Annex

Saddles

For Hawle Saddle

to the

ENVIRONMENTAL PRODUCT DECLARATION
as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	E. Hawle Armaturenwerke GmbH
Declaration number	EPD-HAW-20260412-IBA1-EN
Issue date	See EPD
Valid to	See EPD

Institut Bauen und Umwelt e.V.

General Information

This Annex contains the life cycle impact assessment results for the declared unit of **1 piece of saddle products**:

Number	Product name	Product number
1.	HAKU SADDLE PN16 WATER: HAKU ABS 40-1"	5003443
2.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 50-1" A4	5003448
3.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-1" A4	5003453
4.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-5/4" A4	5003456
5.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-6/4" A4	5003458
6.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-2" A4	5003460
7.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-3/4" A4	5003465
8.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-1" A4	5003467
9.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-5/4" A4	5003472
10.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-6/4" A4	5003476
11.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-2" A4	5003480
12.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-1" A4	5003485
13.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-5/4" A4	5003488
14.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-6/4" A4	5003490
15.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-2" A4	5003492
16.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-1" A4	5003708
17.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-5/4" A4	5003710
18.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-6/4 A4	5003712
19.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-2" A4	5003714
20.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-1" A4	5003717
21.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-5/4" A4	5003722
22.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-6/4" A4	5003724
23.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-2" A4	5003728
24.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-5/4" A4	5003736
25.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-6/4" A4	5003738
26.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-2" A4	5003740
27.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-1" A4	5003743
28.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-5/4" A4	5003747
29.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-6/4" A4	5003749
30.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-2" A4	5003751
31.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-1" A4	5003756
32.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-5/4" A4	5003758
33.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-6/4" A4	5003760
34.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-2" A4	5003764
35.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 250-2" A4	5003515
36.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 280-2" A4	5003529
37.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 315-2" A4	5003543
38.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-2" A4	5003572
39.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-1" A4	5003577
40.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-5/4" A4	5003583
41.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-6/4" A4	5003585
42.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-1" A4	5003587
43.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-5/4" A4	5003589
44.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-6/4" A4	5003591

45.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-2" A4	5003593
46.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 100-2"	5017985
47.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 220-2"	5030251
48.	HAKU SADDLE PN16 WATER, A4: HAKU ABS 87-5/4" A4	5032590
49.	HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-1" m_B A4	5003523
50.	HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-5/4" m_B A4	5003525
51.	HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-6/4" m_B A4	5003527
52.	HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-1" m_B	5003537
53.	HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-5/4" m_B	5003539
54.	HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-6/4" m_B	5003541
55.	HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 355-2" m_B	5003551
56.	HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-6/4" m_B A4	5003554
57.	HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-2" m_B A4	5003556
58.	HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-6/4" m_B A4	5003559
59.	HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-2" m_B A4	5003561
60.	HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 500-2" m_B A4	5003566
61.	HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 630-2" m_B	5003569
62.	ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-ZAK46 A4	5003612
63.	ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-ZAK46 A4	5003614
64.	ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-ZAK46 A4	5003616
65.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 110-80 A4	5004266
66.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 125-100 A4	5004268
67.	HAKU SADDLE PN 16 WITH FLANGED OUTLET: HAKU ABS+FLA 125-80 A4	5004270
68.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-80 A4	5004272
69.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-100 A4	5004274
70.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-80 A4	5004276
71.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-100 A4	5004278
72.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-80 A4	5004280
73.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-100 A4	5004282
74.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-80 A4	5004284
75.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-100 A4	5004286
76.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-80 A4	5004288
77.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-100 A4	5004290
78.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-80 A4	5004292
79.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-150 A4	5004294
80.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-150 A4	5004296
81.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-80 A4	5004298
82.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-150 A4	5004300
83.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-100 A4	5030563
84.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-100 A4	5030565
85.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 355-150	5004302
86.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 450-150	5004304
87.	HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 500-150	5004306

88.	HAKU SADDLE FLANGED OUTLET : HAKU ABS+FLA 630-150	5004308
89.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-1" A4	5003638
90.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-5/4" A4	5003640
91.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-6/4" A4	5003642
92.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-2" A4	5003644
93.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-1" A4	5003646
94.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-5/4" A4	5003648
95.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-6/4" A4	5003650
96.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-2" A4	5003652
97.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-1" A4	5003655
98.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-5/4" A4	5003657
99.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-6/4" A4	5003659
100.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-2" A4	5003661
101.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-1" A4	5003664
102.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-5/4" A4	5003666
103.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-1" A4	5003668
104.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-5/4" A4	5003670
105.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-6/4" A4	5003672
106.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-2" A4	5003674
107.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 100-5/4"	5020470
108.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-2" A4	5030527
109.	HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 98-1" A4	5034682
110.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-ZAK34 A4	5003676
111.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK34 A4	5003678
112.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK46 A4	5003680
113.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK34 A4	5003682
114.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK34 A4	5003692
115.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK34 A4	5003700
116.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK46 A4	5003684
117.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 125-ZAK46 A4	5003686
118.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK34 A4	5003688
119.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK46 A4	5003690
120.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK46 A4	5003694
121.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 180-ZAK46 A4	5003696
122.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 200-ZAK46 A4	5003698
123.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK46 A4	5003702
124.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 250-ZAK46 A4	5003704
125.	ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 280-ZAK46 A4	5003706
126.	UNIVERSAL PIPE SADDLE WITH INT THREAD, STRAP L 1055 MM: UNI ABS 300-3"	5003871
127.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1155 MM: UNI ABS 350-2"	5003873

128.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1325 MM: UNI ABS 400-2"	5003879
129.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1480 MM: UNI ABS 450-2"	5003881
130.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1630 MM: UNI ABS 500-2"	5003882
131.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1945 MM: UNI ABS 600-2"	5003883
132.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-3" A4	5003828
133.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2_1/2"	5003884
134.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2"	5019205
135.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-1"	5003788
136.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-5/4"	5003792
137.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-6/4"	5003794
138.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-2"	5003798
139.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-1"	5003802
140.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-5/4"	5003804
141.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-6/4"	5003805
142.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-2"	5003807
143.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-1"	5003809
144.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-5/4"	5003811
145.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-6/4"	5003813
146.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-2"	5003817
147.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-1"	5003821
148.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-5/4"	5003822
149.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-6/4"	5003823
150.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-2"	5003825
151.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-1"	5003829
152.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-5/4"	5003830
153.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-2"	5003831
154.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-1"	5003833
155.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-5/4"	5003835
156.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-6/4"	5003837
157.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-2"	5003841
158.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-5/4"	5003847
159.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-2"	5003848
160.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-1"	5003849

161.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-5/4"	5003853
162.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-6/4"	5003855
163.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-2"	5003859
164.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-1"	5003865
165.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-5/4"	5003866
166.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-6/4"	5003867
167.	UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-2"	5003869
168.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-50	5003953
169.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 410 MM: UNI ABS+FLA 80-50	5003888
170.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 455 MM: UNI ABS+FLA 100-50	5003893
171.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 520 MM: UNI ABS+FLA 125-50	5003897
172.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-50	5003901
173.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-80	5003902
174.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-100	5003906
175.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-40	5003910
176.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-50	5003912
177.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-80	5003916
178.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-100	5003921
179.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-50	5003926
180.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-80	5003930
181.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-100	5003935
182.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-50	5003939
183.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-100	5003944
184.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-80	5003947
185.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-100	5003950
186.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-80	5003954
187.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-100	5003955
188.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-150	5003957
189.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-80	5003962
190.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-100	5003963
191.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-150	5003964
192.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-80	5003966
193.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-100	5003967

194.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500/532-150	5003969
195.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-80	5003971
196.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-100	5003973
197.	UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 610 MM: UNI ABS+FLA 160-185-80	5030615
198.	UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-1"	5004148
199.	UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-6/4"	5004151
200.	UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-2"	5004156
201.	UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-6/4"	5004164
202.	UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-2"	5004166
203.	UNI SHUT-OFF SADDLE PN16 STRAP L 1480 MM: UNI SPER 450-2"	5004170
204.	UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-1"	5004172
205.	UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-5/4"	5004173
206.	UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-6/4"	5004174
207.	UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-2"	5004177
208.	UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-1"	5004179
209.	UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-6/4"	5004180
210.	UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-2"	5004181
211.	UNI SHUT-OFF SADDLE PN16 STRAP L 2550 MM: UNI SPER 800-2"	5004182
212.	UNI SHUT-OFF SADDLE PN16 STRAP L 3210 MM: UNI SPER 1000-2"	5004184
213.	UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-1"	5004033
214.	UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-5/4"	5004037
215.	UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-6/4"	5004041
216.	UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-2"	5004045
217.	UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-1"	5004050
218.	UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-5/4"	5004052
219.	UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-6/4"	5004054
220.	UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-1"	5004059
221.	UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-5/4"	5004064
222.	UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-6/4"	5004068
223.	UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-2"	5004072
224.	UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-3/4"	5004076
225.	UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-1"	5004077
226.	UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-5/4"	5004080
227.	UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-6/4"	5004082
228.	UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-2"	5004085
229.	UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-1"	5004087
230.	UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-5/4"	5004088
231.	UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-6/4"	5004089
232.	UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-2"	5004090
233.	UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-1"	5004093
234.	UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-5/4"	5004096
235.	UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-6/4"	5004101
236.	UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-2"	5004106
237.	UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-6/4"	5004114
238.	UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-2"	5004116
239.	UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-1"	5004119

240.	UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-5/4"	5004121
241.	UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-6/4"	5004125
242.	UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-2"	5004129
243.	UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-1"	5004137
244.	UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-5/4"	5004139
245.	UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-6/4"	5004141
246.	UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-2"	5004144
247.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK34	5004190
248.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK46	5004192
249.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK34	5004193
250.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK46	5004195
251.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK34	5004196
252.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK46	5004197
253.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK34	5004198
254.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK46	5004199
255.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK34	5004200
256.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK46	5004201
257.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK34	5004202
258.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK46	5004203
259.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK34	5004204
260.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK46	5004205
261.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK34	5004206
262.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK46	5004207
263.	UNIVERSAL SHUT-OFF SADDLE PN16 INCL. STRAP: UNI SPER-H 150-1"	5004224
264.	ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, FOR STEEL PIPES: UNI SPER-H 100-ZAK46 f_Stahl	5004242
265.	UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/1" o_B	5004209
266.	UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/6/4" o_B	5004213

This document declares the specific results according to EN 15804, EF 3.1 for the products mentioned above. It represents a complementary document to the IBU-EPD for **Hawle Saddle [declaration number EPD-HAW-20260412-IBA1-EN].**

General Information on the product

This Annex describes the product specific results for Hawle Saddle products. Further information on the LCA is provided in the complementing IBU-EPD for Hawle Saddle.

LCA: Scenarios and additional technical information

The product described in the IBU-EPD for Hawle Saddle [declaration number EPD-HAW-20260412-IBA1-EN] is one of several different design variations of saddles. These design variations can differ by nominal diameter of pipe, nominal diameter of the connection, connection type, fixation type, and shut-off function.

Each variation has various nominal diameters depending on the pipe it is used on (DN40 up to DN633).

Saddles with shut-off function have bigger housing and additional components in the shut-off chamber: various POM-parts for framing and EPDM parts for sealing.

Saddles have different fixation types:

- wrap around strap fixation by ball washer
- wrap around strap fixation by holding piece (H-type)
- full pipe enclosure fixation

Saddles with wrap around strap fixation have rubber padded straps made of stainless steel which are tightened by nuts and washers. Some types have ball washers made of steel and the other types (H-type fixation) have holding pieces made of polyamide. Saddles with full pipe enclosure fixation have a second housing part, also made of powder coated cast iron and EPDM gasket.

Saddles can have the following connection types

- internal thread
- flange
- ZAK

The main difference is the housing geometry which leads to different component masses. Products with internal threads have an additional O-ring to protect the housing from corrosion.

The following life cycle phases of the Saddle products are part of the analysis:

Module A1-A3: The production stage includes the upstream burdens of raw material supply, their transports and the production of the Saddle Products at E. Hawle Armaturenwerke GmbH in Vöcklabruck and Frankenmarkt.

- Module C2: Transport to recycling (50 km default-scenario)

- Module C3: Energy recovery of the polymer parts in a waste incineration plant.

- Module C4: Emissions from the disposal of the losses from waste processing (5 % of metals)

- Module D: Recycling of the recovered metals (95 % of metals) and substitution potentails from energy recovery from the incineration of the polymers.

Module C1 of Saddle products does not contain any relevant environmental impacts and is to be declared as "0".

All data collected for the LCA of the saddle declared in the IBU-EPD represent the basis for the assessment. This basis was complemented with product specific information, mainly represented by the bill of materials of the declared products. All calculations follow the same principles.

The packaging of the saddles is assumed to remain constant for all products and is represented based on a standard for shipping on the European market. Details can be found in chapter 2.9 and in chapter 4 of the main EPD.

The product specific net flow of steel scrap in Module D is declared in the results tables under “Use of secondary material (SM)” in Module D.

It should be noted that the data and methodological assumptions used for the preparation of the LCAs of the products listed comply with the requirements of *EN 15804+A2* as well as *IBU, PCR Part A* and are thus suitable for use in an EPD.

2. LCA: Results

2.1 HAKU SADDLE PN16 WATER: HAKU ABS 40-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER: HAKU ABS 40-1" (1.05 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.03E+00	0.00E+00	4.09E-03	7.96E-02	1.10E-03	-5.61E-01
GWP-fossil	[kg CO_2-Eq.]	2.98E+00	0.00E+00	4.04E-03	7.96E-02	1.08E-03	-5.64E-01
GWP-biogenic	[kg CO_2-Eq.]	4.33E-02	0.00E+00	7.54E-06	2.99E-06	8.21E-06	2.84E-03
GWP-luluc	[kg CO_2-Eq.]	8.74E-03	0.00E+00	4.24E-05	2.03E-06	3.41E-06	-5.49E-04
ODP	[kg CFC11-Eq.]	4.38E-11	0.00E+00	6.83E-16	6.02E-15	3.51E-15	2.44E-13
AP	[mol H^+-Eq.]	9.99E-03	0.00E+00	1.47E-05	7.88E-06	6.76E-06	-1.99E-03
EP-freshwater	[kg P-Eq.]	1.46E-05	0.00E+00	1.11E-08	1.70E-09	1.53E-09	-3.60E-07
EP-marine	[kg N-Eq.]	2.54E-03	0.00E+00	7.00E-06	2.10E-06	1.65E-06	-3.06E-04
EP-terrestrial	[mol N-Eq.]	2.79E-02	0.00E+00	7.57E-05	3.74E-05	1.80E-05	-3.05E-03
POCP	[kg NMVOC-Eq.]	6.62E-03	0.00E+00	1.35E-05	5.96E-06	5.11E-06	-1.07E-03
ADPE	[kg Sb-Eq.]	9.91E-06	0.00E+00	2.74E-10	7.22E-11	7.36E-11	-7.11E-06
ADPF	[MJ]	3.68E+01	0.00E+00	5.28E-02	1.26E-02	1.77E-02	-6.23E+00
WDP	[m^3 world-Eq deprived]	4.18E-01	0.00E+00	1.88E-05	6.83E-03	1.27E-04	-9.84E-02

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER: HAKU ABS 40-1" (1.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.83E+01	0.00E+00	3.98E-03	3.47E-03	2.89E-03	-4.07E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.95E+01	0.00E+00	3.98E-03	3.47E-03	2.89E-03	-4.07E-01
PENRE	[MJ]	3.48E+01	0.00E+00	5.28E-02	1.50E+00	1.77E-02	-6.23E+00
PENRM	[MJ]	2.00E+00	0.00E+00	0.00E+00	-1.49E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.68E+01	0.00E+00	5.28E-02	1.26E-02	1.77E-02	-6.23E+00
SM	[kg]	8.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.42E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.18E-02	0.00E+00	1.97E-06	1.60E-04	3.73E-06	-4.00E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER: HAKU ABS 40-1" (1.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.31E-08	0.00E+00	2.12E-12	6.80E-12	3.83E-12	-1.95E-05
NHWD	[kg]	5.66E-01	0.00E+00	7.37E-06	2.39E-03	5.10E-02	4.57E-02
RWD	[kg]	1.16E-03	0.00E+00	9.96E-08	6.77E-07	2.46E-07	-4.84E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.26E-01	0.00E+00	0.00E+00	9.68E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER: HAKU ABS 40-1" (1.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.2 HAKU SADDLE PN16 WATER, A4: HAKU ABS 50-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 50-1" A4 (1.20 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.29E+00	0.00E+00	4.67E-03	5.69E-02	1.27E-03	-6.99E-01
GWP-fossil	[kg CO_2-Eq.]	3.23E+00	0.00E+00	4.61E-03	5.69E-02	1.25E-03	-7.02E-01
GWP-biogenic	[kg CO_2-Eq.]	4.79E-02	0.00E+00	8.62E-06	2.14E-06	9.49E-06	3.71E-03
GWP-luluc	[kg CO_2-Eq.]	9.79E-03	0.00E+00	4.84E-05	1.45E-06	3.94E-06	-6.40E-04
ODP	[kg CFC11-Eq.]	4.89E-11	0.00E+00	7.81E-16	4.31E-15	4.05E-15	4.67E-13
AP	[mol H^+-Eq.]	1.10E-02	0.00E+00	1.68E-05	5.63E-06	7.81E-06	-2.46E-03
EP-freshwater	[kg P-Eq.]	1.62E-05	0.00E+00	1.27E-08	1.21E-09	1.77E-09	-4.27E-07
EP-marine	[kg N-Eq.]	2.79E-03	0.00E+00	8.00E-06	1.50E-06	1.90E-06	-3.77E-04
EP-terrestrial	[mol N-Eq.]	3.07E-02	0.00E+00	8.65E-05	2.67E-05	2.08E-05	-3.73E-03
POCP	[kg NMVOC-Eq.]	7.23E-03	0.00E+00	1.54E-05	4.26E-06	5.91E-06	-1.34E-03
ADPE	[kg Sb-Eq.]	1.08E-05	0.00E+00	3.13E-10	5.16E-11	8.50E-11	-8.69E-06
ADPF	[MJ]	3.91E+01	0.00E+00	6.03E-02	9.01E-03	2.05E-02	-7.63E+00
WDP	[m^3 world-Eq deprived]	4.60E-01	0.00E+00	2.15E-05	4.88E-03	1.46E-04	-1.19E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 50-1" A4 (1.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.29E+01	0.00E+00	4.55E-03	2.48E-03	3.34E-03	-3.94E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.41E+01	0.00E+00	4.55E-03	2.48E-03	3.34E-03	-3.94E-01
PENRE	[MJ]	3.73E+01	0.00E+00	6.03E-02	2.67E+00	2.05E-02	-7.63E+00
PENRM	[MJ]	1.78E+00	0.00E+00	0.00E+00	-2.66E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.91E+01	0.00E+00	6.03E-02	9.01E-03	2.05E-02	-7.63E+00
SM	[kg]	9.26E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.13E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.42E-02	0.00E+00	2.25E-06	1.15E-04	4.31E-06	-5.20E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 50-1" A4 (1.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.79E-08	0.00E+00	2.42E-12	4.86E-12	4.42E-12	-2.32E-05
NHWD	[kg]	6.28E-01	0.00E+00	8.42E-06	1.71E-03	5.90E-02	5.98E-02
RWD	[kg]	1.27E-03	0.00E+00	1.14E-07	4.84E-07	2.84E-07	-4.09E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.03E+00	0.00E+00	0.00E+00	1.12E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 50-1" A4 (1.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.3 HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-1" A4 (2.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.09E+00	0.00E+00	1.01E-02	1.21E-01	2.74E-03	-1.62E+00
GWP-fossil	[kg CO_2-Eq.]	6.97E+00	0.00E+00	9.99E-03	1.21E-01	2.71E-03	-1.63E+00
GWP-biogenic	[kg CO_2-Eq.]	9.99E-02	0.00E+00	1.87E-05	4.53E-06	2.06E-05	8.51E-03
GWP-luluc	[kg CO_2-Eq.]	2.09E-02	0.00E+00	1.05E-04	3.08E-06	8.53E-06	-1.75E-03
ODP	[kg CFC11-Eq.]	1.05E-10	0.00E+00	1.69E-15	9.12E-15	8.79E-15	9.78E-13
AP	[mol H^+-Eq.]	2.50E-02	0.00E+00	3.65E-05	1.19E-05	1.69E-05	-6.11E-03
EP-freshwater	[kg P-Eq.]	3.43E-05	0.00E+00	2.75E-08	2.57E-09	3.84E-09	-1.12E-06
EP-marine	[kg N-Eq.]	5.96E-03	0.00E+00	1.73E-05	3.18E-06	4.13E-06	-9.27E-04
EP-terrestrial	[mol N-Eq.]	6.56E-02	0.00E+00	1.87E-04	5.66E-05	4.50E-05	-9.30E-03
POCP	[kg NMVOC-Eq.]	1.55E-02	0.00E+00	3.34E-05	9.03E-06	1.28E-05	-3.22E-03
ADPE	[kg Sb-Eq.]	3.34E-05	0.00E+00	6.78E-10	1.09E-10	1.84E-10	-2.27E-05
ADPF	[MJ]	8.39E+01	0.00E+00	1.31E-01	1.91E-02	4.44E-02	-1.79E+01
WDP	[m^3 world-Eq deprived]	9.99E-01	0.00E+00	4.66E-05	1.03E-02	3.17E-04	-3.12E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-1" A4 (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.10E+01	0.00E+00	9.85E-03	5.25E-03	7.24E-03	-1.18E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.22E+01	0.00E+00	9.85E-03	5.25E-03	7.24E-03	-1.18E+00
PENRE	[MJ]	8.07E+01	0.00E+00	1.31E-01	2.68E+00	4.44E-02	-1.79E+01
PENRM	[MJ]	3.17E+00	0.00E+00	0.00E+00	-2.66E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.39E+01	0.00E+00	1.31E-01	1.91E-02	4.44E-02	-1.79E+01
SM	[kg]	1.99E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.84E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.22E-02	0.00E+00	4.87E-06	2.43E-04	9.35E-06	-1.12E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-1" A4 (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.01E-07	0.00E+00	5.24E-12	1.03E-11	9.59E-12	-6.59E-05
NHWD	[kg]	1.35E+00	0.00E+00	1.82E-05	3.62E-03	1.28E-01	1.27E-01
RWD	[kg]	2.72E-03	0.00E+00	2.47E-07	1.03E-06	6.16E-07	-9.86E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.16E+00	0.00E+00	0.00E+00	2.43E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.87E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.35E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-1" A4 (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.4 HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-5/4" A4 (2.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.35E+00	0.00E+00	1.05E-02	1.27E-01	2.85E-03	-1.67E+00
GWP-fossil	[kg CO_2-Eq.]	7.23E+00	0.00E+00	1.04E-02	1.27E-01	2.82E-03	-1.68E+00
GWP-biogenic	[kg CO_2-Eq.]	1.04E-01	0.00E+00	1.94E-05	4.78E-06	2.14E-05	8.80E-03
GWP-luluc	[kg CO_2-Eq.]	2.17E-02	0.00E+00	1.09E-04	3.25E-06	8.86E-06	-1.79E-03
ODP	[kg CFC11-Eq.]	1.09E-10	0.00E+00	1.76E-15	9.63E-15	9.12E-15	1.01E-12
AP	[mol H^+-Eq.]	2.59E-02	0.00E+00	3.79E-05	1.26E-05	1.76E-05	-6.29E-03
EP-freshwater	[kg P-Eq.]	3.56E-05	0.00E+00	2.85E-08	2.72E-09	3.98E-09	-1.15E-06
EP-marine	[kg N-Eq.]	6.18E-03	0.00E+00	1.80E-05	3.36E-06	4.28E-06	-9.54E-04
EP-terrestrial	[mol N-Eq.]	6.81E-02	0.00E+00	1.95E-04	5.98E-05	4.67E-05	-9.57E-03
POCP	[kg NMVOC-Eq.]	1.61E-02	0.00E+00	3.47E-05	9.54E-06	1.33E-05	-3.32E-03
ADPE	[kg Sb-Eq.]	3.38E-05	0.00E+00	7.04E-10	1.15E-10	1.91E-10	-2.33E-05
ADPF	[MJ]	8.70E+01	0.00E+00	1.36E-01	2.02E-02	4.61E-02	-1.85E+01
WDP	[m^3 world-Eq deprived]	1.04E+00	0.00E+00	4.84E-05	1.09E-02	3.29E-04	-3.20E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-5/4" A4 (2.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.46E+01	0.00E+00	1.02E-02	5.55E-03	7.51E-03	-1.20E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.57E+01	0.00E+00	1.02E-02	5.55E-03	7.51E-03	-1.20E+00
PENRE	[MJ]	8.37E+01	0.00E+00	1.36E-01	2.82E+00	4.61E-02	-1.85E+01
PENRM	[MJ]	3.31E+00	0.00E+00	0.00E+00	-2.80E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.70E+01	0.00E+00	1.36E-01	2.02E-02	4.61E-02	-1.85E+01
SM	[kg]	2.07E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.11E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.42E-02	0.00E+00	5.06E-06	2.56E-04	9.71E-06	-1.16E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-5/4" A4 (2.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.05E-07	0.00E+00	5.44E-12	1.09E-11	9.96E-12	-6.73E-05
NHWD	[kg]	1.40E+00	0.00E+00	1.89E-05	3.83E-03	1.33E-01	1.32E-01
RWD	[kg]	2.82E-03	0.00E+00	2.56E-07	1.08E-06	6.39E-07	-1.02E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.24E+00	0.00E+00	0.00E+00	2.52E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.97E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.54E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-5/4" A4 (2.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.5 HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-6/4" A4 (2.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.09E+00	0.00E+00	1.01E-02	1.28E-01	2.74E-03	-1.62E+00
GWP-fossil	[kg CO_2-Eq.]	6.97E+00	0.00E+00	9.99E-03	1.28E-01	2.71E-03	-1.63E+00
GWP-biogenic	[kg CO_2-Eq.]	9.99E-02	0.00E+00	1.87E-05	4.81E-06	2.05E-05	8.49E-03
GWP-luluc	[kg CO_2-Eq.]	2.09E-02	0.00E+00	1.05E-04	3.27E-06	8.52E-06	-1.75E-03
ODP	[kg CFC11-Eq.]	1.05E-10	0.00E+00	1.69E-15	9.69E-15	8.78E-15	9.54E-13
AP	[mol H^+-Eq.]	2.50E-02	0.00E+00	3.65E-05	1.27E-05	1.69E-05	-6.10E-03
EP-freshwater	[kg P-Eq.]	3.43E-05	0.00E+00	2.75E-08	2.73E-09	3.83E-09	-1.12E-06
EP-marine	[kg N-Eq.]	5.96E-03	0.00E+00	1.73E-05	3.38E-06	4.12E-06	-9.26E-04
EP-terrestrial	[mol N-Eq.]	6.56E-02	0.00E+00	1.87E-04	6.01E-05	4.50E-05	-9.29E-03
POCP	[kg NMVOC-Eq.]	1.55E-02	0.00E+00	3.34E-05	9.59E-06	1.28E-05	-3.22E-03
ADPE	[kg Sb-Eq.]	3.32E-05	0.00E+00	6.78E-10	1.16E-10	1.84E-10	-2.26E-05
ADPF	[MJ]	8.40E+01	0.00E+00	1.31E-01	2.03E-02	4.43E-02	-1.79E+01
WDP	[m^3 world-Eq deprived]	9.98E-01	0.00E+00	4.66E-05	1.10E-02	3.17E-04	-3.11E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-6/4" A4 (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.10E+01	0.00E+00	9.85E-03	5.58E-03	7.23E-03	-1.19E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.22E+01	0.00E+00	9.85E-03	5.58E-03	7.23E-03	-1.19E+00
PENRE	[MJ]	8.07E+01	0.00E+00	1.31E-01	2.77E+00	4.43E-02	-1.79E+01
PENRM	[MJ]	3.26E+00	0.00E+00	0.00E+00	-2.75E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.40E+01	0.00E+00	1.31E-01	2.03E-02	4.43E-02	-1.79E+01
SM	[kg]	1.99E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.84E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.22E-02	0.00E+00	4.87E-06	2.58E-04	9.34E-06	-1.12E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-6/4" A4 (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.01E-07	0.00E+00	5.24E-12	1.09E-11	9.58E-12	-6.57E-05
NHWD	[kg]	1.35E+00	0.00E+00	1.82E-05	3.85E-03	1.28E-01	1.27E-01
RWD	[kg]	2.72E-03	0.00E+00	2.47E-07	1.09E-06	6.15E-07	-1.02E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.15E+00	0.00E+00	0.00E+00	2.42E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.98E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.56E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-6/4" A4 (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.6 HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-2" A4 (2.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.35E+00	0.00E+00	1.05E-02	1.39E-01	2.84E-03	-1.67E+00
GWP-fossil	[kg CO_2-Eq.]	7.22E+00	0.00E+00	1.04E-02	1.39E-01	2.81E-03	-1.67E+00
GWP-biogenic	[kg CO_2-Eq.]	1.04E-01	0.00E+00	1.94E-05	5.21E-06	2.13E-05	8.73E-03
GWP-luluc	[kg CO_2-Eq.]	2.17E-02	0.00E+00	1.09E-04	3.54E-06	8.84E-06	-1.75E-03
ODP	[kg CFC11-Eq.]	1.09E-10	0.00E+00	1.76E-15	1.05E-14	9.11E-15	9.86E-13
AP	[mol H^+-Eq.]	2.56E-02	0.00E+00	3.79E-05	1.37E-05	1.76E-05	-6.19E-03
EP-freshwater	[kg P-Eq.]	3.57E-05	0.00E+00	2.85E-08	2.96E-09	3.98E-09	-1.12E-06
EP-marine	[kg N-Eq.]	6.18E-03	0.00E+00	1.80E-05	3.66E-06	4.28E-06	-9.41E-04
EP-terrestrial	[mol N-Eq.]	6.80E-02	0.00E+00	1.95E-04	6.51E-05	4.66E-05	-9.42E-03
POCP	[kg NMVOC-Eq.]	1.61E-02	0.00E+00	3.47E-05	1.04E-05	1.33E-05	-3.28E-03
ADPE	[kg Sb-Eq.]	3.24E-05	0.00E+00	7.04E-10	1.26E-10	1.91E-10	-2.28E-05
ADPF	[MJ]	8.70E+01	0.00E+00	1.36E-01	2.19E-02	4.60E-02	-1.84E+01
WDP	[m^3 world-Eq deprived]	1.03E+00	0.00E+00	4.84E-05	1.19E-02	3.29E-04	-3.13E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-2" A4 (2.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.46E+01	0.00E+00	1.02E-02	6.04E-03	7.50E-03	-1.18E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.58E+01	0.00E+00	1.02E-02	6.04E-03	7.50E-03	-1.18E+00
PENRE	[MJ]	8.36E+01	0.00E+00	1.36E-01	2.94E+00	4.60E-02	-1.84E+01
PENRM	[MJ]	3.43E+00	0.00E+00	0.00E+00	-2.92E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.70E+01	0.00E+00	1.36E-01	2.19E-02	4.60E-02	-1.84E+01
SM	[kg]	2.06E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.10E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.41E-02	0.00E+00	5.06E-06	2.79E-04	9.69E-06	-1.17E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-2" A4 (2.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.05E-07	0.00E+00	5.44E-12	1.18E-11	9.94E-12	-6.51E-05
NHWD	[kg]	1.40E+00	0.00E+00	1.89E-05	4.16E-03	1.33E-01	1.33E-01
RWD	[kg]	2.82E-03	0.00E+00	2.56E-07	1.18E-06	6.38E-07	-1.06E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.25E+00	0.00E+00	0.00E+00	2.51E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.15E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.85E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-2" A4 (2.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.7 HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-3/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-3/4" A4 (2.79 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.59E+00	0.00E+00	1.09E-02	1.64E-01	2.93E-03	-1.71E+00
GWP-fossil	[kg CO_2-Eq.]	7.46E+00	0.00E+00	1.07E-02	1.64E-01	2.90E-03	-1.71E+00
GWP-biogenic	[kg CO_2-Eq.]	1.08E-01	0.00E+00	2.00E-05	6.17E-06	2.20E-05	8.88E-03
GWP-luluc	[kg CO_2-Eq.]	2.24E-02	0.00E+00	1.13E-04	4.19E-06	9.11E-06	-1.74E-03
ODP	[kg CFC11-Eq.]	1.12E-10	0.00E+00	1.82E-15	1.24E-14	9.38E-15	9.62E-13
AP	[mol H^+-Eq.]	2.61E-02	0.00E+00	3.91E-05	1.63E-05	1.81E-05	-6.25E-03
EP-freshwater	[kg P-Eq.]	3.69E-05	0.00E+00	2.95E-08	3.50E-09	4.10E-09	-1.13E-06
EP-marine	[kg N-Eq.]	6.37E-03	0.00E+00	1.86E-05	4.33E-06	4.41E-06	-9.52E-04
EP-terrestrial	[mol N-Eq.]	7.02E-02	0.00E+00	2.01E-04	7.72E-05	4.81E-05	-9.51E-03
POCP	[kg NMVOC-Eq.]	1.65E-02	0.00E+00	3.58E-05	1.23E-05	1.37E-05	-3.33E-03
ADPE	[kg Sb-Eq.]	3.14E-05	0.00E+00	7.28E-10	1.49E-10	1.97E-10	-2.27E-05
ADPF	[MJ]	9.03E+01	0.00E+00	1.40E-01	2.60E-02	4.74E-02	-1.88E+01
WDP	[m^3 world-Eq deprived]	1.06E+00	0.00E+00	5.00E-05	1.41E-02	3.39E-04	-3.12E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-3/4" A4 (2.79 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.78E+01	0.00E+00	1.06E-02	7.16E-03	7.73E-03	-1.19E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.90E+01	0.00E+00	1.06E-02	7.16E-03	7.73E-03	-1.19E+00
PENRE	[MJ]	8.65E+01	0.00E+00	1.40E-01	3.79E+00	4.74E-02	-1.88E+01
PENRM	[MJ]	3.77E+00	0.00E+00	0.00E+00	-3.77E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.03E+01	0.00E+00	1.40E-01	2.60E-02	4.74E-02	-1.88E+01
SM	[kg]	2.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.33E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.59E-02	0.00E+00	5.22E-06	3.31E-04	9.98E-06	-1.21E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-3/4" A4 (2.79 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.09E-07	0.00E+00	5.63E-12	1.40E-11	1.02E-11	-6.40E-05
NHWD	[kg]	1.44E+00	0.00E+00	1.96E-05	4.94E-03	1.37E-01	1.38E-01
RWD	[kg]	2.91E-03	0.00E+00	2.65E-07	1.40E-06	6.57E-07	-1.16E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.33E+00	0.00E+00	0.00E+00	2.59E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.55E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.56E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-3/4" A4 (2.79 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.8 HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-1" A4 (2.81 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.65E+00	0.00E+00	1.09E-02	1.67E-01	2.95E-03	-1.72E+00
GWP-fossil	[kg CO_2-Eq.]	7.52E+00	0.00E+00	1.08E-02	1.67E-01	2.92E-03	-1.73E+00
GWP-biogenic	[kg CO_2-Eq.]	1.08E-01	0.00E+00	2.02E-05	6.27E-06	2.21E-05	8.95E-03
GWP-luluc	[kg CO_2-Eq.]	2.25E-02	0.00E+00	1.13E-04	4.26E-06	9.17E-06	-1.76E-03
ODP	[kg CFC11-Eq.]	1.13E-10	0.00E+00	1.83E-15	1.26E-14	9.45E-15	9.63E-13
AP	[mol H^+-Eq.]	2.63E-02	0.00E+00	3.94E-05	1.65E-05	1.82E-05	-6.30E-03
EP-freshwater	[kg P-Eq.]	3.72E-05	0.00E+00	2.97E-08	3.56E-09	4.13E-09	-1.14E-06
EP-marine	[kg N-Eq.]	6.42E-03	0.00E+00	1.87E-05	4.40E-06	4.44E-06	-9.61E-04
EP-terrestrial	[mol N-Eq.]	7.06E-02	0.00E+00	2.03E-04	7.84E-05	4.84E-05	-9.60E-03
POCP	[kg NMVOC-Eq.]	1.67E-02	0.00E+00	3.61E-05	1.25E-05	1.38E-05	-3.36E-03
ADPE	[kg Sb-Eq.]	3.18E-05	0.00E+00	7.33E-10	1.51E-10	1.98E-10	-2.29E-05
ADPF	[MJ]	9.10E+01	0.00E+00	1.41E-01	2.64E-02	4.77E-02	-1.90E+01
WDP	[m^3 world-Eq deprived]	1.07E+00	0.00E+00	5.04E-05	1.43E-02	3.41E-04	-3.16E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-1" A4 (2.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.85E+01	0.00E+00	1.06E-02	7.27E-03	7.78E-03	-1.21E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.97E+01	0.00E+00	1.06E-02	7.27E-03	7.78E-03	-1.21E+00
PENRE	[MJ]	8.72E+01	0.00E+00	1.41E-01	2.84E+00	4.77E-02	-1.90E+01
PENRM	[MJ]	3.80E+00	0.00E+00	0.00E+00	-2.81E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.10E+01	0.00E+00	1.41E-01	2.64E-02	4.77E-02	-1.90E+01
SM	[kg]	2.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.38E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.63E-02	0.00E+00	5.26E-06	3.36E-04	1.01E-05	-1.22E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-1" A4 (2.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.09E-07	0.00E+00	5.67E-12	1.43E-11	1.03E-11	-6.48E-05
NHWD	[kg]	1.45E+00	0.00E+00	1.97E-05	5.02E-03	1.37E-01	1.39E-01
RWD	[kg]	2.93E-03	0.00E+00	2.67E-07	1.42E-06	6.62E-07	-1.18E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.34E+00	0.00E+00	0.00E+00	2.61E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.59E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.64E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-1" A4 (2.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.9 HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-5/4" A4 (3.00 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.16E+00	0.00E+00	1.17E-02	1.85E-01	3.15E-03	-1.84E+00
GWP-fossil	[kg CO_2-Eq.]	8.02E+00	0.00E+00	1.15E-02	1.85E-01	3.11E-03	-1.85E+00
GWP-biogenic	[kg CO_2-Eq.]	1.16E-01	0.00E+00	2.15E-05	6.93E-06	2.36E-05	9.54E-03
GWP-luluc	[kg CO_2-Eq.]	2.41E-02	0.00E+00	1.21E-04	4.71E-06	9.79E-06	-1.89E-03
ODP	[kg CFC11-Eq.]	1.21E-10	0.00E+00	1.95E-15	1.40E-14	1.01E-14	1.01E-12
AP	[mol H^+-Eq.]	2.81E-02	0.00E+00	4.21E-05	1.83E-05	1.94E-05	-6.74E-03
EP-freshwater	[kg P-Eq.]	3.96E-05	0.00E+00	3.17E-08	3.93E-09	4.40E-09	-1.22E-06
EP-marine	[kg N-Eq.]	6.84E-03	0.00E+00	2.00E-05	4.87E-06	4.73E-06	-1.03E-03
EP-terrestrial	[mol N-Eq.]	7.54E-02	0.00E+00	2.16E-04	8.66E-05	5.16E-05	-1.03E-02
POCP	[kg NMVOC-Eq.]	1.78E-02	0.00E+00	3.85E-05	1.38E-05	1.47E-05	-3.59E-03
ADPE	[kg Sb-Eq.]	3.40E-05	0.00E+00	7.83E-10	1.67E-10	2.11E-10	-2.45E-05
ADPF	[MJ]	9.72E+01	0.00E+00	1.51E-01	2.92E-02	5.09E-02	-2.03E+01
WDP	[m^3 world-Eq deprived]	1.14E+00	0.00E+00	5.38E-05	1.58E-02	3.64E-04	-3.38E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-5/4" A4 (3.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.05E+02	0.00E+00	1.14E-02	8.04E-03	8.30E-03	-1.31E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.06E+02	0.00E+00	1.14E-02	8.04E-03	8.30E-03	-1.31E+00
PENRE	[MJ]	9.31E+01	0.00E+00	1.51E-01	3.61E+00	5.09E-02	-2.03E+01
PENRM	[MJ]	4.09E+00	0.00E+00	0.00E+00	-3.58E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.72E+01	0.00E+00	1.51E-01	2.92E-02	5.09E-02	-2.03E+01
SM	[kg]	2.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.87E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.00E-02	0.00E+00	5.62E-06	3.71E-04	1.07E-05	-1.30E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-5/4" A4 (3.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.17E-07	0.00E+00	6.05E-12	1.58E-11	1.10E-11	-6.93E-05
NHWD	[kg]	1.55E+00	0.00E+00	2.11E-05	5.54E-03	1.47E-01	1.48E-01
RWD	[kg]	3.12E-03	0.00E+00	2.85E-07	1.57E-06	7.06E-07	-1.29E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.50E+00	0.00E+00	0.00E+00	2.78E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.86E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.12E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-5/4" A4 (3.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.10 HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-6/4" A4 (2.94 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.99E+00	0.00E+00	1.14E-02	1.74E-01	3.09E-03	-1.79E+00
GWP-fossil	[kg CO_2-Eq.]	7.85E+00	0.00E+00	1.13E-02	1.74E-01	3.05E-03	-1.79E+00
GWP-biogenic	[kg CO_2-Eq.]	1.14E-01	0.00E+00	2.11E-05	6.53E-06	2.31E-05	9.32E-03
GWP-luluc	[kg CO_2-Eq.]	2.36E-02	0.00E+00	1.19E-04	4.44E-06	9.60E-06	-1.79E-03
ODP	[kg CFC11-Eq.]	1.18E-10	0.00E+00	1.91E-15	1.32E-14	9.89E-15	1.02E-12
AP	[mol H^+-Eq.]	2.73E-02	0.00E+00	4.13E-05	1.72E-05	1.91E-05	-6.49E-03
EP-freshwater	[kg P-Eq.]	3.90E-05	0.00E+00	3.11E-08	3.71E-09	4.32E-09	-1.17E-06
EP-marine	[kg N-Eq.]	6.71E-03	0.00E+00	1.96E-05	4.59E-06	4.64E-06	-9.91E-04
EP-terrestrial	[mol N-Eq.]	7.39E-02	0.00E+00	2.12E-04	8.17E-05	5.06E-05	-9.88E-03
POCP	[kg NMVOC-Eq.]	1.74E-02	0.00E+00	3.77E-05	1.30E-05	1.44E-05	-3.47E-03
ADPE	[kg Sb-Eq.]	3.18E-05	0.00E+00	7.67E-10	1.58E-10	2.07E-10	-2.35E-05
ADPF	[MJ]	9.49E+01	0.00E+00	1.48E-01	2.75E-02	4.99E-02	-1.97E+01
WDP	[m^3 world-Eq deprived]	1.12E+00	0.00E+00	5.27E-05	1.49E-02	3.57E-04	-3.23E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-6/4" A4 (2.94 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.03E+02	0.00E+00	1.11E-02	7.57E-03	8.14E-03	-1.21E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.04E+02	0.00E+00	1.11E-02	7.57E-03	8.14E-03	-1.21E+00
PENRE	[MJ]	9.10E+01	0.00E+00	1.48E-01	2.97E+00	4.99E-02	-1.97E+01
PENRM	[MJ]	3.95E+00	0.00E+00	0.00E+00	-2.94E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.49E+01	0.00E+00	1.48E-01	2.75E-02	4.99E-02	-1.97E+01
SM	[kg]	2.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.73E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.88E-02	0.00E+00	5.50E-06	3.50E-04	1.05E-05	-1.28E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-6/4" A4 (2.94 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.15E-07	0.00E+00	5.93E-12	1.49E-11	1.08E-11	-6.56E-05
NHWD	[kg]	1.52E+00	0.00E+00	2.06E-05	5.22E-03	1.44E-01	1.46E-01
RWD	[kg]	3.06E-03	0.00E+00	2.79E-07	1.48E-06	6.93E-07	-1.22E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.46E+00	0.00E+00	0.00E+00	2.73E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.70E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.83E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-6/4" A4 (2.94 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.11 HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-2" A4 (3.15 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.54E+00	0.00E+00	1.23E-02	1.91E-01	3.30E-03	-1.90E+00
GWP-fossil	[kg CO_2-Eq.]	8.39E+00	0.00E+00	1.21E-02	1.91E-01	3.27E-03	-1.91E+00
GWP-biogenic	[kg CO_2-Eq.]	1.22E-01	0.00E+00	2.26E-05	7.18E-06	2.48E-05	9.92E-03
GWP-luluc	[kg CO_2-Eq.]	2.53E-02	0.00E+00	1.27E-04	4.88E-06	1.03E-05	-1.87E-03
ODP	[kg CFC11-Eq.]	1.27E-10	0.00E+00	2.05E-15	1.45E-14	1.06E-14	1.09E-12
AP	[mol H^+-Eq.]	2.90E-02	0.00E+00	4.42E-05	1.89E-05	2.04E-05	-6.85E-03
EP-freshwater	[kg P-Eq.]	4.18E-05	0.00E+00	3.33E-08	4.08E-09	4.62E-09	-1.22E-06
EP-marine	[kg N-Eq.]	7.18E-03	0.00E+00	2.10E-05	5.05E-06	4.97E-06	-1.05E-03
EP-terrestrial	[mol N-Eq.]	7.90E-02	0.00E+00	2.27E-04	8.98E-05	5.42E-05	-1.04E-02
POCP	[kg NMVOC-Eq.]	1.86E-02	0.00E+00	4.04E-05	1.43E-05	1.54E-05	-3.68E-03
ADPE	[kg Sb-Eq.]	3.26E-05	0.00E+00	8.22E-10	1.73E-10	2.22E-10	-2.46E-05
ADPF	[MJ]	1.01E+02	0.00E+00	1.58E-01	3.03E-02	5.35E-02	-2.10E+01
WDP	[m^3 world-Eq deprived]	1.19E+00	0.00E+00	5.65E-05	1.64E-02	3.82E-04	-3.38E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-2" A4 (3.15 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.11E+02	0.00E+00	1.19E-02	8.33E-03	8.72E-03	-1.26E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.12E+02	0.00E+00	1.19E-02	8.33E-03	8.72E-03	-1.26E+00
PENRE	[MJ]	9.72E+01	0.00E+00	1.58E-01	3.77E+00	5.35E-02	-2.10E+01
PENRM	[MJ]	4.25E+00	0.00E+00	0.00E+00	-3.74E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.01E+02	0.00E+00	1.58E-01	3.03E-02	5.35E-02	-2.10E+01
SM	[kg]	2.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.28E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.30E-02	0.00E+00	5.90E-06	3.85E-04	1.13E-05	-1.37E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-2" A4 (3.15 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.23E-07	0.00E+00	6.35E-12	1.63E-11	1.16E-11	-6.81E-05
NHWD	[kg]	1.63E+00	0.00E+00	2.21E-05	5.75E-03	1.54E-01	1.57E-01
RWD	[kg]	3.27E-03	0.00E+00	2.99E-07	1.63E-06	7.42E-07	-1.31E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.65E+00	0.00E+00	0.00E+00	2.92E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.96E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.31E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-2" A4 (3.15 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.12 HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-1" A4 (3.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.00E+01	0.00E+00	1.44E-02	1.71E-01	3.90E-03	-2.13E+00
GWP-fossil	[kg CO_2-Eq.]	9.87E+00	0.00E+00	1.42E-02	1.71E-01	3.86E-03	-2.14E+00
GWP-biogenic	[kg CO_2-Eq.]	1.46E-01	0.00E+00	2.66E-05	6.41E-06	2.93E-05	1.13E-02
GWP-luluc	[kg CO_2-Eq.]	2.99E-02	0.00E+00	1.49E-04	4.36E-06	1.21E-05	-1.94E-03
ODP	[kg CFC11-Eq.]	1.50E-10	0.00E+00	2.41E-15	1.29E-14	1.25E-14	1.45E-12
AP	[mol H^+-Eq.]	3.34E-02	0.00E+00	5.19E-05	1.69E-05	2.41E-05	-7.49E-03
EP-freshwater	[kg P-Eq.]	4.99E-05	0.00E+00	3.91E-08	3.64E-09	5.46E-09	-1.29E-06
EP-marine	[kg N-Eq.]	8.49E-03	0.00E+00	2.47E-05	4.50E-06	5.87E-06	-1.15E-03
EP-terrestrial	[mol N-Eq.]	9.35E-02	0.00E+00	2.67E-04	8.01E-05	6.41E-05	-1.14E-02
POCP	[kg NMVOC-Eq.]	2.19E-02	0.00E+00	4.75E-05	1.28E-05	1.82E-05	-4.08E-03
ADPE	[kg Sb-Eq.]	3.24E-05	0.00E+00	9.65E-10	1.55E-10	2.62E-10	-2.64E-05
ADPF	[MJ]	1.18E+02	0.00E+00	1.86E-01	2.70E-02	6.32E-02	-2.33E+01
WDP	[m^3 world-Eq deprived]	1.40E+00	0.00E+00	6.64E-05	1.46E-02	4.51E-04	-3.60E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-1" A4 (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.32E+02	0.00E+00	1.40E-02	7.43E-03	1.03E-02	-1.18E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.33E+02	0.00E+00	1.40E-02	7.43E-03	1.03E-02	-1.18E+00
PENRE	[MJ]	1.14E+02	0.00E+00	1.86E-01	3.90E+00	6.32E-02	-2.33E+01
PENRM	[MJ]	4.38E+00	0.00E+00	0.00E+00	-3.87E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.18E+02	0.00E+00	1.86E-01	2.70E-02	6.32E-02	-2.33E+01
SM	[kg]	2.86E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.59E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.42E-02	0.00E+00	6.93E-06	3.43E-04	1.33E-05	-1.60E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-1" A4 (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.46E-07	0.00E+00	7.46E-12	1.46E-11	1.36E-11	-7.00E-05
NHWD	[kg]	1.94E+00	0.00E+00	2.60E-05	5.13E-03	1.82E-01	1.84E-01
RWD	[kg]	3.85E-03	0.00E+00	3.51E-07	1.45E-06	8.76E-07	-1.23E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.19E+00	0.00E+00	0.00E+00	3.45E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.65E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.74E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-1" A4 (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.13 HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-5/4" A4 (3.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.97E+00	0.00E+00	1.44E-02	1.80E-01	3.90E-03	-2.18E+00
GWP-fossil	[kg CO_2-Eq.]	9.80E+00	0.00E+00	1.42E-02	1.80E-01	3.86E-03	-2.19E+00
GWP-biogenic	[kg CO_2-Eq.]	1.45E-01	0.00E+00	2.66E-05	6.77E-06	2.92E-05	1.16E-02
GWP-luluc	[kg CO_2-Eq.]	2.97E-02	0.00E+00	1.49E-04	4.60E-06	1.21E-05	-1.98E-03
ODP	[kg CFC11-Eq.]	1.49E-10	0.00E+00	2.41E-15	1.36E-14	1.25E-14	1.46E-12
AP	[mol H^+-Eq.]	3.32E-02	0.00E+00	5.19E-05	1.78E-05	2.41E-05	-7.66E-03
EP-freshwater	[kg P-Eq.]	4.94E-05	0.00E+00	3.91E-08	3.84E-09	5.46E-09	-1.32E-06
EP-marine	[kg N-Eq.]	8.42E-03	0.00E+00	2.47E-05	4.76E-06	5.87E-06	-1.17E-03
EP-terrestrial	[mol N-Eq.]	9.27E-02	0.00E+00	2.67E-04	8.47E-05	6.40E-05	-1.16E-02
POCP	[kg NMVOC-Eq.]	2.17E-02	0.00E+00	4.75E-05	1.35E-05	1.82E-05	-4.16E-03
ADPE	[kg Sb-Eq.]	3.28E-05	0.00E+00	9.65E-10	1.63E-10	2.62E-10	-2.70E-05
ADPF	[MJ]	1.17E+02	0.00E+00	1.86E-01	2.85E-02	6.31E-02	-2.38E+01
WDP	[m^3 world-Eq deprived]	1.39E+00	0.00E+00	6.64E-05	1.55E-02	4.51E-04	-3.68E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-5/4" A4 (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.31E+02	0.00E+00	1.40E-02	7.85E-03	1.03E-02	-1.21E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.32E+02	0.00E+00	1.40E-02	7.85E-03	1.03E-02	-1.21E+00
PENRE	[MJ]	1.13E+02	0.00E+00	1.86E-01	3.97E+00	6.31E-02	-2.38E+01
PENRM	[MJ]	4.45E+00	0.00E+00	0.00E+00	-3.94E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.17E+02	0.00E+00	1.86E-01	2.85E-02	6.31E-02	-2.38E+01
SM	[kg]	2.83E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.79E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.38E-02	0.00E+00	6.93E-06	3.63E-04	1.33E-05	-1.63E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-5/4" A4 (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.45E-07	0.00E+00	7.46E-12	1.54E-11	1.36E-11	-7.16E-05
NHWD	[kg]	1.92E+00	0.00E+00	2.60E-05	5.42E-03	1.82E-01	1.87E-01
RWD	[kg]	3.82E-03	0.00E+00	3.51E-07	1.53E-06	8.75E-07	-1.28E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.16E+00	0.00E+00	0.00E+00	3.45E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.79E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.01E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-5/4" A4 (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.14 HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-6/4" A4 (4.15 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.61E-02	2.05E-01	4.37E-03	-2.45E+00
GWP-fossil	[kg CO_2-Eq.]	1.10E+01	0.00E+00	1.60E-02	2.05E-01	4.33E-03	-2.46E+00
GWP-biogenic	[kg CO_2-Eq.]	1.62E-01	0.00E+00	2.98E-05	7.72E-06	3.28E-05	1.30E-02
GWP-luluc	[kg CO_2-Eq.]	3.33E-02	0.00E+00	1.68E-04	5.24E-06	1.36E-05	-2.23E-03
ODP	[kg CFC11-Eq.]	1.68E-10	0.00E+00	2.70E-15	1.55E-14	1.40E-14	1.63E-12
AP	[mol H^+-Eq.]	3.72E-02	0.00E+00	5.82E-05	2.03E-05	2.70E-05	-8.60E-03
EP-freshwater	[kg P-Eq.]	5.54E-05	0.00E+00	4.39E-08	4.38E-09	6.12E-09	-1.49E-06
EP-marine	[kg N-Eq.]	9.44E-03	0.00E+00	2.77E-05	5.42E-06	6.58E-06	-1.32E-03
EP-terrestrial	[mol N-Eq.]	1.04E-01	0.00E+00	2.99E-04	9.65E-05	7.18E-05	-1.30E-02
POCP	[kg NMVOC-Eq.]	2.43E-02	0.00E+00	5.33E-05	1.54E-05	2.04E-05	-4.68E-03
ADPE	[kg Sb-Eq.]	3.69E-05	0.00E+00	1.08E-09	1.86E-10	2.94E-10	-3.03E-05
ADPF	[MJ]	1.32E+02	0.00E+00	2.09E-01	3.25E-02	7.08E-02	-2.67E+01
WDP	[m^3 world-Eq deprived]	1.56E+00	0.00E+00	7.44E-05	1.76E-02	5.06E-04	-4.13E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-6/4" A4 (4.15 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.47E+02	0.00E+00	1.57E-02	8.95E-03	1.15E-02	-1.37E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.48E+02	0.00E+00	1.57E-02	8.95E-03	1.15E-02	-1.37E+00
PENRE	[MJ]	1.27E+02	0.00E+00	2.09E-01	4.49E+00	7.08E-02	-2.67E+01
PENRM	[MJ]	4.97E+00	0.00E+00	0.00E+00	-4.46E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.32E+02	0.00E+00	2.09E-01	3.25E-02	7.08E-02	-2.67E+01
SM	[kg]	3.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.27E-02	0.00E+00	7.77E-06	4.14E-04	1.49E-05	-1.83E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-6/4" A4 (4.15 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.63E-07	0.00E+00	8.37E-12	1.76E-11	1.53E-11	-8.05E-05
NHWD	[kg]	2.16E+00	0.00E+00	2.91E-05	6.17E-03	2.04E-01	2.10E-01
RWD	[kg]	4.28E-03	0.00E+00	3.94E-07	1.75E-06	9.81E-07	-1.45E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.54E+00	0.00E+00	0.00E+00	3.87E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.19E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.71E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-6/4" A4 (4.15 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.15 HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-2" A4 (4.10 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.10E+01	0.00E+00	1.60E-02	2.09E-01	4.32E-03	-2.41E+00
GWP-fossil	[kg CO_2-Eq.]	1.08E+01	0.00E+00	1.58E-02	2.09E-01	4.27E-03	-2.42E+00
GWP-biogenic	[kg CO_2-Eq.]	1.60E-01	0.00E+00	2.94E-05	7.86E-06	3.24E-05	1.28E-02
GWP-luluc	[kg CO_2-Eq.]	3.29E-02	0.00E+00	1.66E-04	5.35E-06	1.34E-05	-2.16E-03
ODP	[kg CFC11-Eq.]	1.66E-10	0.00E+00	2.67E-15	1.58E-14	1.38E-14	1.59E-12
AP	[mol H^+-Eq.]	3.66E-02	0.00E+00	5.75E-05	2.07E-05	2.67E-05	-8.41E-03
EP-freshwater	[kg P-Eq.]	5.48E-05	0.00E+00	4.34E-08	4.47E-09	6.04E-09	-1.45E-06
EP-marine	[kg N-Eq.]	9.32E-03	0.00E+00	2.73E-05	5.52E-06	6.49E-06	-1.29E-03
EP-terrestrial	[mol N-Eq.]	1.03E-01	0.00E+00	2.96E-04	9.83E-05	7.08E-05	-1.27E-02
POCP	[kg NMVOC-Eq.]	2.40E-02	0.00E+00	5.26E-05	1.57E-05	2.01E-05	-4.58E-03
ADPE	[kg Sb-Eq.]	3.52E-05	0.00E+00	1.07E-09	1.90E-10	2.90E-10	-2.95E-05
ADPF	[MJ]	1.30E+02	0.00E+00	2.06E-01	3.32E-02	6.99E-02	-2.63E+01
WDP	[m^3 world-Eq deprived]	1.54E+00	0.00E+00	7.35E-05	1.80E-02	4.99E-04	-4.02E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-2" A4 (4.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.45E+02	0.00E+00	1.55E-02	9.12E-03	1.14E-02	-1.33E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.46E+02	0.00E+00	1.55E-02	9.12E-03	1.14E-02	-1.33E+00
PENRE	[MJ]	1.25E+02	0.00E+00	2.06E-01	4.51E+00	6.99E-02	-2.63E+01
PENRM	[MJ]	4.99E+00	0.00E+00	0.00E+00	-4.47E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.30E+02	0.00E+00	2.06E-01	3.32E-02	6.99E-02	-2.63E+01
SM	[kg]	3.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.17E-02	0.00E+00	7.68E-06	4.21E-04	1.47E-05	-1.81E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-2" A4 (4.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.61E-07	0.00E+00	8.27E-12	1.79E-11	1.51E-11	-7.76E-05
NHWD	[kg]	2.13E+00	0.00E+00	2.88E-05	6.29E-03	2.01E-01	2.08E-01
RWD	[kg]	4.23E-03	0.00E+00	3.89E-07	1.78E-06	9.69E-07	-1.45E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.50E+00	0.00E+00	0.00E+00	3.82E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.25E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.81E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 125-2" A4 (4.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.16 HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-1" A4 (3.96 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.07E+01	0.00E+00	1.54E-02	3.18E-01	4.12E-03	-2.34E+00
GWP-fossil	[kg CO_2-Eq.]	1.05E+01	0.00E+00	1.52E-02	3.18E-01	4.08E-03	-2.35E+00
GWP-biogenic	[kg CO_2-Eq.]	1.54E-01	0.00E+00	2.84E-05	1.19E-05	3.09E-05	1.20E-02
GWP-luluc	[kg CO_2-Eq.]	3.16E-02	0.00E+00	1.60E-04	8.11E-06	1.28E-05	-2.09E-03
ODP	[kg CFC11-Eq.]	1.59E-10	0.00E+00	2.58E-15	2.40E-14	1.32E-14	1.17E-12
AP	[mol H^+-Eq.]	3.50E-02	0.00E+00	5.56E-05	3.15E-05	2.55E-05	-8.04E-03
EP-freshwater	[kg P-Eq.]	5.27E-05	0.00E+00	4.19E-08	6.78E-09	5.77E-09	-1.41E-06
EP-marine	[kg N-Eq.]	8.97E-03	0.00E+00	2.64E-05	8.39E-06	6.20E-06	-1.24E-03
EP-terrestrial	[mol N-Eq.]	9.87E-02	0.00E+00	2.86E-04	1.49E-04	6.76E-05	-1.23E-02
POCP	[kg NMVOC-Eq.]	2.32E-02	0.00E+00	5.08E-05	2.38E-05	1.92E-05	-4.40E-03
ADPE	[kg Sb-Eq.]	3.27E-05	0.00E+00	1.03E-09	2.88E-10	2.77E-10	-2.79E-05
ADPF	[MJ]	1.29E+02	0.00E+00	1.99E-01	5.03E-02	6.67E-02	-2.58E+01
WDP	[m^3 world-Eq deprived]	1.48E+00	0.00E+00	7.10E-05	2.72E-02	4.77E-04	-3.85E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-1" A4 (3.96 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.39E+02	0.00E+00	1.50E-02	1.38E-02	1.09E-02	-1.47E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.40E+02	0.00E+00	1.50E-02	1.38E-02	1.09E-02	-1.47E+00
PENRE	[MJ]	1.23E+02	0.00E+00	1.99E-01	5.62E+00	6.67E-02	-2.58E+01
PENRM	[MJ]	6.08E+00	0.00E+00	0.00E+00	-5.57E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.29E+02	0.00E+00	1.99E-01	5.03E-02	6.67E-02	-2.58E+01
SM	[kg]	2.99E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.88E-02	0.00E+00	7.41E-06	6.40E-04	1.41E-05	-1.74E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-1" A4 (3.96 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.54E-07	0.00E+00	7.98E-12	2.72E-11	1.44E-11	-7.31E-05
NHWD	[kg]	2.04E+00	0.00E+00	2.78E-05	9.55E-03	1.92E-01	1.99E-01
RWD	[kg]	4.07E-03	0.00E+00	3.76E-07	2.70E-06	9.25E-07	-1.90E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.35E+00	0.00E+00	0.00E+00	3.65E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.93E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.83E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-1" A4 (3.96 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.17 HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-5/4" A4 (4.20 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.14E+01	0.00E+00	1.63E-02	3.34E-01	4.37E-03	-2.47E+00
GWP-fossil	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.61E-02	3.34E-01	4.33E-03	-2.48E+00
GWP-biogenic	[kg CO_2-Eq.]	1.64E-01	0.00E+00	3.02E-05	1.25E-05	3.28E-05	1.27E-02
GWP-luluc	[kg CO_2-Eq.]	3.35E-02	0.00E+00	1.70E-04	8.52E-06	1.36E-05	-2.19E-03
ODP	[kg CFC11-Eq.]	1.69E-10	0.00E+00	2.73E-15	2.53E-14	1.40E-14	1.25E-12
AP	[mol H^+-Eq.]	3.71E-02	0.00E+00	5.89E-05	3.30E-05	2.70E-05	-8.46E-03
EP-freshwater	[kg P-Eq.]	5.59E-05	0.00E+00	4.44E-08	7.12E-09	6.12E-09	-1.48E-06
EP-marine	[kg N-Eq.]	9.51E-03	0.00E+00	2.80E-05	8.81E-06	6.58E-06	-1.30E-03
EP-terrestrial	[mol N-Eq.]	1.05E-01	0.00E+00	3.03E-04	1.57E-04	7.18E-05	-1.29E-02
POCP	[kg NMVOC-Eq.]	2.46E-02	0.00E+00	5.39E-05	2.50E-05	2.04E-05	-4.64E-03
ADPE	[kg Sb-Eq.]	3.39E-05	0.00E+00	1.10E-09	3.03E-10	2.94E-10	-2.93E-05
ADPF	[MJ]	1.36E+02	0.00E+00	2.11E-01	5.29E-02	7.08E-02	-2.72E+01
WDP	[m^3 world-Eq deprived]	1.57E+00	0.00E+00	7.53E-05	2.86E-02	5.06E-04	-4.03E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-5/4" A4 (4.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.48E+02	0.00E+00	1.59E-02	1.45E-02	1.15E-02	-1.52E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.49E+02	0.00E+00	1.59E-02	1.45E-02	1.15E-02	-1.52E+00
PENRE	[MJ]	1.30E+02	0.00E+00	2.11E-01	5.93E+00	7.08E-02	-2.72E+01
PENRM	[MJ]	6.39E+00	0.00E+00	0.00E+00	-5.88E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.36E+02	0.00E+00	2.11E-01	5.29E-02	7.08E-02	-2.72E+01
SM	[kg]	3.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.36E-02	0.00E+00	7.86E-06	6.72E-04	1.49E-05	-1.84E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-5/4" A4 (4.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.64E-07	0.00E+00	8.47E-12	2.85E-11	1.53E-11	-2.32E-05
NHWD	[kg]	2.16E+00	0.00E+00	2.95E-05	1.00E-02	2.04E-01	5.98E-02
RWD	[kg]	4.32E-03	0.00E+00	3.98E-07	2.84E-06	9.81E-07	-4.09E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.56E+00	0.00E+00	0.00E+00	3.87E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.17E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.27E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-5/4" A4 (4.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.18 HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-6/4 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-6/4 A4 (4.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.25E+01	0.00E+00	1.79E-02	3.72E-01	4.79E-03	-2.71E+00
GWP-fossil	[kg CO_2-Eq.]	1.22E+01	0.00E+00	1.77E-02	3.72E-01	4.74E-03	-2.72E+00
GWP-biogenic	[kg CO_2-Eq.]	1.79E-01	0.00E+00	3.30E-05	1.40E-05	3.59E-05	1.39E-02
GWP-luluc	[kg CO_2-Eq.]	3.67E-02	0.00E+00	1.86E-04	9.49E-06	1.49E-05	-2.41E-03
ODP	[kg CFC11-Eq.]	1.85E-10	0.00E+00	2.99E-15	2.81E-14	1.53E-14	1.35E-12
AP	[mol H^+-Eq.]	4.06E-02	0.00E+00	6.45E-05	3.68E-05	2.96E-05	-9.28E-03
EP-freshwater	[kg P-Eq.]	6.12E-05	0.00E+00	4.86E-08	7.92E-09	6.70E-09	-1.62E-06
EP-marine	[kg N-Eq.]	1.04E-02	0.00E+00	3.07E-05	9.80E-06	7.20E-06	-1.43E-03
EP-terrestrial	[mol N-Eq.]	1.15E-01	0.00E+00	3.32E-04	1.74E-04	7.86E-05	-1.42E-02
POCP	[kg NMVOC-Eq.]	2.69E-02	0.00E+00	5.91E-05	2.78E-05	2.23E-05	-5.09E-03
ADPE	[kg Sb-Eq.]	3.74E-05	0.00E+00	1.20E-09	3.37E-10	3.22E-10	-3.22E-05
ADPF	[MJ]	1.49E+02	0.00E+00	2.31E-01	5.88E-02	7.75E-02	-2.98E+01
WDP	[m^3 world-Eq deprived]	1.72E+00	0.00E+00	8.25E-05	3.19E-02	5.54E-04	-4.43E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-6/4 A4 (4.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.62E+02	0.00E+00	1.74E-02	1.62E-02	1.26E-02	-1.69E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.63E+02	0.00E+00	1.74E-02	1.62E-02	1.26E-02	-1.69E+00
PENRE	[MJ]	1.42E+02	0.00E+00	2.31E-01	6.56E+00	7.75E-02	-2.98E+01
PENRM	[MJ]	7.01E+00	0.00E+00	0.00E+00	-6.50E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.49E+02	0.00E+00	2.31E-01	5.88E-02	7.75E-02	-2.98E+01
SM	[kg]	3.48E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.15E-02	0.00E+00	8.61E-06	7.48E-04	1.63E-05	-2.01E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-6/4 A4 (4.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.79E-07	0.00E+00	9.27E-12	3.17E-11	1.67E-11	-8.39E-05
NHWD	[kg]	2.37E+00	0.00E+00	3.23E-05	1.12E-02	2.23E-01	2.31E-01
RWD	[kg]	4.72E-03	0.00E+00	4.36E-07	3.16E-06	1.07E-06	-2.21E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.90E+00	0.00E+00	0.00E+00	4.23E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.76E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.03E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-6/4 A4 (4.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.19 HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-2" A4 (4.50 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.22E+01	0.00E+00	1.75E-02	3.87E-01	4.67E-03	-2.66E+00
GWP-fossil	[kg CO_2-Eq.]	1.20E+01	0.00E+00	1.73E-02	3.87E-01	4.62E-03	-2.67E+00
GWP-biogenic	[kg CO_2-Eq.]	1.75E-01	0.00E+00	3.23E-05	1.45E-05	3.50E-05	1.35E-02
GWP-luluc	[kg CO_2-Eq.]	3.59E-02	0.00E+00	1.82E-04	9.88E-06	1.45E-05	-2.39E-03
ODP	[kg CFC11-Eq.]	1.81E-10	0.00E+00	2.93E-15	2.93E-14	1.50E-14	1.23E-12
AP	[mol H^+-Eq.]	3.98E-02	0.00E+00	6.31E-05	3.83E-05	2.89E-05	-9.13E-03
EP-freshwater	[kg P-Eq.]	5.98E-05	0.00E+00	4.76E-08	8.25E-09	6.54E-09	-1.61E-06
EP-marine	[kg N-Eq.]	1.02E-02	0.00E+00	3.00E-05	1.02E-05	7.03E-06	-1.41E-03
EP-terrestrial	[mol N-Eq.]	1.12E-01	0.00E+00	3.25E-04	1.82E-04	7.67E-05	-1.39E-02
POCP	[kg NMVOC-Eq.]	2.63E-02	0.00E+00	5.78E-05	2.90E-05	2.18E-05	-5.00E-03
ADPE	[kg Sb-Eq.]	3.73E-05	0.00E+00	1.17E-09	3.51E-10	3.14E-10	-3.17E-05
ADPF	[MJ]	1.47E+02	0.00E+00	2.26E-01	6.13E-02	7.56E-02	-2.94E+01
WDP	[m^3 world-Eq deprived]	1.68E+00	0.00E+00	8.07E-05	3.32E-02	5.40E-04	-4.38E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-2" A4 (4.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.58E+02	0.00E+00	1.70E-02	1.69E-02	1.23E-02	-1.72E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.59E+02	0.00E+00	1.70E-02	1.69E-02	1.23E-02	-1.72E+00
PENRE	[MJ]	1.40E+02	0.00E+00	2.26E-01	6.67E+00	7.56E-02	-2.94E+01
PENRM	[MJ]	7.12E+00	0.00E+00	0.00E+00	-6.60E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.47E+02	0.00E+00	2.26E-01	6.13E-02	7.56E-02	-2.94E+01
SM	[kg]	3.39E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.96E-02	0.00E+00	8.43E-06	7.79E-04	1.59E-05	-1.96E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-2" A4 (4.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.75E-07	0.00E+00	9.07E-12	3.31E-11	1.63E-11	-8.32E-05
NHWD	[kg]	2.31E+00	0.00E+00	3.16E-05	1.16E-02	2.18E-01	2.25E-01
RWD	[kg]	4.62E-03	0.00E+00	4.27E-07	3.29E-06	1.05E-06	-2.27E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.80E+00	0.00E+00	0.00E+00	4.13E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.00E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.07E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 140-2" A4 (4.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.20 HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-1" A4 (5.90 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.58E+01	0.00E+00	2.30E-02	2.75E-01	6.22E-03	-3.40E+00
GWP-fossil	[kg CO_2-Eq.]	1.55E+01	0.00E+00	2.27E-02	2.75E-01	6.16E-03	-3.42E+00
GWP-biogenic	[kg CO_2-Eq.]	2.32E-01	0.00E+00	4.24E-05	1.03E-05	4.67E-05	1.82E-02
GWP-luluc	[kg CO_2-Eq.]	4.73E-02	0.00E+00	2.38E-04	7.02E-06	1.94E-05	-2.83E-03
ODP	[kg CFC11-Eq.]	2.38E-10	0.00E+00	3.84E-15	2.08E-14	1.99E-14	2.43E-12
AP	[mol H^+-Eq.]	5.14E-02	0.00E+00	8.28E-05	2.72E-05	3.84E-05	-1.16E-02
EP-freshwater	[kg P-Eq.]	7.92E-05	0.00E+00	6.24E-08	5.87E-09	8.71E-09	-1.94E-06
EP-marine	[kg N-Eq.]	1.34E-02	0.00E+00	3.93E-05	7.26E-06	9.36E-06	-1.78E-03
EP-terrestrial	[mol N-Eq.]	1.47E-01	0.00E+00	4.25E-04	1.29E-04	1.02E-04	-1.75E-02
POCP	[kg NMVOC-Eq.]	3.43E-02	0.00E+00	7.57E-05	2.06E-05	2.90E-05	-6.38E-03
ADPE	[kg Sb-Eq.]	4.31E-05	0.00E+00	1.54E-09	2.50E-10	4.18E-10	-3.97E-05
ADPF	[MJ]	1.85E+02	0.00E+00	2.97E-01	4.36E-02	1.01E-01	-3.68E+01
WDP	[m^3 world-Eq deprived]	2.20E+00	0.00E+00	1.06E-04	2.36E-02	7.20E-04	-5.38E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-1" A4 (5.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.09E+02	0.00E+00	2.24E-02	1.20E-02	1.64E-02	-1.61E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.10E+02	0.00E+00	2.24E-02	1.20E-02	1.64E-02	-1.61E+00
PENRE	[MJ]	1.78E+02	0.00E+00	2.97E-01	6.24E+00	1.01E-01	-3.68E+01
PENRM	[MJ]	6.71E+00	0.00E+00	0.00E+00	-6.20E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.85E+02	0.00E+00	2.97E-01	4.36E-02	1.01E-01	-3.68E+01
SM	[kg]	4.52E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.57E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.17E-01	0.00E+00	1.10E-05	5.54E-04	2.12E-05	-2.63E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-1" A4 (5.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.32E-07	0.00E+00	1.19E-11	2.35E-11	2.18E-11	-1.00E-04
NHWD	[kg]	3.07E+00	0.00E+00	4.14E-05	8.27E-03	2.90E-01	3.03E-01
RWD	[kg]	6.05E-03	0.00E+00	5.60E-07	2.34E-06	1.40E-06	-1.89E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.10E+00	0.00E+00	0.00E+00	5.50E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.27E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.64E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-1" A4 (5.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.21 HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-5/4" A4 (4.52 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.27E+01	0.00E+00	1.76E-02	2.08E-01	4.77E-03	-2.31E+00
GWP-fossil	[kg CO_2-Eq.]	1.24E+01	0.00E+00	1.74E-02	2.08E-01	4.72E-03	-2.32E+00
GWP-biogenic	[kg CO_2-Eq.]	1.87E-01	0.00E+00	3.25E-05	7.83E-06	3.58E-05	1.22E-02
GWP-luluc	[kg CO_2-Eq.]	3.74E-02	0.00E+00	1.82E-04	5.32E-06	1.48E-05	-2.01E-03
ODP	[kg CFC11-Eq.]	1.90E-10	0.00E+00	2.94E-15	1.58E-14	1.53E-14	1.53E-12
AP	[mol H^+-Eq.]	4.11E-02	0.00E+00	6.34E-05	2.06E-05	2.94E-05	-7.97E-03
EP-freshwater	[kg P-Eq.]	6.32E-05	0.00E+00	4.78E-08	4.45E-09	6.67E-09	-1.36E-06
EP-marine	[kg N-Eq.]	1.07E-02	0.00E+00	3.01E-05	5.50E-06	7.17E-06	-1.22E-03
EP-terrestrial	[mol N-Eq.]	1.18E-01	0.00E+00	3.26E-04	9.79E-05	7.82E-05	-1.21E-02
POCP	[kg NMVOC-Eq.]	2.75E-02	0.00E+00	5.80E-05	1.56E-05	2.23E-05	-4.37E-03
ADPE	[kg Sb-Eq.]	3.36E-05	0.00E+00	1.18E-09	1.89E-10	3.20E-10	-2.77E-05
ADPF	[MJ]	1.49E+02	0.00E+00	2.27E-01	3.30E-02	7.72E-02	-2.52E+01
WDP	[m^3 world-Eq deprived]	1.77E+00	0.00E+00	8.11E-05	1.79E-02	5.51E-04	-3.77E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-5/4" A4 (4.52 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.66E+02	0.00E+00	1.71E-02	9.08E-03	1.26E-02	-1.23E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.67E+02	0.00E+00	1.71E-02	9.08E-03	1.26E-02	-1.23E+00
PENRE	[MJ]	1.43E+02	0.00E+00	2.27E-01	4.99E+00	7.72E-02	-2.52E+01
PENRM	[MJ]	5.47E+00	0.00E+00	0.00E+00	-4.95E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.49E+02	0.00E+00	2.27E-01	3.30E-02	7.72E-02	-2.52E+01
SM	[kg]	3.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.29E-02	0.00E+00	8.46E-06	4.20E-04	1.63E-05	-1.75E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-5/4" A4 (4.52 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.86E-07	0.00E+00	9.11E-12	1.78E-11	1.67E-11	-7.18E-05
NHWD	[kg]	2.47E+00	0.00E+00	3.17E-05	6.26E-03	2.22E-01	2.02E-01
RWD	[kg]	4.86E-03	0.00E+00	4.29E-07	1.77E-06	1.07E-06	-1.41E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.10E+00	0.00E+00	0.00E+00	4.22E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.23E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.79E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-5/4" A4 (4.52 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.22 HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-6/4" A4 (4.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.26E+01	0.00E+00	1.83E-02	2.25E-01	4.96E-03	-2.71E+00
GWP-fossil	[kg CO_2-Eq.]	1.24E+01	0.00E+00	1.81E-02	2.25E-01	4.90E-03	-2.72E+00
GWP-biogenic	[kg CO_2-Eq.]	1.85E-01	0.00E+00	3.38E-05	8.46E-06	3.72E-05	1.44E-02
GWP-luluc	[kg CO_2-Eq.]	3.77E-02	0.00E+00	1.90E-04	5.75E-06	1.54E-05	-2.24E-03
ODP	[kg CFC11-Eq.]	1.90E-10	0.00E+00	3.06E-15	1.70E-14	1.59E-14	1.92E-12
AP	[mol H^+-Eq.]	4.09E-02	0.00E+00	6.59E-05	2.23E-05	3.06E-05	-9.18E-03
EP-freshwater	[kg P-Eq.]	6.32E-05	0.00E+00	4.97E-08	4.81E-09	6.93E-09	-1.54E-06
EP-marine	[kg N-Eq.]	1.07E-02	0.00E+00	3.13E-05	5.95E-06	7.45E-06	-1.41E-03
EP-terrestrial	[mol N-Eq.]	1.17E-01	0.00E+00	3.39E-04	1.06E-04	8.13E-05	-1.39E-02
POCP	[kg NMVOC-Eq.]	2.74E-02	0.00E+00	6.03E-05	1.69E-05	2.31E-05	-5.07E-03
ADPE	[kg Sb-Eq.]	3.40E-05	0.00E+00	1.23E-09	2.04E-10	3.33E-10	-3.15E-05
ADPF	[MJ]	1.48E+02	0.00E+00	2.36E-01	3.57E-02	8.02E-02	-2.93E+01
WDP	[m^3 world-Eq deprived]	1.75E+00	0.00E+00	8.43E-05	1.93E-02	5.73E-04	-4.27E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-6/4" A4 (4.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.67E+02	0.00E+00	1.78E-02	9.82E-03	1.31E-02	-1.28E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.68E+02	0.00E+00	1.78E-02	9.82E-03	1.31E-02	-1.28E+00
PENRE	[MJ]	1.42E+02	0.00E+00	2.36E-01	5.03E+00	8.02E-02	-2.93E+01
PENRM	[MJ]	5.51E+00	0.00E+00	0.00E+00	-4.99E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.48E+02	0.00E+00	2.36E-01	3.57E-02	8.02E-02	-2.93E+01
SM	[kg]	3.60E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.34E-02	0.00E+00	8.80E-06	4.54E-04	1.69E-05	-2.09E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-6/4" A4 (4.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.85E-07	0.00E+00	9.48E-12	1.93E-11	1.73E-11	-7.93E-05
NHWD	[kg]	2.45E+00	0.00E+00	3.30E-05	6.77E-03	2.31E-01	2.42E-01
RWD	[kg]	4.83E-03	0.00E+00	4.46E-07	1.92E-06	1.11E-06	-1.53E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.06E+00	0.00E+00	0.00E+00	4.38E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.49E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.26E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-6/4" A4 (4.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.23 HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-2" A4 (4.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.31E+01	0.00E+00	1.83E-02	2.25E-01	4.96E-03	-2.44E+00
GWP-fossil	[kg CO_2-Eq.]	1.29E+01	0.00E+00	1.81E-02	2.25E-01	4.90E-03	-2.45E+00
GWP-biogenic	[kg CO_2-Eq.]	1.93E-01	0.00E+00	3.38E-05	8.46E-06	3.72E-05	1.29E-02
GWP-luluc	[kg CO_2-Eq.]	3.87E-02	0.00E+00	1.90E-04	5.75E-06	1.54E-05	-2.09E-03
ODP	[kg CFC11-Eq.]	1.96E-10	0.00E+00	3.06E-15	1.70E-14	1.59E-14	1.62E-12
AP	[mol H^+-Eq.]	4.23E-02	0.00E+00	6.59E-05	2.23E-05	3.06E-05	-8.36E-03
EP-freshwater	[kg P-Eq.]	6.54E-05	0.00E+00	4.97E-08	4.81E-09	6.93E-09	-1.42E-06
EP-marine	[kg N-Eq.]	1.11E-02	0.00E+00	3.13E-05	5.95E-06	7.45E-06	-1.28E-03
EP-terrestrial	[mol N-Eq.]	1.22E-01	0.00E+00	3.39E-04	1.06E-04	8.13E-05	-1.27E-02
POCP	[kg NMVOC-Eq.]	2.84E-02	0.00E+00	6.03E-05	1.69E-05	2.31E-05	-4.59E-03
ADPE	[kg Sb-Eq.]	3.38E-05	0.00E+00	1.23E-09	2.04E-10	3.33E-10	-2.88E-05
ADPF	[MJ]	1.54E+02	0.00E+00	2.36E-01	3.57E-02	8.02E-02	-2.66E+01
WDP	[m^3 world-Eq deprived]	1.82E+00	0.00E+00	8.43E-05	1.93E-02	5.73E-04	-3.93E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-2" A4 (4.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.72E+02	0.00E+00	1.78E-02	9.82E-03	1.31E-02	-1.26E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.73E+02	0.00E+00	1.78E-02	9.82E-03	1.31E-02	-1.26E+00
PENRE	[MJ]	1.48E+02	0.00E+00	2.36E-01	5.25E+00	8.02E-02	-2.66E+01
PENRM	[MJ]	5.72E+00	0.00E+00	0.00E+00	-5.21E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.54E+02	0.00E+00	2.36E-01	3.57E-02	8.02E-02	-2.66E+01
SM	[kg]	3.75E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.11E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.61E-02	0.00E+00	8.80E-06	4.54E-04	1.69E-05	-1.86E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-2" A4 (4.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.92E-07	0.00E+00	9.48E-12	1.93E-11	1.73E-11	-7.39E-05
NHWD	[kg]	2.55E+00	0.00E+00	3.30E-05	6.77E-03	2.31E-01	2.15E-01
RWD	[kg]	5.02E-03	0.00E+00	4.46E-07	1.92E-06	1.11E-06	-1.49E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.24E+00	0.00E+00	0.00E+00	4.38E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.49E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.26E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 160-2" A4 (4.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.24 HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-5/4" A4 (8.00 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.15E+01	0.00E+00	3.11E-02	4.27E-01	8.42E-03	-4.72E+00
GWP-fossil	[kg CO_2-Eq.]	2.12E+01	0.00E+00	3.08E-02	4.27E-01	8.33E-03	-4.74E+00
GWP-biogenic	[kg CO_2-Eq.]	3.11E-01	0.00E+00	5.75E-05	1.60E-05	6.31E-05	2.49E-02
GWP-luluc	[kg CO_2-Eq.]	6.40E-02	0.00E+00	3.23E-04	1.09E-05	2.62E-05	-4.29E-03
ODP	[kg CFC11-Eq.]	3.22E-10	0.00E+00	5.21E-15	3.23E-14	2.70E-14	3.03E-12
AP	[mol H^+-Eq.]	7.15E-02	0.00E+00	1.12E-04	4.23E-05	5.20E-05	-1.65E-02
EP-freshwater	[kg P-Eq.]	1.07E-04	0.00E+00	8.46E-08	9.11E-09	1.18E-08	-2.87E-06
EP-marine	[kg N-Eq.]	1.81E-02	0.00E+00	5.33E-05	1.13E-05	1.27E-05	-2.53E-03
EP-terrestrial	[mol N-Eq.]	2.00E-01	0.00E+00	5.77E-04	2.01E-04	1.38E-04	-2.51E-02
POCP	[kg NMVOC-Eq.]	4.67E-02	0.00E+00	1.03E-04	3.20E-05	3.93E-05	-9.00E-03
ADPE	[kg Sb-Eq.]	7.07E-05	0.00E+00	2.09E-09	3.88E-10	5.65E-10	-5.82E-05
ADPF	[MJ]	2.54E+02	0.00E+00	4.02E-01	6.77E-02	1.36E-01	-5.16E+01
WDP	[m^3 world-Eq deprived]	3.00E+00	0.00E+00	1.43E-04	3.66E-02	9.73E-04	-7.95E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-5/4" A4 (8.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.82E+02	0.00E+00	3.03E-02	1.86E-02	2.22E-02	-2.69E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.83E+02	0.00E+00	3.03E-02	1.86E-02	2.22E-02	-2.69E+00
PENRE	[MJ]	2.44E+02	0.00E+00	4.02E-01	9.01E+00	1.36E-01	-5.16E+01
PENRM	[MJ]	9.45E+00	0.00E+00	0.00E+00	-8.94E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.54E+02	0.00E+00	4.02E-01	6.77E-02	1.36E-01	-5.16E+01
SM	[kg]	6.11E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.11E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.59E-01	0.00E+00	1.50E-05	8.60E-04	2.87E-05	-3.52E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-5/4" A4 (8.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.12E-07	0.00E+00	1.61E-11	3.65E-11	2.94E-11	-1.54E-04
NHWD	[kg]	4.15E+00	0.00E+00	5.61E-05	1.28E-02	3.92E-01	4.05E-01
RWD	[kg]	8.21E-03	0.00E+00	7.59E-07	3.63E-06	1.89E-06	-2.94E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.82E+00	0.00E+00	0.00E+00	7.44E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.62E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.19E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-5/4" A4 (8.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.25 HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-6/4" A4 (8.10 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.18E+01	0.00E+00	3.15E-02	4.20E-01	8.53E-03	-4.76E+00
GWP-fossil	[kg CO_2-Eq.]	2.14E+01	0.00E+00	3.11E-02	4.20E-01	8.44E-03	-4.78E+00
GWP-biogenic	[kg CO_2-Eq.]	3.16E-01	0.00E+00	5.82E-05	1.58E-05	6.39E-05	2.52E-02
GWP-luluc	[kg CO_2-Eq.]	6.48E-02	0.00E+00	3.27E-04	1.07E-05	2.65E-05	-4.26E-03
ODP	[kg CFC11-Eq.]	3.27E-10	0.00E+00	5.27E-15	3.18E-14	2.73E-14	3.13E-12
AP	[mol H^+-Eq.]	7.21E-02	0.00E+00	1.14E-04	4.16E-05	5.27E-05	-1.66E-02
EP-freshwater	[kg P-Eq.]	1.08E-04	0.00E+00	8.56E-08	8.96E-09	1.19E-08	-2.86E-06
EP-marine	[kg N-Eq.]	1.84E-02	0.00E+00	5.40E-05	1.11E-05	1.28E-05	-2.54E-03
EP-terrestrial	[mol N-Eq.]	2.02E-01	0.00E+00	5.84E-04	1.97E-04	1.40E-04	-2.51E-02
POCP	[kg NMVOC-Eq.]	4.72E-02	0.00E+00	1.04E-04	3.15E-05	3.98E-05	-9.05E-03
ADPE	[kg Sb-Eq.]	6.92E-05	0.00E+00	2.11E-09	3.81E-10	5.73E-10	-5.81E-05
ADPF	[MJ]	2.56E+02	0.00E+00	4.07E-01	6.65E-02	1.38E-01	-5.19E+01
WDP	[m^3 world-Eq deprived]	3.03E+00	0.00E+00	1.45E-04	3.60E-02	9.86E-04	-7.93E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-6/4" A4 (8.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.86E+02	0.00E+00	3.07E-02	1.83E-02	2.25E-02	-2.63E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.87E+02	0.00E+00	3.07E-02	1.83E-02	2.25E-02	-2.63E+00
PENRE	[MJ]	2.47E+02	0.00E+00	4.07E-01	8.99E+00	1.38E-01	-5.19E+01
PENRM	[MJ]	9.43E+00	0.00E+00	0.00E+00	-8.92E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.56E+02	0.00E+00	4.07E-01	6.65E-02	1.38E-01	-5.19E+01
SM	[kg]	6.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.14E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.61E-01	0.00E+00	1.52E-05	8.45E-04	2.91E-05	-3.57E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-6/4" A4 (8.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.17E-07	0.00E+00	1.63E-11	3.59E-11	2.98E-11	-1.53E-04
NHWD	[kg]	4.21E+00	0.00E+00	5.68E-05	1.26E-02	3.97E-01	4.11E-01
RWD	[kg]	8.31E-03	0.00E+00	7.68E-07	3.57E-06	1.91E-06	-2.89E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.92E+00	0.00E+00	0.00E+00	7.54E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.51E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.17E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-6/4" A4 (8.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.26 HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-2" A4 (5.58 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.53E+01	0.00E+00	2.17E-02	3.08E-01	5.87E-03	-3.17E+00
GWP-fossil	[kg CO_2-Eq.]	1.50E+01	0.00E+00	2.14E-02	3.08E-01	5.80E-03	-3.19E+00
GWP-biogenic	[kg CO_2-Eq.]	2.21E-01	0.00E+00	4.01E-05	1.16E-05	4.40E-05	1.67E-02
GWP-luluc	[kg CO_2-Eq.]	4.51E-02	0.00E+00	2.25E-04	7.87E-06	1.82E-05	-2.91E-03
ODP	[kg CFC11-Eq.]	2.28E-10	0.00E+00	3.63E-15	2.33E-14	1.88E-14	1.95E-12
AP	[mol H^+-Eq.]	5.05E-02	0.00E+00	7.83E-05	3.05E-05	3.62E-05	-1.11E-02
EP-freshwater	[kg P-Eq.]	7.54E-05	0.00E+00	5.90E-08	6.57E-09	8.21E-09	-1.94E-06
EP-marine	[kg N-Eq.]	1.28E-02	0.00E+00	3.72E-05	8.13E-06	8.82E-06	-1.71E-03
EP-terrestrial	[mol N-Eq.]	1.41E-01	0.00E+00	4.02E-04	1.45E-04	9.63E-05	-1.69E-02
POCP	[kg NMVOC-Eq.]	3.31E-02	0.00E+00	7.16E-05	2.31E-05	2.74E-05	-6.05E-03
ADPE	[kg Sb-Eq.]	4.92E-05	0.00E+00	1.46E-09	2.80E-10	3.94E-10	-3.92E-05
ADPF	[MJ]	1.80E+02	0.00E+00	2.80E-01	4.88E-02	9.49E-02	-3.48E+01
WDP	[m^3 world-Eq deprived]	2.12E+00	0.00E+00	1.00E-04	2.64E-02	6.78E-04	-5.37E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-2" A4 (5.58 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.99E+02	0.00E+00	2.11E-02	1.34E-02	1.55E-02	-1.87E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.00E+02	0.00E+00	2.11E-02	1.34E-02	1.55E-02	-1.87E+00
PENRE	[MJ]	1.73E+02	0.00E+00	2.80E-01	6.48E+00	9.49E-02	-3.48E+01
PENRM	[MJ]	6.95E+00	0.00E+00	0.00E+00	-6.43E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.80E+02	0.00E+00	2.80E-01	4.88E-02	9.49E-02	-3.48E+01
SM	[kg]	4.33E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.12E-01	0.00E+00	1.04E-05	6.20E-04	2.00E-05	-2.35E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-2" A4 (5.58 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.21E-07	0.00E+00	1.13E-11	2.63E-11	2.05E-11	-1.05E-04
NHWD	[kg]	2.94E+00	0.00E+00	3.92E-05	9.26E-03	2.73E-01	2.70E-01
RWD	[kg]	5.83E-03	0.00E+00	5.29E-07	2.62E-06	1.32E-06	-2.07E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.83E+00	0.00E+00	0.00E+00	5.19E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.78E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.56E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 180-2" A4 (5.58 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.27 HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-1" A4 (8.10 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.18E+01	0.00E+00	3.15E-02	4.29E-01	8.52E-03	-4.74E+00
GWP-fossil	[kg CO_2-Eq.]	2.14E+01	0.00E+00	3.11E-02	4.28E-01	8.43E-03	-4.76E+00
GWP-biogenic	[kg CO_2-Eq.]	3.16E-01	0.00E+00	5.82E-05	1.61E-05	6.39E-05	2.51E-02
GWP-luluc	[kg CO_2-Eq.]	6.48E-02	0.00E+00	3.27E-04	1.09E-05	2.65E-05	-4.18E-03
ODP	[kg CFC11-Eq.]	3.27E-10	0.00E+00	5.27E-15	3.24E-14	2.73E-14	3.11E-12
AP	[mol H^+-Eq.]	7.17E-02	0.00E+00	1.14E-04	4.24E-05	5.26E-05	-1.64E-02
EP-freshwater	[kg P-Eq.]	1.08E-04	0.00E+00	8.56E-08	9.14E-09	1.19E-08	-2.82E-06
EP-marine	[kg N-Eq.]	1.83E-02	0.00E+00	5.40E-05	1.13E-05	1.28E-05	-2.52E-03
EP-terrestrial	[mol N-Eq.]	2.02E-01	0.00E+00	5.84E-04	2.01E-04	1.40E-04	-2.49E-02
POCP	[kg NMVOC-Eq.]	4.72E-02	0.00E+00	1.04E-04	3.21E-05	3.98E-05	-8.98E-03
ADPE	[kg Sb-Eq.]	6.69E-05	0.00E+00	2.11E-09	3.89E-10	5.73E-10	-5.72E-05
ADPF	[MJ]	2.56E+02	0.00E+00	4.07E-01	6.78E-02	1.38E-01	-5.17E+01
WDP	[m^3 world-Eq deprived]	3.03E+00	0.00E+00	1.45E-04	3.67E-02	9.86E-04	-7.81E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-1" A4 (8.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.86E+02	0.00E+00	3.07E-02	1.87E-02	2.25E-02	-2.57E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.87E+02	0.00E+00	3.07E-02	1.87E-02	2.25E-02	-2.57E+00
PENRE	[MJ]	2.47E+02	0.00E+00	4.07E-01	9.08E+00	1.38E-01	-5.17E+01
PENRM	[MJ]	9.53E+00	0.00E+00	0.00E+00	-9.02E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.56E+02	0.00E+00	4.07E-01	6.78E-02	1.38E-01	-5.17E+01
SM	[kg]	6.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.14E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.61E-01	0.00E+00	1.52E-05	8.62E-04	2.91E-05	-3.58E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-1" A4 (8.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.17E-07	0.00E+00	1.63E-11	3.66E-11	2.98E-11	-1.49E-04
NHWD	[kg]	4.21E+00	0.00E+00	5.68E-05	1.29E-02	3.97E-01	4.12E-01
RWD	[kg]	8.30E-03	0.00E+00	7.68E-07	3.64E-06	1.91E-06	-2.90E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.93E+00	0.00E+00	0.00E+00	7.54E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.64E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.19E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-1" A4 (8.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.28 HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-5/4" A4 (7.80 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.10E+01	0.00E+00	3.04E-02	4.15E-01	8.21E-03	-4.56E+00
GWP-fossil	[kg CO_2-Eq.]	2.06E+01	0.00E+00	3.00E-02	4.15E-01	8.12E-03	-4.58E+00
GWP-biogenic	[kg CO_2-Eq.]	3.05E-01	0.00E+00	5.60E-05	1.56E-05	6.15E-05	2.41E-02
GWP-luluc	[kg CO_2-Eq.]	6.24E-02	0.00E+00	3.15E-04	1.06E-05	2.55E-05	-4.00E-03
ODP	[kg CFC11-Eq.]	3.14E-10	0.00E+00	5.08E-15	3.14E-14	2.63E-14	3.00E-12
AP	[mol H^+-Eq.]	6.89E-02	0.00E+00	1.09E-04	4.10E-05	5.07E-05	-1.58E-02
EP-freshwater	[kg P-Eq.]	1.04E-04	0.00E+00	8.25E-08	8.84E-09	1.15E-08	-2.70E-06
EP-marine	[kg N-Eq.]	1.77E-02	0.00E+00	5.20E-05	1.09E-05	1.23E-05	-2.42E-03
EP-terrestrial	[mol N-Eq.]	1.95E-01	0.00E+00	5.62E-04	1.95E-04	1.35E-04	-2.39E-02
POCP	[kg NMVOC-Eq.]	4.54E-02	0.00E+00	1.00E-04	3.11E-05	3.83E-05	-8.63E-03
ADPE	[kg Sb-Eq.]	6.37E-05	0.00E+00	2.03E-09	3.76E-10	5.51E-10	-5.48E-05
ADPF	[MJ]	2.47E+02	0.00E+00	3.92E-01	6.57E-02	1.33E-01	-4.97E+01
WDP	[m^3 world-Eq deprived]	2.91E+00	0.00E+00	1.40E-04	3.55E-02	9.49E-04	-7.48E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-5/4" A4 (7.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.75E+02	0.00E+00	2.95E-02	1.81E-02	2.17E-02	-2.45E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.77E+02	0.00E+00	2.95E-02	1.81E-02	2.17E-02	-2.45E+00
PENRE	[MJ]	2.38E+02	0.00E+00	3.92E-01	8.76E+00	1.33E-01	-4.97E+01
PENRM	[MJ]	9.21E+00	0.00E+00	0.00E+00	-8.70E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.47E+02	0.00E+00	3.92E-01	6.57E-02	1.33E-01	-4.97E+01
SM	[kg]	5.96E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.06E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.55E-01	0.00E+00	1.46E-05	8.34E-04	2.80E-05	-3.45E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-5/4" A4 (7.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.05E-07	0.00E+00	1.57E-11	3.54E-11	2.87E-11	-1.43E-04
NHWD	[kg]	4.05E+00	0.00E+00	5.47E-05	1.25E-02	3.83E-01	3.97E-01
RWD	[kg]	8.00E-03	0.00E+00	7.40E-07	3.52E-06	1.84E-06	-2.80E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.68E+00	0.00E+00	0.00E+00	7.26E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.43E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.15E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-5/4" A4 (7.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.29 HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-6/4" A4 (6.06 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.67E+01	0.00E+00	2.36E-02	3.17E-01	6.38E-03	-3.31E+00
GWP-fossil	[kg CO_2-Eq.]	1.65E+01	0.00E+00	2.33E-02	3.17E-01	6.31E-03	-3.32E+00
GWP-biogenic	[kg CO_2-Eq.]	2.44E-01	0.00E+00	4.35E-05	1.19E-05	4.78E-05	1.74E-02
GWP-luluc	[kg CO_2-Eq.]	4.93E-02	0.00E+00	2.45E-04	8.10E-06	1.98E-05	-2.97E-03
ODP	[kg CFC11-Eq.]	2.50E-10	0.00E+00	3.94E-15	2.40E-14	2.04E-14	2.09E-12
AP	[mol H^+-Eq.]	5.49E-02	0.00E+00	8.50E-05	3.14E-05	3.94E-05	-1.15E-02
EP-freshwater	[kg P-Eq.]	8.30E-05	0.00E+00	6.41E-08	6.77E-09	8.92E-09	-1.99E-06
EP-marine	[kg N-Eq.]	1.41E-02	0.00E+00	4.04E-05	8.37E-06	9.59E-06	-1.77E-03
EP-terrestrial	[mol N-Eq.]	1.55E-01	0.00E+00	4.37E-04	1.49E-04	1.05E-04	-1.75E-02
POCP	[kg NMVOC-Eq.]	3.63E-02	0.00E+00	7.78E-05	2.38E-05	2.98E-05	-6.28E-03
ADPE	[kg Sb-Eq.]	4.99E-05	0.00E+00	1.58E-09	2.88E-10	4.29E-10	-4.03E-05
ADPF	[MJ]	1.97E+02	0.00E+00	3.05E-01	5.03E-02	1.03E-01	-3.62E+01
WDP	[m^3 world-Eq deprived]	2.33E+00	0.00E+00	1.09E-04	2.72E-02	7.38E-04	-5.51E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-6/4" A4 (6.06 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.19E+02	0.00E+00	2.30E-02	1.38E-02	1.68E-02	-1.88E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.20E+02	0.00E+00	2.30E-02	1.38E-02	1.68E-02	-1.88E+00
PENRE	[MJ]	1.90E+02	0.00E+00	3.05E-01	6.95E+00	1.03E-01	-3.62E+01
PENRM	[MJ]	7.41E+00	0.00E+00	0.00E+00	-6.90E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.97E+02	0.00E+00	3.05E-01	5.03E-02	1.03E-01	-3.62E+01
SM	[kg]	4.76E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.23E-01	0.00E+00	1.13E-05	6.39E-04	2.17E-05	-2.48E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-6/4" A4 (6.06 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.43E-07	0.00E+00	1.22E-11	2.71E-11	2.23E-11	-1.06E-04
NHWD	[kg]	3.24E+00	0.00E+00	4.25E-05	9.53E-03	2.97E-01	2.85E-01
RWD	[kg]	6.39E-03	0.00E+00	5.75E-07	2.70E-06	1.43E-06	-2.12E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.35E+00	0.00E+00	0.00E+00	5.64E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.92E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.81E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-6/4" A4 (6.06 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.30 HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-2" A4 (5.89 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.62E+01	0.00E+00	2.29E-02	3.32E-01	6.19E-03	-3.29E+00
GWP-fossil	[kg CO_2-Eq.]	1.59E+01	0.00E+00	2.26E-02	3.32E-01	6.12E-03	-3.30E+00
GWP-biogenic	[kg CO_2-Eq.]	2.35E-01	0.00E+00	4.23E-05	1.24E-05	4.64E-05	1.72E-02
GWP-luluc	[kg CO_2-Eq.]	4.77E-02	0.00E+00	2.38E-04	8.46E-06	1.93E-05	-2.97E-03
ODP	[kg CFC11-Eq.]	2.41E-10	0.00E+00	3.83E-15	2.51E-14	1.98E-14	2.00E-12
AP	[mol H^+-Eq.]	5.32E-02	0.00E+00	8.26E-05	3.28E-05	3.82E-05	-1.15E-02
EP-freshwater	[kg P-Eq.]	8.01E-05	0.00E+00	6.23E-08	7.07E-09	8.66E-09	-1.99E-06
EP-marine	[kg N-Eq.]	1.36E-02	0.00E+00	3.93E-05	8.75E-06	9.31E-06	-1.76E-03
EP-terrestrial	[mol N-Eq.]	1.50E-01	0.00E+00	4.25E-04	1.56E-04	1.02E-04	-1.74E-02
POCP	[kg NMVOC-Eq.]	3.51E-02	0.00E+00	7.56E-05	2.48E-05	2.89E-05	-6.24E-03
ADPE	[kg Sb-Eq.]	4.96E-05	0.00E+00	1.54E-09	3.01E-10	4.16E-10	-4.01E-05
ADPF	[MJ]	1.91E+02	0.00E+00	2.96E-01	5.25E-02	1.00E-01	-3.60E+01
WDP	[m^3 world-Eq deprived]	2.25E+00	0.00E+00	1.06E-04	2.84E-02	7.16E-04	-5.49E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-2" A4 (5.89 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.11E+02	0.00E+00	2.23E-02	1.44E-02	1.63E-02	-1.91E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.12E+02	0.00E+00	2.23E-02	1.44E-02	1.63E-02	-1.91E+00
PENRE	[MJ]	1.84E+02	0.00E+00	2.96E-01	6.97E+00	1.00E-01	-3.60E+01
PENRM	[MJ]	7.43E+00	0.00E+00	0.00E+00	-6.91E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.91E+02	0.00E+00	2.96E-01	5.25E-02	1.00E-01	-3.60E+01
SM	[kg]	4.59E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.19E-01	0.00E+00	1.10E-05	6.67E-04	2.11E-05	-2.45E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-2" A4 (5.89 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.35E-07	0.00E+00	1.19E-11	2.83E-11	2.16E-11	-1.06E-04
NHWD	[kg]	3.12E+00	0.00E+00	4.13E-05	9.96E-03	2.88E-01	2.81E-01
RWD	[kg]	6.18E-03	0.00E+00	5.59E-07	2.82E-06	1.39E-06	-2.18E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.14E+00	0.00E+00	0.00E+00	5.47E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.14E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.21E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 200-2" A4 (5.89 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.31 HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-1" A4 (9.10 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.45E+01	0.00E+00	3.54E-02	5.67E-01	9.54E-03	-5.30E+00
GWP-fossil	[kg CO_2-Eq.]	2.40E+01	0.00E+00	3.50E-02	5.67E-01	9.44E-03	-5.33E+00
GWP-biogenic	[kg CO_2-Eq.]	3.56E-01	0.00E+00	6.54E-05	2.13E-05	7.15E-05	2.78E-02
GWP-luluc	[kg CO_2-Eq.]	7.27E-02	0.00E+00	3.67E-04	1.45E-05	2.97E-05	-4.57E-03
ODP	[kg CFC11-Eq.]	3.66E-10	0.00E+00	5.92E-15	4.29E-14	3.06E-14	3.25E-12
AP	[mol H^+-Eq.]	7.97E-02	0.00E+00	1.28E-04	5.61E-05	5.89E-05	-1.81E-02
EP-freshwater	[kg P-Eq.]	1.22E-04	0.00E+00	9.62E-08	1.21E-08	1.33E-08	-3.10E-06
EP-marine	[kg N-Eq.]	2.06E-02	0.00E+00	6.07E-05	1.50E-05	1.44E-05	-2.79E-03
EP-terrestrial	[mol N-Eq.]	2.26E-01	0.00E+00	6.56E-04	2.66E-04	1.57E-04	-2.75E-02
POCP	[kg NMVOC-Eq.]	5.29E-02	0.00E+00	1.17E-04	4.24E-05	4.45E-05	-9.96E-03
ADPE	[kg Sb-Eq.]	7.05E-05	0.00E+00	2.37E-09	5.14E-10	6.41E-10	-6.25E-05
ADPF	[MJ]	2.89E+02	0.00E+00	4.57E-01	8.97E-02	1.54E-01	-5.79E+01
WDP	[m^3 world-Eq deprived]	3.39E+00	0.00E+00	1.63E-04	4.86E-02	1.10E-03	-8.55E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-1" A4 (9.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.21E+02	0.00E+00	3.45E-02	2.47E-02	2.52E-02	-2.90E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.22E+02	0.00E+00	3.45E-02	2.47E-02	2.52E-02	-2.90E+00
PENRE	[MJ]	2.78E+02	0.00E+00	4.57E-01	1.12E+01	1.54E-01	-5.79E+01
PENRM	[MJ]	1.16E+01	0.00E+00	0.00E+00	-1.11E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.89E+02	0.00E+00	4.57E-01	8.97E-02	1.54E-01	-5.79E+01
SM	[kg]	6.93E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.40E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.81E-01	0.00E+00	1.70E-05	1.14E-03	3.25E-05	-4.02E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-1" A4 (9.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.56E-07	0.00E+00	1.83E-11	4.84E-11	3.34E-11	-1.61E-04
NHWD	[kg]	4.71E+00	0.00E+00	6.39E-05	1.70E-02	4.45E-01	4.63E-01
RWD	[kg]	9.31E-03	0.00E+00	8.63E-07	4.82E-06	2.14E-06	-3.59E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	7.79E+00	0.00E+00	0.00E+00	8.44E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.79E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.57E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-1" A4 (9.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.32 HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-5/4" A4 (6.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.80E+01	0.00E+00	2.61E-02	4.12E-01	7.03E-03	-3.89E+00
GWP-fossil	[kg CO_2-Eq.]	1.77E+01	0.00E+00	2.58E-02	4.12E-01	6.95E-03	-3.91E+00
GWP-biogenic	[kg CO_2-Eq.]	2.62E-01	0.00E+00	4.81E-05	1.55E-05	5.27E-05	2.04E-02
GWP-luluc	[kg CO_2-Eq.]	5.36E-02	0.00E+00	2.70E-04	1.05E-05	2.19E-05	-3.31E-03
ODP	[kg CFC11-Eq.]	2.70E-10	0.00E+00	4.36E-15	3.12E-14	2.25E-14	2.42E-12
AP	[mol H^+-Eq.]	5.85E-02	0.00E+00	9.40E-05	4.08E-05	4.34E-05	-1.32E-02
EP-freshwater	[kg P-Eq.]	8.96E-05	0.00E+00	7.08E-08	8.79E-09	9.83E-09	-2.26E-06
EP-marine	[kg N-Eq.]	1.52E-02	0.00E+00	4.47E-05	1.09E-05	1.06E-05	-2.04E-03
EP-terrestrial	[mol N-Eq.]	1.67E-01	0.00E+00	4.83E-04	1.93E-04	1.15E-04	-2.01E-02
POCP	[kg NMVOC-Eq.]	3.90E-02	0.00E+00	8.60E-05	3.09E-05	3.28E-05	-7.30E-03
ADPE	[kg Sb-Eq.]	5.07E-05	0.00E+00	1.75E-09	3.74E-10	4.72E-10	-4.56E-05
ADPF	[MJ]	2.13E+02	0.00E+00	3.37E-01	6.52E-02	1.14E-01	-4.25E+01
WDP	[m^3 world-Eq deprived]	2.50E+00	0.00E+00	1.20E-04	3.53E-02	8.12E-04	-6.23E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-5/4" A4 (6.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.37E+02	0.00E+00	2.54E-02	1.79E-02	1.85E-02	-2.08E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.38E+02	0.00E+00	2.54E-02	1.79E-02	1.85E-02	-2.08E+00
PENRE	[MJ]	2.04E+02	0.00E+00	3.37E-01	8.15E+00	1.14E-01	-4.25E+01
PENRM	[MJ]	8.60E+00	0.00E+00	0.00E+00	-8.08E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.13E+02	0.00E+00	3.37E-01	6.52E-02	1.14E-01	-4.25E+01
SM	[kg]	5.10E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.77E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.33E-01	0.00E+00	1.25E-05	8.29E-04	2.40E-05	-2.96E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-5/4" A4 (6.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.62E-07	0.00E+00	1.35E-11	3.52E-11	2.46E-11	-1.16E-04
NHWD	[kg]	3.47E+00	0.00E+00	4.70E-05	1.24E-02	3.28E-01	3.41E-01
RWD	[kg]	6.86E-03	0.00E+00	6.36E-07	3.50E-06	1.58E-06	-2.60E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.75E+00	0.00E+00	0.00E+00	6.21E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.39E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.14E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-5/4" A4 (6.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.33 HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-6/4" A4 (9.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.61E+01	0.00E+00	3.77E-02	6.14E-01	1.02E-02	-5.65E+00
GWP-fossil	[kg CO_2-Eq.]	2.56E+01	0.00E+00	3.73E-02	6.14E-01	1.01E-02	-5.68E+00
GWP-biogenic	[kg CO_2-Eq.]	3.79E-01	0.00E+00	6.97E-05	2.31E-05	7.62E-05	2.96E-02
GWP-luluc	[kg CO_2-Eq.]	7.74E-02	0.00E+00	3.92E-04	1.57E-05	3.16E-05	-4.86E-03
ODP	[kg CFC11-Eq.]	3.91E-10	0.00E+00	6.31E-15	4.65E-14	3.26E-14	3.43E-12
AP	[mol H^+-Eq.]	8.49E-02	0.00E+00	1.36E-04	6.08E-05	6.28E-05	-1.93E-02
EP-freshwater	[kg P-Eq.]	1.30E-04	0.00E+00	1.03E-07	1.31E-08	1.42E-08	-3.30E-06
EP-marine	[kg N-Eq.]	2.19E-02	0.00E+00	6.47E-05	1.62E-05	1.53E-05	-2.97E-03
EP-terrestrial	[mol N-Eq.]	2.41E-01	0.00E+00	6.99E-04	2.88E-04	1.67E-04	-2.93E-02
POCP	[kg NMVOC-Eq.]	5.64E-02	0.00E+00	1.25E-04	4.60E-05	4.74E-05	-1.06E-02
ADPE	[kg Sb-Eq.]	7.49E-05	0.00E+00	2.53E-09	5.57E-10	6.83E-10	-6.65E-05
ADPF	[MJ]	3.08E+02	0.00E+00	4.88E-01	9.73E-02	1.65E-01	-6.17E+01
WDP	[m^3 world-Eq deprived]	3.61E+00	0.00E+00	1.74E-04	5.27E-02	1.18E-03	-9.10E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-6/4" A4 (9.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.42E+02	0.00E+00	3.67E-02	2.68E-02	2.68E-02	-3.10E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.43E+02	0.00E+00	3.67E-02	2.68E-02	2.68E-02	-3.10E+00
PENRE	[MJ]	2.96E+02	0.00E+00	4.88E-01	1.20E+01	1.65E-01	-6.17E+01
PENRM	[MJ]	1.24E+01	0.00E+00	0.00E+00	-1.19E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.08E+02	0.00E+00	4.88E-01	9.73E-02	1.65E-01	-6.17E+01
SM	[kg]	7.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.56E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.93E-01	0.00E+00	1.82E-05	1.24E-03	3.47E-05	-4.28E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-6/4" A4 (9.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.79E-07	0.00E+00	1.96E-11	5.25E-11	3.55E-11	-1.71E-04
NHWD	[kg]	5.02E+00	0.00E+00	6.81E-05	1.85E-02	4.74E-01	4.93E-01
RWD	[kg]	9.92E-03	0.00E+00	9.20E-07	5.22E-06	2.28E-06	-3.86E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	8.30E+00	0.00E+00	0.00E+00	8.99E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.52E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.71E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-6/4" A4 (9.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.34 HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-2" A4 (6.42 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.79E+01	0.00E+00	2.50E-02	4.10E-01	6.73E-03	-3.42E+00
GWP-fossil	[kg CO_2-Eq.]	1.76E+01	0.00E+00	2.47E-02	4.10E-01	6.66E-03	-3.44E+00
GWP-biogenic	[kg CO_2-Eq.]	2.60E-01	0.00E+00	4.61E-05	1.54E-05	5.04E-05	1.77E-02
GWP-luluc	[kg CO_2-Eq.]	5.25E-02	0.00E+00	2.59E-04	1.05E-05	2.09E-05	-3.05E-03
ODP	[kg CFC11-Eq.]	2.66E-10	0.00E+00	4.18E-15	3.10E-14	2.16E-14	1.89E-12
AP	[mol H^+-Eq.]	5.81E-02	0.00E+00	9.01E-05	4.06E-05	4.15E-05	-1.18E-02
EP-freshwater	[kg P-Eq.]	8.85E-05	0.00E+00	6.79E-08	8.74E-09	9.41E-09	-2.06E-06
EP-marine	[kg N-Eq.]	1.50E-02	0.00E+00	4.28E-05	1.08E-05	1.01E-05	-1.82E-03
EP-terrestrial	[mol N-Eq.]	1.66E-01	0.00E+00	4.63E-04	1.92E-04	1.10E-04	-1.80E-02
POCP	[kg NMVOC-Eq.]	3.87E-02	0.00E+00	8.24E-05	3.07E-05	3.14E-05	-6.46E-03
ADPE	[kg Sb-Eq.]	5.04E-05	0.00E+00	1.67E-09	3.72E-10	4.52E-10	-4.11E-05
ADPF	[MJ]	2.12E+02	0.00E+00	3.23E-01	6.49E-02	1.09E-01	-3.76E+01
WDP	[m^3 world-Eq deprived]	2.48E+00	0.00E+00	1.15E-04	3.51E-02	7.78E-04	-5.64E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-2" A4 (6.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.33E+02	0.00E+00	2.43E-02	1.79E-02	1.78E-02	-2.05E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.34E+02	0.00E+00	2.43E-02	1.79E-02	1.78E-02	-2.05E+00
PENRE	[MJ]	2.03E+02	0.00E+00	3.23E-01	8.27E+00	1.09E-01	-3.76E+01
PENRM	[MJ]	8.72E+00	0.00E+00	0.00E+00	-8.21E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.12E+02	0.00E+00	3.23E-01	6.49E-02	1.09E-01	-3.76E+01
SM	[kg]	5.07E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.31E-01	0.00E+00	1.20E-05	8.25E-04	2.29E-05	-2.55E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-2" A4 (6.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.59E-07	0.00E+00	1.29E-11	3.50E-11	2.35E-11	-1.08E-04
NHWD	[kg]	3.44E+00	0.00E+00	4.50E-05	1.23E-02	3.14E-01	2.93E-01
RWD	[kg]	6.82E-03	0.00E+00	6.09E-07	3.48E-06	1.51E-06	-2.54E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.71E+00	0.00E+00	0.00E+00	5.95E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.35E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.14E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 225-2" A4 (6.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.35 HAKU SADDLE PN16 WATER, A4: HAKU ABS 250-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 250-2" A4 (4.10 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.10E+01	0.00E+00	1.60E-02	2.09E-01	4.32E-03	-2.41E+00
GWP-fossil	[kg CO_2-Eq.]	1.08E+01	0.00E+00	1.58E-02	2.09E-01	4.27E-03	-2.42E+00
GWP-biogenic	[kg CO_2-Eq.]	1.60E-01	0.00E+00	2.94E-05	7.86E-06	3.24E-05	1.28E-02
GWP-luluc	[kg CO_2-Eq.]	3.29E-02	0.00E+00	1.66E-04	5.35E-06	1.34E-05	-2.16E-03
ODP	[kg CFC11-Eq.]	1.66E-10	0.00E+00	2.67E-15	1.58E-14	1.38E-14	1.59E-12
AP	[mol H^+-Eq.]	3.66E-02	0.00E+00	5.75E-05	2.07E-05	2.67E-05	-8.41E-03
EP-freshwater	[kg P-Eq.]	5.48E-05	0.00E+00	4.34E-08	4.47E-09	6.04E-09	-1.45E-06
EP-marine	[kg N-Eq.]	9.32E-03	0.00E+00	2.73E-05	5.52E-06	6.49E-06	-1.29E-03
EP-terrestrial	[mol N-Eq.]	1.03E-01	0.00E+00	2.96E-04	9.83E-05	7.08E-05	-1.27E-02
POCP	[kg NMVOC-Eq.]	2.40E-02	0.00E+00	5.26E-05	1.57E-05	2.01E-05	-4.58E-03
ADPE	[kg Sb-Eq.]	3.52E-05	0.00E+00	1.07E-09	1.90E-10	2.90E-10	-2.95E-05
ADPF	[MJ]	1.30E+02	0.00E+00	2.06E-01	3.32E-02	6.99E-02	-2.63E+01
WDP	[m^3 world-Eq deprived]	1.54E+00	0.00E+00	7.35E-05	1.80E-02	4.99E-04	-4.02E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 250-2" A4 (4.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.45E+02	0.00E+00	1.55E-02	9.12E-03	1.14E-02	-1.33E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.46E+02	0.00E+00	1.55E-02	9.12E-03	1.14E-02	-1.33E+00
PENRE	[MJ]	1.25E+02	0.00E+00	2.06E-01	4.51E+00	6.99E-02	-2.63E+01
PENRM	[MJ]	4.99E+00	0.00E+00	0.00E+00	-4.47E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.30E+02	0.00E+00	2.06E-01	3.32E-02	6.99E-02	-2.63E+01
SM	[kg]	3.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.17E-02	0.00E+00	7.68E-06	4.21E-04	1.47E-05	-1.81E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 250-2" A4 (4.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.61E-07	0.00E+00	8.27E-12	1.79E-11	1.51E-11	-7.76E-05
NHWD	[kg]	2.13E+00	0.00E+00	2.88E-05	6.29E-03	2.01E-01	2.08E-01
RWD	[kg]	4.23E-03	0.00E+00	3.89E-07	1.78E-06	9.69E-07	-1.45E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.50E+00	0.00E+00	0.00E+00	3.82E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.25E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.81E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 250-2" A4 (4.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.36 HAKU SADDLE PN16 WATER, A4: HAKU ABS 280-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 280-2" A4 (12.2 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.31E+01	0.00E+00	4.74E-02	1.28E+00	1.26E-02	-7.43E+00
GWP-fossil	[kg CO_2-Eq.]	3.25E+01	0.00E+00	4.68E-02	1.28E+00	1.24E-02	-7.46E+00
GWP-biogenic	[kg CO_2-Eq.]	4.65E-01	0.00E+00	8.75E-05	4.80E-05	9.42E-05	3.68E-02
GWP-luluc	[kg CO_2-Eq.]	9.65E-02	0.00E+00	4.92E-04	3.27E-05	3.91E-05	-7.30E-03
ODP	[kg CFC11-Eq.]	4.86E-10	0.00E+00	7.93E-15	9.68E-14	4.02E-14	2.46E-12
AP	[mol H^+-Eq.]	1.10E-01	0.00E+00	1.71E-04	1.27E-04	7.75E-05	-2.62E-02
EP-freshwater	[kg P-Eq.]	1.60E-04	0.00E+00	1.29E-07	2.73E-08	1.76E-08	-4.79E-06
EP-marine	[kg N-Eq.]	2.74E-02	0.00E+00	8.12E-05	3.37E-05	1.89E-05	-4.04E-03
EP-terrestrial	[mol N-Eq.]	3.02E-01	0.00E+00	8.78E-04	6.01E-04	2.06E-04	-4.03E-02
POCP	[kg NMVOC-Eq.]	7.12E-02	0.00E+00	1.56E-04	9.58E-05	5.86E-05	-1.42E-02
ADPE	[kg Sb-Eq.]	1.21E-04	0.00E+00	3.18E-09	1.16E-09	8.44E-10	-9.32E-05
ADPF	[MJ]	4.02E+02	0.00E+00	6.12E-01	2.03E-01	2.03E-01	-8.30E+01
WDP	[m^3 world-Eq deprived]	4.57E+00	0.00E+00	2.18E-04	1.10E-01	1.45E-03	-1.30E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 280-2" A4 (12.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.23E+02	0.00E+00	4.61E-02	5.57E-02	3.31E-02	-5.79E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.24E+02	0.00E+00	4.61E-02	5.57E-02	3.31E-02	-5.79E+00
PENRE	[MJ]	3.81E+02	0.00E+00	6.12E-01	2.04E+01	2.03E-01	-8.30E+01
PENRM	[MJ]	2.08E+01	0.00E+00	0.00E+00	-2.02E+01	0.00E+00	0.00E+00
PENRT	[MJ]	4.02E+02	0.00E+00	6.12E-01	2.03E-01	2.03E-01	-8.30E+01
SM	[kg]	9.10E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.42E-01	0.00E+00	2.28E-05	2.57E-03	4.28E-05	-5.24E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 280-2" A4 (12.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.68E-07	0.00E+00	2.46E-11	1.09E-10	4.39E-11	-2.56E-04
NHWD	[kg]	6.19E+00	0.00E+00	8.55E-05	3.84E-02	5.85E-01	5.98E-01
RWD	[kg]	1.25E-02	0.00E+00	1.16E-06	1.09E-05	2.82E-06	-7.38E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.01E+01	0.00E+00	0.00E+00	1.11E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.98E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.55E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 280-2" A4 (12.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.37 HAKU SADDLE PN16 WATER, A4: HAKU ABS 315-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 315-2" A4 (15.0 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.14E+01	0.00E+00	5.84E-02	1.25E+00	1.56E-02	-8.36E+00
GWP-fossil	[kg CO_2-Eq.]	4.07E+01	0.00E+00	5.77E-02	1.25E+00	1.54E-02	-8.40E+00
GWP-biogenic	[kg CO_2-Eq.]	5.95E-01	0.00E+00	1.08E-04	4.68E-05	1.17E-04	4.24E-02
GWP-luluc	[kg CO_2-Eq.]	1.21E-01	0.00E+00	6.06E-04	3.18E-05	4.85E-05	-7.65E-03
ODP	[kg CFC11-Eq.]	6.13E-10	0.00E+00	9.76E-15	9.43E-14	5.00E-14	3.70E-12
AP	[mol H^+-Eq.]	1.35E-01	0.00E+00	2.10E-04	1.23E-04	9.63E-05	-2.89E-02
EP-freshwater	[kg P-Eq.]	2.03E-04	0.00E+00	1.59E-07	2.66E-08	2.18E-08	-5.12E-06
EP-marine	[kg N-Eq.]	3.46E-02	0.00E+00	1.00E-04	3.29E-05	2.35E-05	-4.45E-03
EP-terrestrial	[mol N-Eq.]	3.81E-01	0.00E+00	1.08E-03	5.85E-04	2.56E-04	-4.41E-02
POCP	[kg NMVOC-Eq.]	8.93E-02	0.00E+00	1.93E-04	9.34E-05	7.28E-05	-1.58E-02
ADPE	[kg Sb-Eq.]	1.25E-04	0.00E+00	3.91E-09	1.13E-09	1.05E-09	-1.01E-04
ADPF	[MJ]	4.96E+02	0.00E+00	7.54E-01	1.97E-01	2.52E-01	-9.25E+01
WDP	[m^3 world-Eq deprived]	5.73E+00	0.00E+00	2.69E-04	1.07E-01	1.80E-03	-1.39E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 315-2" A4 (15.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.36E+02	0.00E+00	5.68E-02	5.43E-02	4.12E-02	-5.61E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.37E+02	0.00E+00	5.68E-02	5.43E-02	4.12E-02	-5.61E+00
PENRE	[MJ]	4.73E+02	0.00E+00	7.54E-01	2.23E+01	2.52E-01	-9.25E+01
PENRM	[MJ]	2.26E+01	0.00E+00	0.00E+00	-2.21E+01	0.00E+00	0.00E+00
PENRT	[MJ]	4.96E+02	0.00E+00	7.54E-01	1.97E-01	2.52E-01	-9.25E+01
SM	[kg]	1.16E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.67E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.03E-01	0.00E+00	2.81E-05	2.51E-03	5.32E-05	-6.12E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 315-2" A4 (15.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.95E-07	0.00E+00	3.02E-11	1.07E-10	5.45E-11	-2.67E-04
NHWD	[kg]	7.89E+00	0.00E+00	1.05E-04	3.75E-02	7.27E-01	7.01E-01
RWD	[kg]	1.57E-02	0.00E+00	1.42E-06	1.06E-05	3.50E-06	-7.30E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.30E+01	0.00E+00	0.00E+00	1.38E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.93E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.46E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 315-2" A4 (15.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.38 HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-2" A4 (2.09 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	5.73E+00	0.00E+00	8.13E-03	9.59E-02	2.21E-03	-1.33E+00
GWP-fossil	[kg CO_2-Eq.]	5.64E+00	0.00E+00	8.03E-03	9.59E-02	2.18E-03	-1.34E+00
GWP-biogenic	[kg CO_2-Eq.]	7.97E-02	0.00E+00	1.50E-05	3.60E-06	1.65E-05	6.98E-03
GWP-luluc	[kg CO_2-Eq.]	1.68E-02	0.00E+00	8.44E-05	2.45E-06	6.86E-06	-1.54E-03
ODP	[kg CFC11-Eq.]	8.43E-11	0.00E+00	1.36E-15	7.25E-15	7.07E-15	7.64E-13
AP	[mol H^+-Eq.]	2.08E-02	0.00E+00	2.93E-05	9.49E-06	1.36E-05	-5.18E-03
EP-freshwater	[kg P-Eq.]	2.74E-05	0.00E+00	2.21E-08	2.04E-09	3.09E-09	-9.68E-07
EP-marine	[kg N-Eq.]	4.81E-03	0.00E+00	1.39E-05	2.53E-06	3.32E-06	-7.83E-04
EP-terrestrial	[mol N-Eq.]	5.30E-02	0.00E+00	1.51E-04	4.50E-05	3.62E-05	-7.90E-03
POCP	[kg NMVOC-Eq.]	1.26E-02	0.00E+00	2.68E-05	7.18E-06	1.03E-05	-2.70E-03
ADPE	[kg Sb-Eq.]	3.06E-05	0.00E+00	5.45E-10	8.69E-11	1.48E-10	-1.96E-05
ADPF	[MJ]	6.80E+01	0.00E+00	1.05E-01	1.52E-02	3.57E-02	-1.48E+01
WDP	[m^3 world-Eq deprived]	8.11E-01	0.00E+00	3.75E-05	8.22E-03	2.55E-04	-2.70E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-2" A4 (2.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.29E+01	0.00E+00	7.92E-03	4.17E-03	5.82E-03	-1.07E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.41E+01	0.00E+00	7.92E-03	4.17E-03	5.82E-03	-1.07E+00
PENRE	[MJ]	6.54E+01	0.00E+00	1.05E-01	2.13E+00	3.57E-02	-1.48E+01
PENRM	[MJ]	2.63E+00	0.00E+00	0.00E+00	-2.11E+00	0.00E+00	0.00E+00
PENRT	[MJ]	6.80E+01	0.00E+00	1.05E-01	1.52E-02	3.57E-02	-1.48E+01
SM	[kg]	1.60E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.49E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.21E-02	0.00E+00	3.91E-06	1.93E-04	7.52E-06	-8.89E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-2" A4 (2.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.12E-08	0.00E+00	4.21E-12	8.19E-12	7.71E-12	-5.87E-05
NHWD	[kg]	1.08E+00	0.00E+00	1.47E-05	2.88E-03	1.03E-01	1.01E-01
RWD	[kg]	2.21E-03	0.00E+00	1.98E-07	8.15E-07	4.95E-07	-8.29E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.71E+00	0.00E+00	0.00E+00	1.95E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.49E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.66E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-2" A4 (2.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.39 HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-1" A4 (1.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.86E+00	0.00E+00	6.62E-03	7.04E-02	1.80E-03	-1.03E+00
GWP-fossil	[kg CO_2-Eq.]	4.78E+00	0.00E+00	6.53E-03	7.04E-02	1.78E-03	-1.03E+00
GWP-biogenic	[kg CO_2-Eq.]	6.64E-02	0.00E+00	1.22E-05	2.65E-06	1.35E-05	5.34E-03
GWP-luluc	[kg CO_2-Eq.]	1.40E-02	0.00E+00	6.86E-05	1.80E-06	5.59E-06	-1.32E-03
ODP	[kg CFC11-Eq.]	7.04E-11	0.00E+00	1.11E-15	5.33E-15	5.76E-15	5.35E-13
AP	[mol H^+-Eq.]	1.81E-02	0.00E+00	2.39E-05	6.97E-06	1.11E-05	-4.19E-03
EP-freshwater	[kg P-Eq.]	2.28E-05	0.00E+00	1.80E-08	1.50E-09	2.51E-09	-8.07E-07
EP-marine	[kg N-Eq.]	4.06E-03	0.00E+00	1.13E-05	1.86E-06	2.70E-06	-6.29E-04
EP-terrestrial	[mol N-Eq.]	4.47E-02	0.00E+00	1.23E-04	3.31E-05	2.95E-05	-6.40E-03
POCP	[kg NMVOC-Eq.]	1.07E-02	0.00E+00	2.18E-05	5.28E-06	8.39E-06	-2.14E-03
ADPE	[kg Sb-Eq.]	2.96E-05	0.00E+00	4.43E-10	6.39E-11	1.21E-10	-1.63E-05
ADPF	[MJ]	5.78E+01	0.00E+00	8.54E-02	1.12E-02	2.91E-02	-1.16E+01
WDP	[m^3 world-Eq deprived]	6.91E-01	0.00E+00	3.05E-05	6.04E-03	2.08E-04	-2.26E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-1" A4 (1.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.05E+01	0.00E+00	6.44E-03	3.07E-03	4.74E-03	-9.57E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.17E+01	0.00E+00	6.44E-03	3.07E-03	4.74E-03	-9.57E-01
PENRE	[MJ]	5.56E+01	0.00E+00	8.54E-02	1.69E+00	2.91E-02	-1.16E+01
PENRM	[MJ]	2.19E+00	0.00E+00	0.00E+00	-1.68E+00	0.00E+00	0.00E+00
PENRT	[MJ]	5.78E+01	0.00E+00	8.54E-02	1.12E-02	2.91E-02	-1.16E+01
SM	[kg]	1.35E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.04E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.52E-02	0.00E+00	3.18E-06	1.42E-04	6.13E-06	-6.45E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-1" A4 (1.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	6.79E-08	0.00E+00	3.43E-12	6.02E-12	6.28E-12	-5.10E-05
NHWD	[kg]	9.13E-01	0.00E+00	1.19E-05	2.12E-03	8.38E-02	7.23E-02
RWD	[kg]	1.87E-03	0.00E+00	1.61E-07	5.99E-07	4.03E-07	-6.65E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.42E+00	0.00E+00	0.00E+00	1.59E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.09E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.96E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-1" A4 (1.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.40 HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-5/4" A4 (1.77 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.97E+00	0.00E+00	6.89E-03	7.70E-02	1.87E-03	-1.11E+00
GWP-fossil	[kg CO_2-Eq.]	4.89E+00	0.00E+00	6.80E-03	7.70E-02	1.85E-03	-1.12E+00
GWP-biogenic	[kg CO_2-Eq.]	6.81E-02	0.00E+00	1.27E-05	2.89E-06	1.40E-05	5.79E-03
GWP-luluc	[kg CO_2-Eq.]	1.44E-02	0.00E+00	7.15E-05	1.97E-06	5.81E-06	-1.39E-03
ODP	[kg CFC11-Eq.]	7.23E-11	0.00E+00	1.15E-15	5.83E-15	5.99E-15	5.96E-13
AP	[mol H^+-Eq.]	1.84E-02	0.00E+00	2.48E-05	7.62E-06	1.15E-05	-4.48E-03
EP-freshwater	[kg P-Eq.]	2.34E-05	0.00E+00	1.87E-08	1.64E-09	2.62E-09	-8.56E-07
EP-marine	[kg N-Eq.]	4.16E-03	0.00E+00	1.18E-05	2.03E-06	2.81E-06	-6.73E-04
EP-terrestrial	[mol N-Eq.]	4.58E-02	0.00E+00	1.28E-04	3.62E-05	3.07E-05	-6.84E-03
POCP	[kg NMVOC-Eq.]	1.09E-02	0.00E+00	2.27E-05	5.77E-06	8.72E-06	-2.29E-03
ADPE	[kg Sb-Eq.]	2.96E-05	0.00E+00	4.62E-10	6.98E-11	1.26E-10	-1.73E-05
ADPF	[MJ]	5.91E+01	0.00E+00	8.90E-02	1.22E-02	3.03E-02	-1.25E+01
WDP	[m^3 world-Eq deprived]	7.05E-01	0.00E+00	3.17E-05	6.60E-03	2.16E-04	-2.39E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-5/4" A4 (1.77 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.22E+01	0.00E+00	6.71E-03	3.35E-03	4.93E-03	-9.96E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.34E+01	0.00E+00	6.71E-03	3.35E-03	4.93E-03	-9.96E-01
PENRE	[MJ]	5.68E+01	0.00E+00	8.90E-02	1.77E+00	3.03E-02	-1.25E+01
PENRM	[MJ]	2.27E+00	0.00E+00	0.00E+00	-1.76E+00	0.00E+00	0.00E+00
PENRT	[MJ]	5.91E+01	0.00E+00	8.90E-02	1.22E-02	3.03E-02	-1.25E+01
SM	[kg]	1.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.43E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.62E-02	0.00E+00	3.31E-06	1.55E-04	6.37E-06	-7.10E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-5/4" A4 (1.77 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	6.96E-08	0.00E+00	3.57E-12	6.58E-12	6.54E-12	-5.35E-05
NHWD	[kg]	9.34E-01	0.00E+00	1.24E-05	2.31E-03	8.71E-02	7.99E-02
RWD	[kg]	1.91E-03	0.00E+00	1.68E-07	6.55E-07	4.20E-07	-7.11E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.45E+00	0.00E+00	0.00E+00	1.65E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.19E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.14E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2- optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-5/4" A4 (1.77 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.41 HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-6/4" A4 (1.80 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	5.05E+00	0.00E+00	7.00E-03	7.93E-02	1.90E-03	-1.13E+00
GWP-fossil	[kg CO_2-Eq.]	4.96E+00	0.00E+00	6.92E-03	7.93E-02	1.88E-03	-1.13E+00
GWP-biogenic	[kg CO_2-Eq.]	6.93E-02	0.00E+00	1.29E-05	2.98E-06	1.43E-05	5.88E-03
GWP-luluc	[kg CO_2-Eq.]	1.47E-02	0.00E+00	7.27E-05	2.02E-06	5.91E-06	-1.40E-03
ODP	[kg CFC11-Eq.]	7.35E-11	0.00E+00	1.17E-15	6.00E-15	6.09E-15	6.06E-13
AP	[mol H^+-Eq.]	1.87E-02	0.00E+00	2.53E-05	7.85E-06	1.17E-05	-4.52E-03
EP-freshwater	[kg P-Eq.]	2.38E-05	0.00E+00	1.90E-08	1.69E-09	2.66E-09	-8.63E-07
EP-marine	[kg N-Eq.]	4.22E-03	0.00E+00	1.20E-05	2.09E-06	2.86E-06	-6.81E-04
EP-terrestrial	[mol N-Eq.]	4.65E-02	0.00E+00	1.30E-04	3.72E-05	3.12E-05	-6.91E-03
POCP	[kg NMVOC-Eq.]	1.11E-02	0.00E+00	2.31E-05	5.94E-06	8.87E-06	-2.32E-03
ADPE	[kg Sb-Eq.]	2.97E-05	0.00E+00	4.70E-10	7.19E-11	1.28E-10	-1.75E-05
ADPF	[MJ]	6.00E+01	0.00E+00	9.05E-02	1.26E-02	3.08E-02	-1.26E+01
WDP	[m^3 world-Eq deprived]	7.16E-01	0.00E+00	3.23E-05	6.80E-03	2.20E-04	-2.41E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-6/4" A4 (1.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.33E+01	0.00E+00	6.82E-03	3.45E-03	5.02E-03	-1.00E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.45E+01	0.00E+00	6.82E-03	3.45E-03	5.02E-03	-1.00E+00
PENRE	[MJ]	5.77E+01	0.00E+00	9.05E-02	1.82E+00	3.08E-02	-1.26E+01
PENRM	[MJ]	2.32E+00	0.00E+00	0.00E+00	-1.81E+00	0.00E+00	0.00E+00
PENRT	[MJ]	6.00E+01	0.00E+00	9.05E-02	1.26E-02	3.08E-02	-1.26E+01
SM	[kg]	1.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.51E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.68E-02	0.00E+00	3.37E-06	1.60E-04	6.48E-06	-7.24E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-6/4" A4 (1.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.08E-08	0.00E+00	3.63E-12	6.77E-12	6.65E-12	-5.38E-05
NHWD	[kg]	9.49E-01	0.00E+00	1.26E-05	2.38E-03	8.86E-02	8.15E-02
RWD	[kg]	1.94E-03	0.00E+00	1.71E-07	6.74E-07	4.27E-07	-7.23E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.48E+00	0.00E+00	0.00E+00	1.68E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.23E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.20E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-6/4" A4 (1.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.42 HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-1" A4 (1.95 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	5.54E+00	0.00E+00	7.59E-03	1.06E-01	2.05E-03	-1.16E+00
GWP-fossil	[kg CO_2-Eq.]	5.44E+00	0.00E+00	7.50E-03	1.06E-01	2.03E-03	-1.16E+00
GWP-biogenic	[kg CO_2-Eq.]	7.65E-02	0.00E+00	1.40E-05	3.99E-06	1.54E-05	5.96E-03
GWP-luluc	[kg CO_2-Eq.]	1.60E-02	0.00E+00	7.87E-05	2.71E-06	6.38E-06	-1.40E-03
ODP	[kg CFC11-Eq.]	8.05E-11	0.00E+00	1.27E-15	8.03E-15	6.57E-15	5.59E-13
AP	[mol H^+-Eq.]	2.01E-02	0.00E+00	2.74E-05	1.05E-05	1.27E-05	-4.56E-03
EP-freshwater	[kg P-Eq.]	2.62E-05	0.00E+00	2.06E-08	2.26E-09	2.87E-09	-8.69E-07
EP-marine	[kg N-Eq.]	4.63E-03	0.00E+00	1.30E-05	2.80E-06	3.08E-06	-6.89E-04
EP-terrestrial	[mol N-Eq.]	5.10E-02	0.00E+00	1.41E-04	4.99E-05	3.36E-05	-6.98E-03
POCP	[kg NMVOC-Eq.]	1.21E-02	0.00E+00	2.50E-05	7.95E-06	9.57E-06	-2.36E-03
ADPE	[kg Sb-Eq.]	2.99E-05	0.00E+00	5.09E-10	9.63E-11	1.38E-10	-1.74E-05
ADPF	[MJ]	6.61E+01	0.00E+00	9.80E-02	1.68E-02	3.32E-02	-1.30E+01
WDP	[m^3 world-Eq deprived]	7.82E-01	0.00E+00	3.50E-05	9.10E-03	2.37E-04	-2.41E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-1" A4 (1.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.94E+01	0.00E+00	7.39E-03	4.63E-03	5.41E-03	-1.03E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.06E+01	0.00E+00	7.39E-03	4.63E-03	5.41E-03	-1.03E+00
PENRE	[MJ]	6.34E+01	0.00E+00	9.80E-02	2.24E+00	3.32E-02	-1.30E+01
PENRM	[MJ]	2.73E+00	0.00E+00	0.00E+00	-2.22E+00	0.00E+00	0.00E+00
PENRT	[MJ]	6.61E+01	0.00E+00	9.80E-02	1.68E-02	3.32E-02	-1.30E+01
SM	[kg]	1.54E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.65E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.02E-02	0.00E+00	3.65E-06	2.14E-04	6.99E-06	-7.50E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-1" A4 (1.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.78E-08	0.00E+00	3.93E-12	9.07E-12	7.17E-12	-5.31E-05
NHWD	[kg]	1.04E+00	0.00E+00	1.37E-05	3.19E-03	9.56E-02	8.46E-02
RWD	[kg]	2.13E-03	0.00E+00	1.85E-07	9.03E-07	4.60E-07	-8.36E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.64E+00	0.00E+00	0.00E+00	1.81E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.65E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.95E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-1" A4 (1.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.43 HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-5/4" A4 (2.05 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	5.73E+00	0.00E+00	7.98E-03	1.13E-01	2.16E-03	-1.26E+00
GWP-fossil	[kg CO_2-Eq.]	5.63E+00	0.00E+00	7.88E-03	1.13E-01	2.13E-03	-1.26E+00
GWP-biogenic	[kg CO_2-Eq.]	7.95E-02	0.00E+00	1.47E-05	4.23E-06	1.62E-05	6.48E-03
GWP-luluc	[kg CO_2-Eq.]	1.67E-02	0.00E+00	8.28E-05	2.88E-06	6.70E-06	-1.47E-03
ODP	[kg CFC11-Eq.]	8.37E-11	0.00E+00	1.33E-15	8.53E-15	6.91E-15	6.37E-13
AP	[mol H^+-Eq.]	2.06E-02	0.00E+00	2.88E-05	1.12E-05	1.33E-05	-4.88E-03
EP-freshwater	[kg P-Eq.]	2.73E-05	0.00E+00	2.17E-08	2.40E-09	3.02E-09	-9.19E-07
EP-marine	[kg N-Eq.]	4.79E-03	0.00E+00	1.37E-05	2.97E-06	3.24E-06	-7.38E-04
EP-terrestrial	[mol N-Eq.]	5.28E-02	0.00E+00	1.48E-04	5.29E-05	3.54E-05	-7.45E-03
POCP	[kg NMVOC-Eq.]	1.25E-02	0.00E+00	2.63E-05	8.44E-06	1.01E-05	-2.53E-03
ADPE	[kg Sb-Eq.]	3.00E-05	0.00E+00	5.35E-10	1.02E-10	1.45E-10	-1.85E-05
ADPF	[MJ]	6.83E+01	0.00E+00	1.03E-01	1.78E-02	3.49E-02	-1.40E+01
WDP	[m^3 world-Eq deprived]	8.08E-01	0.00E+00	3.68E-05	9.66E-03	2.49E-04	-2.55E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-5/4" A4 (2.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.23E+01	0.00E+00	7.77E-03	4.91E-03	5.69E-03	-1.06E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.35E+01	0.00E+00	7.77E-03	4.91E-03	5.69E-03	-1.06E+00
PENRE	[MJ]	6.55E+01	0.00E+00	1.03E-01	2.33E+00	3.49E-02	-1.40E+01
PENRM	[MJ]	2.83E+00	0.00E+00	0.00E+00	-2.32E+00	0.00E+00	0.00E+00
PENRT	[MJ]	6.83E+01	0.00E+00	1.03E-01	1.78E-02	3.49E-02	-1.40E+01
SM	[kg]	1.59E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.11E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.18E-02	0.00E+00	3.84E-06	2.27E-04	7.35E-06	-8.28E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-5/4" A4 (2.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.08E-08	0.00E+00	4.13E-12	9.63E-12	7.54E-12	-5.55E-05
NHWD	[kg]	1.08E+00	0.00E+00	1.44E-05	3.39E-03	1.00E-01	9.36E-02
RWD	[kg]	2.20E-03	0.00E+00	1.94E-07	9.58E-07	4.84E-07	-8.81E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.70E+00	0.00E+00	0.00E+00	1.91E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.75E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.13E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-5/4" A4 (2.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.44 HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-6/4" A4 (2.00 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	5.75E+00	0.00E+00	7.78E-03	1.12E-01	2.10E-03	-1.14E+00
GWP-fossil	[kg CO_2-Eq.]	5.65E+00	0.00E+00	7.69E-03	1.12E-01	2.08E-03	-1.14E+00
GWP-biogenic	[kg CO_2-Eq.]	7.98E-02	0.00E+00	1.44E-05	4.21E-06	1.58E-05	5.82E-03
GWP-luluc	[kg CO_2-Eq.]	1.66E-02	0.00E+00	8.07E-05	2.86E-06	6.54E-06	-1.37E-03
ODP	[kg CFC11-Eq.]	8.36E-11	0.00E+00	1.30E-15	8.48E-15	6.74E-15	5.23E-13
AP	[mol H^+-Eq.]	2.07E-02	0.00E+00	2.81E-05	1.11E-05	1.30E-05	-4.47E-03
EP-freshwater	[kg P-Eq.]	2.73E-05	0.00E+00	2.11E-08	2.39E-09	2.94E-09	-8.51E-07
EP-marine	[kg N-Eq.]	4.81E-03	0.00E+00	1.33E-05	2.96E-06	3.16E-06	-6.75E-04
EP-terrestrial	[mol N-Eq.]	5.30E-02	0.00E+00	1.44E-04	5.26E-05	3.45E-05	-6.84E-03
POCP	[kg NMVOC-Eq.]	1.26E-02	0.00E+00	2.57E-05	8.39E-06	9.81E-06	-2.31E-03
ADPE	[kg Sb-Eq.]	3.00E-05	0.00E+00	5.22E-10	1.02E-10	1.41E-10	-1.70E-05
ADPF	[MJ]	6.87E+01	0.00E+00	1.01E-01	1.77E-02	3.40E-02	-1.28E+01
WDP	[m^3 world-Eq deprived]	8.13E-01	0.00E+00	3.59E-05	9.61E-03	2.43E-04	-2.36E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-6/4" A4 (2.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.21E+01	0.00E+00	7.58E-03	4.88E-03	5.55E-03	-1.02E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.33E+01	0.00E+00	7.58E-03	4.88E-03	5.55E-03	-1.02E+00
PENRE	[MJ]	6.58E+01	0.00E+00	1.01E-01	2.37E+00	3.40E-02	-1.28E+01
PENRM	[MJ]	2.86E+00	0.00E+00	0.00E+00	-2.35E+00	0.00E+00	0.00E+00
PENRT	[MJ]	6.87E+01	0.00E+00	1.01E-01	1.77E-02	3.40E-02	-1.28E+01
SM	[kg]	1.60E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.56E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.17E-02	0.00E+00	3.74E-06	2.25E-04	7.17E-06	-7.35E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-6/4" A4 (2.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.10E-08	0.00E+00	4.03E-12	9.57E-12	7.35E-12	-5.19E-05
NHWD	[kg]	1.08E+00	0.00E+00	1.40E-05	3.37E-03	9.80E-02	8.29E-02
RWD	[kg]	2.21E-03	0.00E+00	1.90E-07	9.52E-07	4.72E-07	-8.53E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.71E+00	0.00E+00	0.00E+00	1.86E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.74E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.11E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-6/4" A4 (2.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.45 HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-2" A4 (2.20 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.26E+00	0.00E+00	8.56E-03	1.25E-01	2.31E-03	-1.25E+00
GWP-fossil	[kg CO_2-Eq.]	6.16E+00	0.00E+00	8.46E-03	1.25E-01	2.29E-03	-1.26E+00
GWP-biogenic	[kg CO_2-Eq.]	8.76E-02	0.00E+00	1.58E-05	4.69E-06	1.73E-05	6.44E-03
GWP-luluc	[kg CO_2-Eq.]	1.81E-02	0.00E+00	8.88E-05	3.19E-06	7.19E-06	-1.44E-03
ODP	[kg CFC11-Eq.]	9.15E-11	0.00E+00	1.43E-15	9.45E-15	7.41E-15	6.07E-13
AP	[mol H^+-Eq.]	2.22E-02	0.00E+00	3.09E-05	1.24E-05	1.43E-05	-4.82E-03
EP-freshwater	[kg P-Eq.]	2.99E-05	0.00E+00	2.33E-08	2.66E-09	3.23E-09	-9.06E-07
EP-marine	[kg N-Eq.]	5.24E-03	0.00E+00	1.47E-05	3.30E-06	3.48E-06	-7.30E-04
EP-terrestrial	[mol N-Eq.]	5.78E-02	0.00E+00	1.59E-04	5.87E-05	3.79E-05	-7.37E-03
POCP	[kg NMVOC-Eq.]	1.37E-02	0.00E+00	2.82E-05	9.36E-06	1.08E-05	-2.51E-03
ADPE	[kg Sb-Eq.]	3.02E-05	0.00E+00	5.74E-10	1.13E-10	1.55E-10	-1.81E-05
ADPF	[MJ]	7.47E+01	0.00E+00	1.11E-01	1.98E-02	3.74E-02	-1.40E+01
WDP	[m^3 world-Eq deprived]	8.83E-01	0.00E+00	3.95E-05	1.07E-02	2.67E-04	-2.51E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-2" A4 (2.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.91E+01	0.00E+00	8.33E-03	5.44E-03	6.10E-03	-1.05E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.03E+01	0.00E+00	8.33E-03	5.44E-03	6.10E-03	-1.05E+00
PENRE	[MJ]	7.15E+01	0.00E+00	1.11E-01	2.62E+00	3.74E-02	-1.40E+01
PENRM	[MJ]	3.11E+00	0.00E+00	0.00E+00	-2.60E+00	0.00E+00	0.00E+00
PENRT	[MJ]	7.47E+01	0.00E+00	1.11E-01	1.98E-02	3.74E-02	-1.40E+01
SM	[kg]	1.75E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.13E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.55E-02	0.00E+00	4.12E-06	2.52E-04	7.88E-06	-8.32E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-2" A4 (2.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.87E-08	0.00E+00	4.44E-12	1.07E-11	8.08E-12	-5.41E-05
NHWD	[kg]	1.18E+00	0.00E+00	1.54E-05	3.75E-03	1.08E-01	9.42E-02
RWD	[kg]	2.41E-03	0.00E+00	2.09E-07	1.06E-06	5.19E-07	-9.25E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.89E+00	0.00E+00	0.00E+00	2.04E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.94E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.47E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 75-2" A4 (2.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.46 HAKU SADDLE PN16 WATER, A4: HAKU ABS 100-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 100-2" (3.32 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.62E+00	0.00E+00	1.29E-02	7.82E-01	3.24E-03	-2.01E+00
GWP-fossil	[kg CO_2-Eq.]	9.47E+00	0.00E+00	1.28E-02	7.82E-01	3.21E-03	-2.01E+00
GWP-biogenic	[kg CO_2-Eq.]	1.26E-01	0.00E+00	2.38E-05	2.94E-05	2.43E-05	8.36E-03
GWP-luluc	[kg CO_2-Eq.]	2.61E-02	0.00E+00	1.34E-04	2.00E-05	1.01E-05	-2.10E-03
ODP	[kg CFC11-Eq.]	1.31E-10	0.00E+00	2.16E-15	5.91E-14	1.04E-14	-8.62E-13
AP	[mol H^+-Eq.]	3.05E-02	0.00E+00	4.66E-05	7.74E-05	2.00E-05	-6.82E-03
EP-freshwater	[kg P-Eq.]	4.32E-05	0.00E+00	3.51E-08	1.67E-08	4.53E-09	-1.37E-06
EP-marine	[kg N-Eq.]	7.56E-03	0.00E+00	2.21E-05	2.06E-05	4.88E-06	-1.07E-03
EP-terrestrial	[mol N-Eq.]	8.32E-02	0.00E+00	2.39E-04	3.67E-04	5.32E-05	-1.08E-02
POCP	[kg NMVOC-Eq.]	2.01E-02	0.00E+00	4.26E-05	5.85E-05	1.51E-05	-3.70E-03
ADPE	[kg Sb-Eq.]	3.27E-05	0.00E+00	8.65E-10	7.09E-10	2.18E-10	-2.39E-05
ADPF	[MJ]	1.26E+02	0.00E+00	1.67E-01	1.24E-01	5.25E-02	-2.35E+01
WDP	[m^3 world-Eq deprived]	1.26E+00	0.00E+00	5.95E-05	6.70E-02	3.75E-04	-3.49E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 100-2" (3.32 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.13E+02	0.00E+00	1.26E-02	3.40E-02	8.55E-03	-2.40E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.15E+02	0.00E+00	1.26E-02	3.40E-02	8.55E-03	-2.40E+00
PENRE	[MJ]	1.15E+02	0.00E+00	1.67E-01	1.05E+01	5.25E-02	-2.35E+01
PENRM	[MJ]	1.09E+01	0.00E+00	0.00E+00	-1.04E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.26E+02	0.00E+00	1.67E-01	1.24E-01	5.25E-02	-2.35E+01
SM	[kg]	2.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.77E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.71E-02	0.00E+00	6.21E-06	1.57E-03	1.10E-05	-1.29E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 100-2" (3.32 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.27E-07	0.00E+00	6.69E-12	6.68E-11	1.13E-11	-6.71E-05
NHWD	[kg]	1.64E+00	0.00E+00	2.33E-05	2.35E-02	1.51E-01	1.45E-01
RWD	[kg]	3.46E-03	0.00E+00	3.15E-07	6.64E-06	7.28E-07	-3.89E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.65E+00	0.00E+00	0.00E+00	2.87E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.21E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.17E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 100-2" (3.32 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.47 HAKU SADDLE PN16 WATER, A4: HAKU ABS 220-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 220-2" (6.71 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.92E+01	0.00E+00	2.61E-02	1.15E+00	6.74E-03	-3.72E+00
GWP-fossil	[kg CO_2-Eq.]	1.89E+01	0.00E+00	2.58E-02	1.15E+00	6.67E-03	-3.73E+00
GWP-biogenic	[kg CO_2-Eq.]	2.66E-01	0.00E+00	4.82E-05	4.32E-05	5.05E-05	1.67E-02
GWP-luluc	[kg CO_2-Eq.]	5.39E-02	0.00E+00	2.71E-04	2.93E-05	2.10E-05	-3.45E-03
ODP	[kg CFC11-Eq.]	2.72E-10	0.00E+00	4.37E-15	8.70E-14	2.16E-14	-3.69E-13
AP	[mol H^+-Eq.]	5.99E-02	0.00E+00	9.42E-05	1.14E-04	4.16E-05	-1.23E-02
EP-freshwater	[kg P-Eq.]	9.04E-05	0.00E+00	7.10E-08	2.45E-08	9.43E-09	-2.32E-06
EP-marine	[kg N-Eq.]	1.55E-02	0.00E+00	4.48E-05	3.03E-05	1.01E-05	-1.93E-03
EP-terrestrial	[mol N-Eq.]	1.71E-01	0.00E+00	4.84E-04	5.40E-04	1.11E-04	-1.92E-02
POCP	[kg NMVOC-Eq.]	4.06E-02	0.00E+00	8.62E-05	8.61E-05	3.14E-05	-6.78E-03
ADPE	[kg Sb-Eq.]	5.05E-05	0.00E+00	1.75E-09	1.04E-09	4.53E-10	-4.19E-05
ADPF	[MJ]	2.42E+02	0.00E+00	3.37E-01	1.82E-01	1.09E-01	-4.24E+01
WDP	[m^3 world-Eq deprived]	2.57E+00	0.00E+00	1.20E-04	9.85E-02	7.79E-04	-6.00E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 220-2" (6.71 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.37E+02	0.00E+00	2.54E-02	5.01E-02	1.78E-02	-3.50E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.39E+02	0.00E+00	2.54E-02	5.01E-02	1.78E-02	-3.50E+00
PENRE	[MJ]	2.25E+02	0.00E+00	3.37E-01	1.68E+01	1.09E-01	-4.24E+01
PENRM	[MJ]	1.71E+01	0.00E+00	0.00E+00	-1.66E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.42E+02	0.00E+00	3.37E-01	1.82E-01	1.09E-01	-4.24E+01
SM	[kg]	5.07E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.55E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.37E-01	0.00E+00	1.26E-05	2.31E-03	2.30E-05	-2.59E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 220-2" (6.71 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.65E-07	0.00E+00	1.35E-11	9.82E-11	2.36E-11	-1.10E-04
NHWD	[kg]	3.46E+00	0.00E+00	4.71E-05	3.45E-02	3.14E-01	2.94E-01
RWD	[kg]	7.07E-03	0.00E+00	6.37E-07	9.77E-06	1.51E-06	-5.80E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.71E+00	0.00E+00	0.00E+00	5.96E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.78E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.19E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 220-2" (6.71 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.48 HAKU SADDLE PN16 WATER, A4: HAKU ABS 87-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 87-5/4" A4 (2.44 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.96E+00	0.00E+00	9.48E-03	5.62E-01	2.38E-03	-1.46E+00
GWP-fossil	[kg CO_2-Eq.]	6.85E+00	0.00E+00	9.36E-03	5.62E-01	2.36E-03	-1.47E+00
GWP-biogenic	[kg CO_2-Eq.]	9.37E-02	0.00E+00	1.75E-05	2.11E-05	1.79E-05	6.04E-03
GWP-luluc	[kg CO_2-Eq.]	1.96E-02	0.00E+00	9.83E-05	1.44E-05	7.42E-06	-1.70E-03
ODP	[kg CFC11-Eq.]	9.89E-11	0.00E+00	1.59E-15	4.25E-14	7.64E-15	-6.93E-13
AP	[mol H^+-Eq.]	2.36E-02	0.00E+00	3.42E-05	5.57E-05	1.47E-05	-5.22E-03
EP-freshwater	[kg P-Eq.]	3.20E-05	0.00E+00	2.58E-08	1.20E-08	3.34E-09	-1.08E-06
EP-marine	[kg N-Eq.]	5.63E-03	0.00E+00	1.62E-05	1.48E-05	3.59E-06	-8.14E-04
EP-terrestrial	[mol N-Eq.]	6.20E-02	0.00E+00	1.76E-04	2.64E-04	3.91E-05	-8.26E-03
POCP	[kg NMVOC-Eq.]	1.50E-02	0.00E+00	3.13E-05	4.21E-05	1.11E-05	-2.77E-03
ADPE	[kg Sb-Eq.]	3.04E-05	0.00E+00	6.35E-10	5.10E-10	1.60E-10	-1.90E-05
ADPF	[MJ]	9.09E+01	0.00E+00	1.22E-01	8.91E-02	3.86E-02	-1.72E+01
WDP	[m^3 world-Eq deprived]	9.66E-01	0.00E+00	4.37E-05	4.82E-02	2.76E-04	-2.77E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 87-5/4" A4 (2.44 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.49E+01	0.00E+00	9.23E-03	2.45E-02	6.29E-03	-1.91E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.61E+01	0.00E+00	9.23E-03	2.45E-02	6.29E-03	-1.91E+00
PENRE	[MJ]	8.28E+01	0.00E+00	1.22E-01	7.69E+00	3.86E-02	-1.72E+01
PENRM	[MJ]	8.11E+00	0.00E+00	0.00E+00	-7.60E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.09E+01	0.00E+00	1.22E-01	8.91E-02	3.86E-02	-1.72E+01
SM	[kg]	1.80E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.41E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.01E-02	0.00E+00	4.56E-06	1.13E-03	8.13E-06	-8.86E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 87-5/4" A4 (2.44 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.47E-08	0.00E+00	4.91E-12	4.81E-11	8.34E-12	-5.64E-05
NHWD	[kg]	1.22E+00	0.00E+00	1.71E-05	1.69E-02	1.11E-01	9.83E-02
RWD	[kg]	2.62E-03	0.00E+00	2.31E-07	4.78E-06	5.35E-07	-2.86E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.94E+00	0.00E+00	0.00E+00	2.11E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.72E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.56E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WATER, A4: HAKU ABS 87-5/4" A4 (2.44 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.49 HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-1" m_B A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-1" m_B A4 (3.43 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.85E+00	0.00E+00	1.33E-02	6.33E-01	3.42E-03	-2.89E+00
GWP-fossil	[kg CO_2-Eq.]	9.74E+00	0.00E+00	1.32E-02	6.33E-01	3.39E-03	-2.90E+00
GWP-biogenic	[kg CO_2-Eq.]	9.14E-02	0.00E+00	2.46E-05	2.38E-05	2.57E-05	1.37E-02
GWP-luluc	[kg CO_2-Eq.]	2.46E-02	0.00E+00	1.38E-04	1.62E-05	1.06E-05	-3.19E-03
ODP	[kg CFC11-Eq.]	1.17E-10	0.00E+00	2.23E-15	4.79E-14	1.10E-14	3.24E-13
AP	[mol H^+-Eq.]	3.64E-02	0.00E+00	4.81E-05	6.26E-05	2.11E-05	-1.06E-02
EP-freshwater	[kg P-Eq.]	3.68E-05	0.00E+00	3.63E-08	1.35E-08	4.79E-09	-2.04E-06
EP-marine	[kg N-Eq.]	7.32E-03	0.00E+00	2.29E-05	1.67E-05	5.15E-06	-1.63E-03
EP-terrestrial	[mol N-Eq.]	7.99E-02	0.00E+00	2.47E-04	2.97E-04	5.62E-05	-1.64E-02
POCP	[kg NMVOC-Eq.]	2.08E-02	0.00E+00	4.40E-05	4.74E-05	1.60E-05	-5.61E-03
ADPE	[kg Sb-Eq.]	6.69E-05	0.00E+00	8.95E-10	5.74E-10	2.30E-10	-3.87E-05
ADPF	[MJ]	1.26E+02	0.00E+00	1.72E-01	1.00E-01	5.54E-02	-3.29E+01
WDP	[m^3 world-Eq deprived]	1.32E+00	0.00E+00	6.15E-05	5.42E-02	3.96E-04	-5.47E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-1" m_B A4 (3.43 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.00E+02	0.00E+00	1.30E-02	2.76E-02	9.03E-03	-2.84E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.01E+02	0.00E+00	1.30E-02	2.76E-02	9.03E-03	-2.84E+00
PENRE	[MJ]	1.17E+02	0.00E+00	1.72E-01	8.48E+00	5.54E-02	-3.29E+01
PENRM	[MJ]	8.89E+00	0.00E+00	0.00E+00	-8.38E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.26E+02	0.00E+00	1.72E-01	1.00E-01	5.54E-02	-3.29E+01
SM	[kg]	2.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.74E-01	0.00E+00	6.42E-06	1.27E-03	1.17E-05	-1.90E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-1" m_B A4 (3.43 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.05E-07	0.00E+00	6.92E-12	5.41E-11	1.20E-11	-1.13E-04
NHWD	[kg]	1.39E+00	0.00E+00	2.41E-05	1.90E-02	1.60E-01	2.14E-01
RWD	[kg]	3.02E-03	0.00E+00	3.25E-07	5.38E-06	7.68E-07	-3.56E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.99E+00	0.00E+00	0.00E+00	3.03E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-1" m_B A4 (3.43 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.50 HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-5/4" m_B A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-5/4" m_B A4 (3.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.06E+01	0.00E+00	1.44E-02	6.39E-01	3.71E-03	-3.04E+00
GWP-fossil	[kg CO_2-Eq.]	1.04E+01	0.00E+00	1.42E-02	6.39E-01	3.67E-03	-3.05E+00
GWP-biogenic	[kg CO_2-Eq.]	1.02E-01	0.00E+00	2.66E-05	2.40E-05	2.78E-05	1.45E-02
GWP-luluc	[kg CO_2-Eq.]	2.67E-02	0.00E+00	1.49E-04	1.63E-05	1.15E-05	-3.27E-03
ODP	[kg CFC11-Eq.]	1.28E-10	0.00E+00	2.41E-15	4.84E-14	1.19E-14	4.63E-13
AP	[mol H^+-Eq.]	3.85E-02	0.00E+00	5.19E-05	6.33E-05	2.29E-05	-1.10E-02
EP-freshwater	[kg P-Eq.]	4.05E-05	0.00E+00	3.91E-08	1.36E-08	5.19E-09	-2.10E-06
EP-marine	[kg N-Eq.]	7.93E-03	0.00E+00	2.47E-05	1.69E-05	5.58E-06	-1.69E-03
EP-terrestrial	[mol N-Eq.]	8.66E-02	0.00E+00	2.67E-04	3.00E-04	6.09E-05	-1.70E-02
POCP	[kg NMVOC-Eq.]	2.23E-02	0.00E+00	4.75E-05	4.79E-05	1.73E-05	-5.86E-03
ADPE	[kg Sb-Eq.]	6.72E-05	0.00E+00	9.65E-10	5.80E-10	2.49E-10	-4.01E-05
ADPF	[MJ]	1.34E+02	0.00E+00	1.86E-01	1.01E-01	6.01E-02	-3.44E+01
WDP	[m^3 world-Eq deprived]	1.42E+00	0.00E+00	6.64E-05	5.48E-02	4.29E-04	-5.65E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-5/4" m_B A4 (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.10E+02	0.00E+00	1.40E-02	2.78E-02	9.79E-03	-2.86E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.11E+02	0.00E+00	1.40E-02	2.78E-02	9.79E-03	-2.86E+00
PENRE	[MJ]	1.25E+02	0.00E+00	1.86E-01	8.59E+00	6.01E-02	-3.44E+01
PENRM	[MJ]	9.10E+00	0.00E+00	0.00E+00	-8.49E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.34E+02	0.00E+00	1.86E-01	1.01E-01	6.01E-02	-3.44E+01
SM	[kg]	2.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.79E-01	0.00E+00	6.93E-06	1.29E-03	1.26E-05	-2.03E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-5/4" m_B A4 (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.15E-07	0.00E+00	7.46E-12	5.46E-11	1.30E-11	-1.15E-04
NHWD	[kg]	1.53E+00	0.00E+00	2.60E-05	1.92E-02	1.73E-01	2.29E-01
RWD	[kg]	3.30E-03	0.00E+00	3.51E-07	5.43E-06	8.33E-07	-3.60E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.24E+00	0.00E+00	0.00E+00	3.28E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-5/4" m_B A4 (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.51 HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-6/4" m_B A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-6/4" m_B A4 (3.48 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.99E+00	0.00E+00	1.35E-02	6.40E-01	3.47E-03	-2.92E+00
GWP-fossil	[kg CO_2-Eq.]	9.87E+00	0.00E+00	1.34E-02	6.40E-01	3.44E-03	-2.93E+00
GWP-biogenic	[kg CO_2-Eq.]	9.33E-02	0.00E+00	2.50E-05	2.40E-05	2.61E-05	1.39E-02
GWP-luluc	[kg CO_2-Eq.]	2.50E-02	0.00E+00	1.40E-04	1.63E-05	1.08E-05	-3.21E-03
ODP	[kg CFC11-Eq.]	1.19E-10	0.00E+00	2.27E-15	4.84E-14	1.11E-14	3.29E-13
AP	[mol H^+-Eq.]	3.68E-02	0.00E+00	4.88E-05	6.34E-05	2.14E-05	-1.07E-02
EP-freshwater	[kg P-Eq.]	3.75E-05	0.00E+00	3.68E-08	1.37E-08	4.86E-09	-2.05E-06
EP-marine	[kg N-Eq.]	7.43E-03	0.00E+00	2.32E-05	1.69E-05	5.23E-06	-1.64E-03
EP-terrestrial	[mol N-Eq.]	8.12E-02	0.00E+00	2.51E-04	3.01E-04	5.70E-05	-1.65E-02
POCP	[kg NMVOC-Eq.]	2.10E-02	0.00E+00	4.47E-05	4.79E-05	1.62E-05	-5.66E-03
ADPE	[kg Sb-Eq.]	6.69E-05	0.00E+00	9.08E-10	5.81E-10	2.33E-10	-3.90E-05
ADPF	[MJ]	1.28E+02	0.00E+00	1.75E-01	1.01E-01	5.62E-02	-3.32E+01
WDP	[m^3 world-Eq deprived]	1.34E+00	0.00E+00	6.24E-05	5.49E-02	4.02E-04	-5.50E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-6/4" m_B A4 (3.48 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.02E+02	0.00E+00	1.32E-02	2.79E-02	9.17E-03	-2.86E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.03E+02	0.00E+00	1.32E-02	2.79E-02	9.17E-03	-2.86E+00
PENRE	[MJ]	1.19E+02	0.00E+00	1.75E-01	8.59E+00	5.62E-02	-3.32E+01
PENRM	[MJ]	9.00E+00	0.00E+00	0.00E+00	-8.49E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.28E+02	0.00E+00	1.75E-01	1.01E-01	5.62E-02	-3.32E+01
SM	[kg]	2.17E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.17E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.75E-01	0.00E+00	6.52E-06	1.29E-03	1.18E-05	-1.92E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-6/4" m_B A4 (3.48 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.07E-07	0.00E+00	7.02E-12	5.47E-11	1.21E-11	-1.13E-04
NHWD	[kg]	1.42E+00	0.00E+00	2.44E-05	1.92E-02	1.62E-01	2.17E-01
RWD	[kg]	3.07E-03	0.00E+00	3.30E-07	5.44E-06	7.80E-07	-3.59E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.03E+00	0.00E+00	0.00E+00	3.07E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.92E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.78E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 280-6/4" m_B A4 (3.48 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.52 HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-1" m_B

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-1" m_B (3.58 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.00E+01	0.00E+00	1.39E-02	7.87E-01	3.52E-03	-3.34E+00
GWP-fossil	[kg CO_2-Eq.]	9.90E+00	0.00E+00	1.38E-02	7.87E-01	3.48E-03	-3.35E+00
GWP-biogenic	[kg CO_2-Eq.]	8.36E-02	0.00E+00	2.57E-05	2.96E-05	2.64E-05	1.57E-02
GWP-luluc	[kg CO_2-Eq.]	2.44E-02	0.00E+00	1.45E-04	2.01E-05	1.10E-05	-3.61E-03
ODP	[kg CFC11-Eq.]	1.14E-10	0.00E+00	2.33E-15	5.96E-14	1.13E-14	2.23E-13
AP	[mol H^+-Eq.]	3.69E-02	0.00E+00	5.02E-05	7.79E-05	2.17E-05	-1.20E-02
EP-freshwater	[kg P-Eq.]	3.55E-05	0.00E+00	3.79E-08	1.68E-08	4.92E-09	-2.32E-06
EP-marine	[kg N-Eq.]	7.24E-03	0.00E+00	2.39E-05	2.08E-05	5.30E-06	-1.86E-03
EP-terrestrial	[mol N-Eq.]	7.89E-02	0.00E+00	2.58E-04	3.70E-04	5.78E-05	-1.87E-02
POCP	[kg NMVOC-Eq.]	2.09E-02	0.00E+00	4.60E-05	5.90E-05	1.64E-05	-6.41E-03
ADPE	[kg Sb-Eq.]	6.95E-05	0.00E+00	9.34E-10	7.14E-10	2.37E-10	-4.37E-05
ADPF	[MJ]	1.31E+02	0.00E+00	1.80E-01	1.25E-01	5.70E-02	-3.81E+01
WDP	[m^3 world-Eq deprived]	1.33E+00	0.00E+00	6.42E-05	6.75E-02	4.07E-04	-6.18E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-1" m_B (3.58 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.75E+01	0.00E+00	1.36E-02	3.43E-02	9.29E-03	-3.29E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.87E+01	0.00E+00	1.36E-02	3.43E-02	9.29E-03	-3.29E+00
PENRE	[MJ]	1.20E+02	0.00E+00	1.80E-01	9.87E+00	5.70E-02	-3.81E+01
PENRM	[MJ]	1.03E+01	0.00E+00	0.00E+00	-9.75E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.31E+02	0.00E+00	1.80E-01	1.25E-01	5.70E-02	-3.81E+01
SM	[kg]	2.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.98E-01	0.00E+00	6.70E-06	1.58E-03	1.20E-05	-2.21E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-1" m_B (3.58 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.95E-08	0.00E+00	7.22E-12	6.73E-11	1.23E-11	-1.26E-04
NHWD	[kg]	1.31E+00	0.00E+00	2.51E-05	2.37E-02	1.64E-01	2.49E-01
RWD	[kg]	2.91E-03	0.00E+00	3.40E-07	6.69E-06	7.90E-07	-4.33E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.82E+00	0.00E+00	0.00E+00	3.11E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.22E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.19E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-1" m_B (3.58 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.53 HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-5/4" m_B

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-5/4" m_B (3.56 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.00E+01	0.00E+00	1.39E-02	7.53E-01	3.51E-03	-3.20E+00
GWP-fossil	[kg CO_2-Eq.]	9.93E+00	0.00E+00	1.37E-02	7.53E-01	3.48E-03	-3.22E+00
GWP-biogenic	[kg CO_2-Eq.]	8.69E-02	0.00E+00	2.56E-05	2.83E-05	2.63E-05	1.51E-02
GWP-luluc	[kg CO_2-Eq.]	2.47E-02	0.00E+00	1.44E-04	1.92E-05	1.09E-05	-3.42E-03
ODP	[kg CFC11-Eq.]	1.16E-10	0.00E+00	2.32E-15	5.70E-14	1.13E-14	2.45E-13
AP	[mol H^+-Eq.]	3.67E-02	0.00E+00	4.99E-05	7.46E-05	2.17E-05	-1.15E-02
EP-freshwater	[kg P-Eq.]	3.63E-05	0.00E+00	3.76E-08	1.61E-08	4.91E-09	-2.20E-06
EP-marine	[kg N-Eq.]	7.32E-03	0.00E+00	2.37E-05	1.99E-05	5.29E-06	-1.77E-03
EP-terrestrial	[mol N-Eq.]	7.98E-02	0.00E+00	2.57E-04	3.54E-04	5.76E-05	-1.78E-02
POCP	[kg NMVOC-Eq.]	2.10E-02	0.00E+00	4.57E-05	5.64E-05	1.64E-05	-6.14E-03
ADPE	[kg Sb-Eq.]	6.70E-05	0.00E+00	9.29E-10	6.83E-10	2.36E-10	-4.15E-05
ADPF	[MJ]	1.30E+02	0.00E+00	1.79E-01	1.19E-01	5.69E-02	-3.65E+01
WDP	[m^3 world-Eq deprived]	1.33E+00	0.00E+00	6.39E-05	6.46E-02	4.06E-04	-5.87E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-5/4" m_B (3.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.91E+01	0.00E+00	1.35E-02	3.28E-02	9.27E-03	-3.10E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.00E+02	0.00E+00	1.35E-02	3.28E-02	9.27E-03	-3.10E+00
PENRE	[MJ]	1.20E+02	0.00E+00	1.79E-01	9.64E+00	5.69E-02	-3.65E+01
PENRM	[MJ]	1.00E+01	0.00E+00	0.00E+00	-9.52E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.30E+02	0.00E+00	1.79E-01	1.19E-01	5.69E-02	-3.65E+01
SM	[kg]	2.07E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.94E-01	0.00E+00	6.67E-06	1.52E-03	1.20E-05	-2.13E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-5/4" m_B (3.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.02E-07	0.00E+00	7.18E-12	6.44E-11	1.23E-11	-1.19E-04
NHWD	[kg]	1.34E+00	0.00E+00	2.50E-05	2.26E-02	1.64E-01	2.41E-01
RWD	[kg]	2.96E-03	0.00E+00	3.38E-07	6.40E-06	7.88E-07	-4.13E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.90E+00	0.00E+00	0.00E+00	3.11E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.17E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.09E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-5/4" m_B (3.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.54 HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-6/4" m_B

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-6/4" m_B (3.39 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.60E+00	0.00E+00	1.32E-02	7.55E-01	3.33E-03	-3.12E+00
GWP-fossil	[kg CO_2-Eq.]	9.50E+00	0.00E+00	1.30E-02	7.55E-01	3.29E-03	-3.13E+00
GWP-biogenic	[kg CO_2-Eq.]	7.99E-02	0.00E+00	2.43E-05	2.84E-05	2.50E-05	1.45E-02
GWP-luluc	[kg CO_2-Eq.]	2.33E-02	0.00E+00	1.37E-04	1.93E-05	1.04E-05	-3.37E-03
ODP	[kg CFC11-Eq.]	1.09E-10	0.00E+00	2.21E-15	5.71E-14	1.07E-14	1.36E-13
AP	[mol H^+-Eq.]	3.54E-02	0.00E+00	4.76E-05	7.48E-05	2.06E-05	-1.12E-02
EP-freshwater	[kg P-Eq.]	3.39E-05	0.00E+00	3.58E-08	1.61E-08	4.66E-09	-2.16E-06
EP-marine	[kg N-Eq.]	6.94E-03	0.00E+00	2.26E-05	1.99E-05	5.01E-06	-1.73E-03
EP-terrestrial	[mol N-Eq.]	7.56E-02	0.00E+00	2.44E-04	3.55E-04	5.46E-05	-1.74E-02
POCP	[kg NMVOC-Eq.]	2.01E-02	0.00E+00	4.35E-05	5.66E-05	1.55E-05	-5.98E-03
ADPE	[kg Sb-Eq.]	6.68E-05	0.00E+00	8.84E-10	6.85E-10	2.24E-10	-4.07E-05
ADPF	[MJ]	1.25E+02	0.00E+00	1.70E-01	1.20E-01	5.39E-02	-3.56E+01
WDP	[m^3 world-Eq deprived]	1.27E+00	0.00E+00	6.08E-05	6.47E-02	3.85E-04	-5.77E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-6/4" m_B (3.39 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.30E+01	0.00E+00	1.28E-02	3.29E-02	8.79E-03	-3.11E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.42E+01	0.00E+00	1.28E-02	3.29E-02	8.79E-03	-3.11E+00
PENRE	[MJ]	1.15E+02	0.00E+00	1.70E-01	9.57E+00	5.39E-02	-3.56E+01
PENRM	[MJ]	9.96E+00	0.00E+00	0.00E+00	-9.45E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.25E+02	0.00E+00	1.70E-01	1.20E-01	5.39E-02	-3.56E+01
SM	[kg]	1.93E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.90E-01	0.00E+00	6.35E-06	1.52E-03	1.14E-05	-2.06E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-6/4" m_B (3.39 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.51E-08	0.00E+00	6.84E-12	6.45E-11	1.16E-11	-1.17E-04
NHWD	[kg]	1.25E+00	0.00E+00	2.38E-05	2.27E-02	1.55E-01	2.32E-01
RWD	[kg]	2.79E-03	0.00E+00	3.22E-07	6.42E-06	7.47E-07	-4.13E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.74E+00	0.00E+00	0.00E+00	2.95E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.17E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.10E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 315-6/4" m_B (3.39 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.55 HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 355-2" m_B

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 355-2" m_B (4.04 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.13E+01	0.00E+00	1.57E-02	8.85E-01	3.97E-03	-3.58E+00
GWP-fossil	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.55E-02	8.85E-01	3.93E-03	-3.59E+00
GWP-biogenic	[kg CO_2-Eq.]	1.00E-01	0.00E+00	2.90E-05	3.32E-05	2.98E-05	1.67E-02
GWP-luluc	[kg CO_2-Eq.]	2.80E-02	0.00E+00	1.63E-04	2.26E-05	1.24E-05	-3.61E-03
ODP	[kg CFC11-Eq.]	1.32E-10	0.00E+00	2.63E-15	6.70E-14	1.27E-14	2.32E-13
AP	[mol H^+-Eq.]	4.03E-02	0.00E+00	5.67E-05	8.76E-05	2.45E-05	-1.25E-02
EP-freshwater	[kg P-Eq.]	4.15E-05	0.00E+00	4.27E-08	1.89E-08	5.56E-09	-2.36E-06
EP-marine	[kg N-Eq.]	8.27E-03	0.00E+00	2.69E-05	2.34E-05	5.98E-06	-1.93E-03
EP-terrestrial	[mol N-Eq.]	9.02E-02	0.00E+00	2.91E-04	4.16E-04	6.52E-05	-1.94E-02
POCP	[kg NMVOC-Eq.]	2.37E-02	0.00E+00	5.19E-05	6.63E-05	1.85E-05	-6.74E-03
ADPE	[kg Sb-Eq.]	6.77E-05	0.00E+00	1.05E-09	8.03E-10	2.67E-10	-4.42E-05
ADPF	[MJ]	1.47E+02	0.00E+00	2.03E-01	1.40E-01	6.43E-02	-4.06E+01
WDP	[m^3 world-Eq deprived]	1.50E+00	0.00E+00	7.25E-05	7.59E-02	4.60E-04	-6.26E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 355-2" m_B (4.04 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.13E+02	0.00E+00	1.53E-02	3.86E-02	1.05E-02	-3.32E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.14E+02	0.00E+00	1.53E-02	3.86E-02	1.05E-02	-3.32E+00
PENRE	[MJ]	1.36E+02	0.00E+00	2.03E-01	1.18E+01	6.43E-02	-4.06E+01
PENRM	[MJ]	1.17E+01	0.00E+00	0.00E+00	-1.17E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.47E+02	0.00E+00	2.03E-01	1.40E-01	6.43E-02	-4.06E+01
SM	[kg]	2.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.19E-01	0.00E+00	7.56E-06	1.78E-03	1.35E-05	-2.44E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 355-2" m_B (4.04 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.16E-07	0.00E+00	8.15E-12	7.56E-11	1.39E-11	-1.23E-04
NHWD	[kg]	1.52E+00	0.00E+00	2.83E-05	2.66E-02	1.85E-01	2.77E-01
RWD	[kg]	3.33E-03	0.00E+00	3.83E-07	7.53E-06	8.92E-07	-4.73E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.19E+00	0.00E+00	0.00E+00	3.52E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.37E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.46E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 355-2" m_B (4.04 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.56 HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-6/4" m_B A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-6/4" m_B A4 (4.48 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.21E+01	0.00E+00	1.74E-02	9.77E-01	4.41E-03	-3.78E+00
GWP-fossil	[kg CO_2-Eq.]	1.20E+01	0.00E+00	1.72E-02	9.77E-01	4.36E-03	-3.80E+00
GWP-biogenic	[kg CO_2-Eq.]	1.07E-01	0.00E+00	3.22E-05	3.67E-05	3.31E-05	1.76E-02
GWP-luluc	[kg CO_2-Eq.]	3.04E-02	0.00E+00	1.81E-04	2.49E-05	1.37E-05	-3.80E-03
ODP	[kg CFC11-Eq.]	1.41E-10	0.00E+00	2.92E-15	7.39E-14	1.41E-14	1.17E-13
AP	[mol H^+-Eq.]	4.18E-02	0.00E+00	6.29E-05	9.67E-05	2.72E-05	-1.31E-02
EP-freshwater	[kg P-Eq.]	4.29E-05	0.00E+00	4.74E-08	2.08E-08	6.17E-09	-2.49E-06
EP-marine	[kg N-Eq.]	8.60E-03	0.00E+00	2.99E-05	2.58E-05	6.63E-06	-2.04E-03
EP-terrestrial	[mol N-Eq.]	9.37E-02	0.00E+00	3.23E-04	4.59E-04	7.24E-05	-2.04E-02
POCP	[kg NMVOC-Eq.]	2.47E-02	0.00E+00	5.75E-05	7.32E-05	2.06E-05	-7.11E-03
ADPE	[kg Sb-Eq.]	7.12E-05	0.00E+00	1.17E-09	8.86E-10	2.96E-10	-4.64E-05
ADPF	[MJ]	1.58E+02	0.00E+00	2.25E-01	1.55E-01	7.14E-02	-4.30E+01
WDP	[m^3 world-Eq deprived]	1.54E+00	0.00E+00	8.04E-05	8.38E-02	5.10E-04	-6.58E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-6/4" m_B A4 (4.48 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.21E+02	0.00E+00	1.70E-02	4.26E-02	1.16E-02	-3.56E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.22E+02	0.00E+00	1.70E-02	4.26E-02	1.16E-02	-3.56E+00
PENRE	[MJ]	1.46E+02	0.00E+00	2.25E-01	4.63E+00	7.14E-02	-4.30E+01
PENRM	[MJ]	1.26E+01	0.00E+00	0.00E+00	-4.48E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.58E+02	0.00E+00	2.25E-01	1.55E-01	7.14E-02	-4.30E+01
SM	[kg]	2.65E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.55E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.44E-01	0.00E+00	8.39E-06	1.97E-03	1.50E-05	-2.58E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-6/4" m_B A4 (4.48 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.22E-07	0.00E+00	9.03E-12	8.35E-11	1.54E-11	-1.28E-04
NHWD	[kg]	1.51E+00	0.00E+00	3.14E-05	2.94E-02	2.06E-01	2.92E-01
RWD	[kg]	3.57E-03	0.00E+00	4.25E-07	8.31E-06	9.90E-07	-5.17E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.15E+00	0.00E+00	0.00E+00	3.90E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.51E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.71E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-6/4" m_B A4 (4.48 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.57 HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-2" m_B A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-2" m_B A4 (4.28 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.19E+01	0.00E+00	1.67E-02	9.84E-01	4.19E-03	-3.91E+00
GWP-fossil	[kg CO_2-Eq.]	1.17E+01	0.00E+00	1.65E-02	9.84E-01	4.15E-03	-3.92E+00
GWP-biogenic	[kg CO_2-Eq.]	1.01E-01	0.00E+00	3.07E-05	3.69E-05	3.14E-05	1.83E-02
GWP-luluc	[kg CO_2-Eq.]	2.91E-02	0.00E+00	1.73E-04	2.51E-05	1.30E-05	-3.83E-03
ODP	[kg CFC11-Eq.]	1.36E-10	0.00E+00	2.79E-15	7.44E-14	1.34E-14	2.62E-13
AP	[mol H^+-Eq.]	4.18E-02	0.00E+00	6.01E-05	9.74E-05	2.59E-05	-1.35E-02
EP-freshwater	[kg P-Eq.]	4.27E-05	0.00E+00	4.53E-08	2.10E-08	5.86E-09	-2.52E-06
EP-marine	[kg N-Eq.]	8.57E-03	0.00E+00	2.85E-05	2.60E-05	6.31E-06	-2.09E-03
EP-terrestrial	[mol N-Eq.]	9.34E-02	0.00E+00	3.09E-04	4.62E-04	6.88E-05	-2.09E-02
POCP	[kg NMVOC-Eq.]	2.47E-02	0.00E+00	5.49E-05	7.37E-05	1.96E-05	-7.32E-03
ADPE	[kg Sb-Eq.]	6.89E-05	0.00E+00	1.12E-09	8.92E-10	2.82E-10	-4.72E-05
ADPF	[MJ]	1.55E+02	0.00E+00	2.15E-01	1.56E-01	6.78E-02	-4.43E+01
WDP	[m^3 world-Eq deprived]	1.56E+00	0.00E+00	7.68E-05	8.43E-02	4.85E-04	-6.68E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-2" m_B A4 (4.28 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.17E+02	0.00E+00	1.62E-02	4.28E-02	1.11E-02	-3.53E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.18E+02	0.00E+00	1.62E-02	4.28E-02	1.11E-02	-3.53E+00
PENRE	[MJ]	1.42E+02	0.00E+00	2.15E-01	1.23E+01	6.78E-02	-4.43E+01
PENRM	[MJ]	1.27E+01	0.00E+00	0.00E+00	-1.21E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.55E+02	0.00E+00	2.15E-01	1.56E-01	6.78E-02	-4.43E+01
SM	[kg]	2.39E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.63E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.42E-01	0.00E+00	8.01E-06	1.98E-03	1.43E-05	-2.70E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-2" m_B A4 (4.28 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.19E-07	0.00E+00	8.63E-12	8.40E-11	1.47E-11	-1.29E-04
NHWD	[kg]	1.54E+00	0.00E+00	3.00E-05	2.95E-02	1.95E-01	3.07E-01
RWD	[kg]	3.40E-03	0.00E+00	4.06E-07	8.36E-06	9.41E-07	-5.20E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.22E+00	0.00E+00	0.00E+00	3.71E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.52E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.73E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 400-2" m_B A4 (4.28 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.58 HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-6/4" m_B A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-6/4" m_B A4 (4.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.25E+01	0.00E+00	1.79E-02	1.10E+00	4.49E-03	-3.99E+00
GWP-fossil	[kg CO_2-Eq.]	1.24E+01	0.00E+00	1.77E-02	1.10E+00	4.44E-03	-4.01E+00
GWP-biogenic	[kg CO_2-Eq.]	1.03E-01	0.00E+00	3.30E-05	4.12E-05	3.37E-05	1.84E-02
GWP-luluc	[kg CO_2-Eq.]	3.06E-02	0.00E+00	1.86E-04	2.80E-05	1.40E-05	-3.86E-03
ODP	[kg CFC11-Eq.]	1.41E-10	0.00E+00	2.99E-15	8.30E-14	1.44E-14	-1.56E-14
AP	[mol H^+-Eq.]	4.27E-02	0.00E+00	6.45E-05	1.09E-04	2.77E-05	-1.36E-02
EP-freshwater	[kg P-Eq.]	4.27E-05	0.00E+00	4.86E-08	2.34E-08	6.28E-09	-2.56E-06
EP-marine	[kg N-Eq.]	8.74E-03	0.00E+00	3.07E-05	2.89E-05	6.75E-06	-2.12E-03
EP-terrestrial	[mol N-Eq.]	9.50E-02	0.00E+00	3.32E-04	5.15E-04	7.37E-05	-2.11E-02
POCP	[kg NMVOC-Eq.]	2.54E-02	0.00E+00	5.91E-05	8.21E-05	2.10E-05	-7.41E-03
ADPE	[kg Sb-Eq.]	7.16E-05	0.00E+00	1.20E-09	9.95E-10	3.02E-10	-4.71E-05
ADPF	[MJ]	1.66E+02	0.00E+00	2.31E-01	1.74E-01	7.27E-02	-4.54E+01
WDP	[m^3 world-Eq deprived]	1.58E+00	0.00E+00	8.25E-05	9.40E-02	5.19E-04	-6.71E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-6/4" m_B A4 (4.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.21E+02	0.00E+00	1.74E-02	4.78E-02	1.18E-02	-3.70E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.22E+02	0.00E+00	1.74E-02	4.78E-02	1.18E-02	-3.70E+00
PENRE	[MJ]	1.52E+02	0.00E+00	2.31E-01	4.77E+00	7.27E-02	-4.54E+01
PENRM	[MJ]	1.40E+01	0.00E+00	0.00E+00	-4.60E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.66E+02	0.00E+00	2.31E-01	1.74E-01	7.27E-02	-4.54E+01
SM	[kg]	2.62E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.66E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.74E-01	0.00E+00	8.61E-06	2.21E-03	1.53E-05	-2.76E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-6/4" m_B A4 (4.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.20E-07	0.00E+00	9.27E-12	9.37E-11	1.57E-11	-1.27E-04
NHWD	[kg]	1.48E+00	0.00E+00	3.23E-05	3.29E-02	2.09E-01	3.13E-01
RWD	[kg]	3.53E-03	0.00E+00	4.36E-07	9.32E-06	1.01E-06	-5.69E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.08E+00	0.00E+00	0.00E+00	3.97E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.70E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.05E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-6/4" m_B A4 (4.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.59 HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-2" m_B A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-2" m_B A4 (4.28 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.21E+01	0.00E+00	1.67E-02	1.09E+00	4.15E-03	-3.99E+00
GWP-fossil	[kg CO_2-Eq.]	1.20E+01	0.00E+00	1.65E-02	1.09E+00	4.10E-03	-4.00E+00
GWP-biogenic	[kg CO_2-Eq.]	9.33E-02	0.00E+00	3.07E-05	4.10E-05	3.11E-05	1.84E-02
GWP-luluc	[kg CO_2-Eq.]	2.85E-02	0.00E+00	1.73E-04	2.79E-05	1.29E-05	-3.78E-03
ODP	[kg CFC11-Eq.]	1.32E-10	0.00E+00	2.79E-15	8.26E-14	1.33E-14	4.08E-14
AP	[mol H^+-Eq.]	4.21E-02	0.00E+00	6.01E-05	1.08E-04	2.56E-05	-1.34E-02
EP-freshwater	[kg P-Eq.]	4.13E-05	0.00E+00	4.53E-08	2.33E-08	5.80E-09	-2.52E-06
EP-marine	[kg N-Eq.]	8.53E-03	0.00E+00	2.85E-05	2.88E-05	6.24E-06	-2.10E-03
EP-terrestrial	[mol N-Eq.]	9.28E-02	0.00E+00	3.09E-04	5.13E-04	6.80E-05	-2.09E-02
POCP	[kg NMVOC-Eq.]	2.49E-02	0.00E+00	5.49E-05	8.18E-05	1.94E-05	-7.37E-03
ADPE	[kg Sb-Eq.]	6.91E-05	0.00E+00	1.12E-09	9.90E-10	2.79E-10	-4.64E-05
ADPF	[MJ]	1.60E+02	0.00E+00	2.15E-01	1.73E-01	6.71E-02	-4.53E+01
WDP	[m^3 world-Eq deprived]	1.57E+00	0.00E+00	7.68E-05	9.36E-02	4.79E-04	-6.60E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-2" m_B A4 (4.28 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.13E+02	0.00E+00	1.62E-02	4.76E-02	1.09E-02	-3.61E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.15E+02	0.00E+00	1.62E-02	4.76E-02	1.09E-02	-3.61E+00
PENRE	[MJ]	1.46E+02	0.00E+00	2.15E-01	1.36E+01	6.71E-02	-4.53E+01
PENRM	[MJ]	1.40E+01	0.00E+00	0.00E+00	-1.35E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.60E+02	0.00E+00	2.15E-01	1.73E-01	6.71E-02	-4.53E+01
SM	[kg]	2.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.67E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.70E-01	0.00E+00	8.01E-06	2.20E-03	1.41E-05	-2.79E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-2" m_B A4 (4.28 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.13E-07	0.00E+00	8.63E-12	9.33E-11	1.45E-11	-1.24E-04
NHWD	[kg]	1.47E+00	0.00E+00	3.00E-05	3.28E-02	1.93E-01	3.16E-01
RWD	[kg]	3.29E-03	0.00E+00	4.06E-07	9.28E-06	9.31E-07	-5.64E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.08E+00	0.00E+00	0.00E+00	3.67E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.69E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.03E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 450-2" m_B A4 (4.28 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.60 HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 500-2" m_B A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 500-2" m_B A4 (5.31 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.46E+01	0.00E+00	2.07E-02	1.31E+00	5.16E-03	-4.88E+00
GWP-fossil	[kg CO_2-Eq.]	1.45E+01	0.00E+00	2.04E-02	1.31E+00	5.11E-03	-4.90E+00
GWP-biogenic	[kg CO_2-Eq.]	1.20E-01	0.00E+00	3.81E-05	4.92E-05	3.87E-05	2.28E-02
GWP-luluc	[kg CO_2-Eq.]	3.54E-02	0.00E+00	2.14E-04	3.34E-05	1.61E-05	-4.35E-03
ODP	[kg CFC11-Eq.]	1.64E-10	0.00E+00	3.46E-15	9.90E-14	1.65E-14	2.83E-13
AP	[mol H^+-Eq.]	4.95E-02	0.00E+00	7.45E-05	1.30E-04	3.19E-05	-1.61E-02
EP-freshwater	[kg P-Eq.]	5.20E-05	0.00E+00	5.61E-08	2.79E-08	7.22E-09	-2.95E-06
EP-marine	[kg N-Eq.]	1.04E-02	0.00E+00	3.54E-05	3.45E-05	7.77E-06	-2.52E-03
EP-terrestrial	[mol N-Eq.]	1.14E-01	0.00E+00	3.83E-04	6.15E-04	8.47E-05	-2.49E-02
POCP	[kg NMVOC-Eq.]	3.02E-02	0.00E+00	6.82E-05	9.80E-05	2.41E-05	-8.91E-03
ADPE	[kg Sb-Eq.]	7.26E-05	0.00E+00	1.39E-09	1.19E-09	3.47E-10	-5.44E-05
ADPF	[MJ]	1.92E+02	0.00E+00	2.67E-01	2.07E-01	8.36E-02	-5.51E+01
WDP	[m^3 world-Eq deprived]	1.89E+00	0.00E+00	9.52E-05	1.12E-01	5.97E-04	-7.72E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 500-2" m_B A4 (5.31 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.42E+02	0.00E+00	2.01E-02	5.70E-02	1.36E-02	-4.08E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.44E+02	0.00E+00	2.01E-02	5.70E-02	1.36E-02	-4.08E+00
PENRE	[MJ]	1.76E+02	0.00E+00	2.67E-01	1.62E+01	8.36E-02	-5.51E+01
PENRM	[MJ]	1.65E+01	0.00E+00	0.00E+00	-1.60E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.92E+02	0.00E+00	2.67E-01	2.07E-01	8.36E-02	-5.51E+01
SM	[kg]	2.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.09E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.18E-01	0.00E+00	9.94E-06	2.63E-03	1.76E-05	-3.50E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 500-2" m_B A4 (5.31 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.43E-07	0.00E+00	1.07E-11	1.12E-10	1.81E-11	-1.40E-04
NHWD	[kg]	1.84E+00	0.00E+00	3.73E-05	3.93E-02	2.41E-01	4.00E-01
RWD	[kg]	4.04E-03	0.00E+00	5.04E-07	1.11E-05	1.16E-06	-6.70E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.69E+00	0.00E+00	0.00E+00	4.57E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.03E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.63E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER, A4: HAKU ABS 500-2" m_B A4 (5.31 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.61 HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 630-2" m_B

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 630-2" m_B (5.50 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.52E+01	0.00E+00	2.14E-02	1.60E+00	5.25E-03	-5.29E+00
GWP-fossil	[kg CO_2-Eq.]	1.51E+01	0.00E+00	2.11E-02	1.60E+00	5.19E-03	-5.31E+00
GWP-biogenic	[kg CO_2-Eq.]	1.09E-01	0.00E+00	3.95E-05	5.99E-05	3.94E-05	2.42E-02
GWP-luluc	[kg CO_2-Eq.]	3.53E-02	0.00E+00	2.22E-04	4.07E-05	1.63E-05	-4.41E-03
ODP	[kg CFC11-Eq.]	1.61E-10	0.00E+00	3.58E-15	1.21E-13	1.68E-14	-1.19E-13
AP	[mol H^+-Eq.]	5.02E-02	0.00E+00	7.72E-05	1.58E-04	3.24E-05	-1.68E-02
EP-freshwater	[kg P-Eq.]	5.07E-05	0.00E+00	5.82E-08	3.40E-08	7.34E-09	-3.05E-06
EP-marine	[kg N-Eq.]	1.05E-02	0.00E+00	3.67E-05	4.21E-05	7.90E-06	-2.65E-03
EP-terrestrial	[mol N-Eq.]	1.14E-01	0.00E+00	3.97E-04	7.49E-04	8.61E-05	-2.62E-02
POCP	[kg NMVOC-Eq.]	3.11E-02	0.00E+00	7.06E-05	1.19E-04	2.45E-05	-9.46E-03
ADPE	[kg Sb-Eq.]	7.01E-05	0.00E+00	1.43E-09	1.45E-09	3.53E-10	-5.52E-05
ADPF	[MJ]	2.05E+02	0.00E+00	2.76E-01	2.53E-01	8.50E-02	-5.98E+01
WDP	[m^3 world-Eq deprived]	1.94E+00	0.00E+00	9.86E-05	1.37E-01	6.07E-04	-7.89E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 630-2" m_B (5.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.40E+02	0.00E+00	2.08E-02	6.95E-02	1.39E-02	-4.38E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.41E+02	0.00E+00	2.08E-02	6.95E-02	1.39E-02	-4.38E+00
PENRE	[MJ]	1.85E+02	0.00E+00	2.76E-01	1.94E+01	8.50E-02	-5.98E+01
PENRM	[MJ]	1.96E+01	0.00E+00	0.00E+00	-1.91E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.05E+02	0.00E+00	2.76E-01	2.53E-01	8.50E-02	-5.98E+01
SM	[kg]	2.72E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.29E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.76E-01	0.00E+00	1.03E-05	3.21E-03	1.79E-05	-3.87E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 630-2" m_B (5.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.36E-07	0.00E+00	1.11E-11	1.36E-10	1.84E-11	-1.35E-04
NHWD	[kg]	1.72E+00	0.00E+00	3.86E-05	4.79E-02	2.45E-01	4.42E-01
RWD	[kg]	3.89E-03	0.00E+00	5.22E-07	1.36E-05	1.18E-06	-7.92E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.48E+00	0.00E+00	0.00E+00	4.64E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.47E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.43E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 WITH STRAP, WATER: HAKU ABS 630-2" m_B (5.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.62 ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-ZAK46 A4 (2.13 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.07E+00	0.00E+00	8.29E-03	6.49E-02	2.26E-03	-1.20E+00
GWP-fossil	[kg CO_2-Eq.]	5.97E+00	0.00E+00	8.19E-03	6.49E-02	2.24E-03	-1.20E+00
GWP-biogenic	[kg CO_2-Eq.]	8.55E-02	0.00E+00	1.53E-05	2.44E-06	1.70E-05	6.34E-03
GWP-luluc	[kg CO_2-Eq.]	1.77E-02	0.00E+00	8.60E-05	1.66E-06	7.03E-06	-1.39E-03
ODP	[kg CFC11-Eq.]	8.91E-11	0.00E+00	1.39E-15	4.91E-15	7.25E-15	7.56E-13
AP	[mol H^+-Eq.]	2.17E-02	0.00E+00	2.99E-05	6.43E-06	1.40E-05	-4.67E-03
EP-freshwater	[kg P-Eq.]	2.92E-05	0.00E+00	2.25E-08	1.38E-09	3.16E-09	-8.69E-07
EP-marine	[kg N-Eq.]	5.12E-03	0.00E+00	1.42E-05	1.71E-06	3.40E-06	-7.05E-04
EP-terrestrial	[mol N-Eq.]	5.63E-02	0.00E+00	1.54E-04	3.05E-05	3.71E-05	-7.11E-03
POCP	[kg NMVOC-Eq.]	1.33E-02	0.00E+00	2.73E-05	4.86E-06	1.06E-05	-2.43E-03
ADPE	[kg Sb-Eq.]	3.02E-05	0.00E+00	5.56E-10	5.89E-11	1.52E-10	-1.77E-05
ADPF	[MJ]	7.14E+01	0.00E+00	1.07E-01	1.03E-02	3.66E-02	-1.33E+01
WDP	[m^3 world-Eq deprived]	8.60E-01	0.00E+00	3.82E-05	5.57E-03	2.61E-04	-2.44E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-ZAK46 A4 (2.13 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.71E+01	0.00E+00	8.07E-03	2.83E-03	5.97E-03	-9.30E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.83E+01	0.00E+00	8.07E-03	2.83E-03	5.97E-03	-9.30E-01
PENRE	[MJ]	6.90E+01	0.00E+00	1.07E-01	1.90E+00	3.66E-02	-1.33E+01
PENRM	[MJ]	2.41E+00	0.00E+00	0.00E+00	-1.89E+00	0.00E+00	0.00E+00
PENRT	[MJ]	7.14E+01	0.00E+00	1.07E-01	1.03E-02	3.66E-02	-1.33E+01
SM	[kg]	1.72E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.42E-02	0.00E+00	3.99E-06	1.31E-04	7.71E-06	-8.02E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-ZAK46 A4 (2.13 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.66E-08	0.00E+00	4.29E-12	5.55E-12	7.91E-12	-5.31E-05
NHWD	[kg]	1.16E+00	0.00E+00	1.49E-05	1.95E-03	1.05E-01	9.09E-02
RWD	[kg]	2.34E-03	0.00E+00	2.02E-07	5.52E-07	5.07E-07	-6.55E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.85E+00	0.00E+00	0.00E+00	2.00E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.01E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.80E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 63-ZAK46 A4 (2.13 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.63 ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-ZAK46 A4 (2.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.07E+00	0.00E+00	1.01E-02	1.06E-01	2.75E-03	-1.60E+00
GWP-fossil	[kg CO_2-Eq.]	6.95E+00	0.00E+00	9.99E-03	1.06E-01	2.72E-03	-1.60E+00
GWP-biogenic	[kg CO_2-Eq.]	1.01E-01	0.00E+00	1.87E-05	3.97E-06	2.06E-05	8.47E-03
GWP-luluc	[kg CO_2-Eq.]	2.09E-02	0.00E+00	1.05E-04	2.70E-06	8.55E-06	-1.66E-03
ODP	[kg CFC11-Eq.]	1.05E-10	0.00E+00	1.69E-15	8.00E-15	8.81E-15	1.04E-12
AP	[mol H^+-Eq.]	2.47E-02	0.00E+00	3.65E-05	1.05E-05	1.70E-05	-5.94E-03
EP-freshwater	[kg P-Eq.]	3.45E-05	0.00E+00	2.75E-08	2.25E-09	3.85E-09	-1.07E-06
EP-marine	[kg N-Eq.]	5.96E-03	0.00E+00	1.73E-05	2.79E-06	4.14E-06	-9.02E-04
EP-terrestrial	[mol N-Eq.]	6.56E-02	0.00E+00	1.87E-04	4.96E-05	4.51E-05	-9.02E-03
POCP	[kg NMVOC-Eq.]	1.55E-02	0.00E+00	3.34E-05	7.92E-06	1.28E-05	-3.15E-03
ADPE	[kg Sb-Eq.]	3.09E-05	0.00E+00	6.78E-10	9.58E-11	1.85E-10	-2.18E-05
ADPF	[MJ]	8.32E+01	0.00E+00	1.31E-01	1.67E-02	4.45E-02	-1.76E+01
WDP	[m^3 world-Eq deprived]	9.95E-01	0.00E+00	4.66E-05	9.06E-03	3.18E-04	-2.99E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-ZAK46 A4 (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.13E+01	0.00E+00	9.85E-03	4.60E-03	7.25E-03	-1.07E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.25E+01	0.00E+00	9.85E-03	4.60E-03	7.25E-03	-1.07E+00
PENRE	[MJ]	8.02E+01	0.00E+00	1.31E-01	2.53E+00	4.45E-02	-1.76E+01
PENRM	[MJ]	3.02E+00	0.00E+00	0.00E+00	-2.51E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.32E+01	0.00E+00	1.31E-01	1.67E-02	4.45E-02	-1.76E+01
SM	[kg]	2.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.87E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.21E-02	0.00E+00	4.87E-06	2.13E-04	9.37E-06	-1.13E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-ZAK46 A4 (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.02E-07	0.00E+00	5.24E-12	9.03E-12	9.61E-12	-6.23E-05
NHWD	[kg]	1.35E+00	0.00E+00	1.82E-05	3.17E-03	1.28E-01	1.29E-01
RWD	[kg]	2.72E-03	0.00E+00	2.47E-07	8.98E-07	6.17E-07	-8.95E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.18E+00	0.00E+00	0.00E+00	2.43E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.64E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.93E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 90-ZAK46 A4 (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.64 ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-ZAK46 A4 (3.09 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.36E+00	0.00E+00	1.20E-02	1.56E-01	3.25E-03	-1.86E+00
GWP-fossil	[kg CO_2-Eq.]	8.21E+00	0.00E+00	1.19E-02	1.56E-01	3.22E-03	-1.87E+00
GWP-biogenic	[kg CO_2-Eq.]	1.20E-01	0.00E+00	2.22E-05	5.87E-06	2.44E-05	9.81E-03
GWP-luluc	[kg CO_2-Eq.]	2.48E-02	0.00E+00	1.25E-04	3.99E-06	1.01E-05	-1.80E-03
ODP	[kg CFC11-Eq.]	1.25E-10	0.00E+00	2.01E-15	1.18E-14	1.04E-14	1.18E-12
AP	[mol H^+-Eq.]	2.84E-02	0.00E+00	4.34E-05	1.55E-05	2.01E-05	-6.68E-03
EP-freshwater	[kg P-Eq.]	4.11E-05	0.00E+00	3.27E-08	3.33E-09	4.55E-09	-1.18E-06
EP-marine	[kg N-Eq.]	7.04E-03	0.00E+00	2.06E-05	4.12E-06	4.90E-06	-1.02E-03
EP-terrestrial	[mol N-Eq.]	7.76E-02	0.00E+00	2.23E-04	7.33E-05	5.34E-05	-1.01E-02
POCP	[kg NMVOC-Eq.]	1.82E-02	0.00E+00	3.97E-05	1.17E-05	1.52E-05	-3.59E-03
ADPE	[kg Sb-Eq.]	3.12E-05	0.00E+00	8.06E-10	1.42E-10	2.19E-10	-2.39E-05
ADPF	[MJ]	9.88E+01	0.00E+00	1.55E-01	2.47E-02	5.27E-02	-2.04E+01
WDP	[m^3 world-Eq deprived]	1.17E+00	0.00E+00	5.54E-05	1.34E-02	3.76E-04	-3.28E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-ZAK46 A4 (3.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.09E+02	0.00E+00	1.17E-02	6.80E-03	8.59E-03	-1.15E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.10E+02	0.00E+00	1.17E-02	6.80E-03	8.59E-03	-1.15E+00
PENRE	[MJ]	9.49E+01	0.00E+00	1.55E-01	3.36E+00	5.27E-02	-2.04E+01
PENRM	[MJ]	3.85E+00	0.00E+00	0.00E+00	-3.34E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.88E+01	0.00E+00	1.55E-01	2.47E-02	5.27E-02	-2.04E+01
SM	[kg]	2.36E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.18E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.17E-02	0.00E+00	5.79E-06	3.14E-04	1.11E-05	-1.35E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-ZAK46 A4 (3.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.21E-07	0.00E+00	6.23E-12	1.33E-11	1.14E-11	-6.57E-05
NHWD	[kg]	1.60E+00	0.00E+00	2.17E-05	4.69E-03	1.52E-01	1.55E-01
RWD	[kg]	3.21E-03	0.00E+00	2.93E-07	1.33E-06	7.30E-07	-1.14E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.61E+00	0.00E+00	0.00E+00	2.88E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.42E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.34E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SADDLE PN16 WATER, A4: HAKU ABS 110-ZAK46 A4 (3.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.65 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 110-80 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 110-80 A4 (8.21 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.28E+01	0.00E+00	3.19E-02	3.68E-01	8.69E-03	-4.17E+00
GWP-fossil	[kg CO_2-Eq.]	2.24E+01	0.00E+00	3.16E-02	3.68E-01	8.60E-03	-4.19E+00
GWP-biogenic	[kg CO_2-Eq.]	3.40E-01	0.00E+00	5.90E-05	1.15E-05	6.52E-05	2.18E-02
GWP-luluc	[kg CO_2-Eq.]	6.78E-02	0.00E+00	3.31E-04	4.17E-06	2.70E-05	-3.39E-03
ODP	[kg CFC11-Eq.]	3.44E-10	0.00E+00	5.34E-15	2.18E-14	2.78E-14	2.53E-12
AP	[mol H^+-Eq.]	7.30E-02	0.00E+00	1.15E-04	3.69E-05	5.36E-05	-1.39E-02
EP-freshwater	[kg P-Eq.]	1.15E-04	0.00E+00	8.68E-08	3.40E-09	1.22E-08	-2.35E-06
EP-marine	[kg N-Eq.]	1.95E-02	0.00E+00	5.47E-05	8.25E-06	1.31E-05	-2.15E-03
EP-terrestrial	[mol N-Eq.]	2.14E-01	0.00E+00	5.92E-04	1.75E-04	1.43E-04	-2.11E-02
POCP	[kg NMVOC-Eq.]	4.98E-02	0.00E+00	1.05E-04	2.42E-05	4.06E-05	-7.74E-03
ADPE	[kg Sb-Eq.]	5.08E-05	0.00E+00	2.14E-09	2.49E-10	5.84E-10	-4.72E-05
ADPF	[MJ]	2.65E+02	0.00E+00	4.13E-01	4.57E-02	1.41E-01	-4.54E+01
WDP	[m^3 world-Eq deprived]	3.19E+00	0.00E+00	1.47E-04	3.35E-02	1.00E-03	-6.44E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 110-80 A4 (8.21 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.03E+02	0.00E+00	3.11E-02	1.26E-02	2.29E-02	-2.13E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.04E+02	0.00E+00	3.11E-02	1.26E-02	2.29E-02	-2.13E+00
PENRE	[MJ]	2.55E+02	0.00E+00	4.13E-01	9.97E+00	1.41E-01	-4.54E+01
PENRM	[MJ]	1.04E+01	0.00E+00	0.00E+00	-9.93E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.65E+02	0.00E+00	4.13E-01	4.57E-02	1.41E-01	-4.54E+01
SM	[kg]	6.61E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.92E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.68E-01	0.00E+00	1.54E-05	7.86E-04	2.96E-05	-3.22E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 110-80 A4 (8.21 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.38E-07	0.00E+00	1.66E-11	2.49E-11	3.04E-11	-1.17E-04
NHWD	[kg]	4.49E+00	0.00E+00	5.76E-05	3.08E-03	4.05E-01	3.72E-01
RWD	[kg]	8.74E-03	0.00E+00	7.79E-07	2.59E-06	1.95E-06	-2.92E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	7.54E+00	0.00E+00	0.00E+00	7.68E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 110-80 A4 (8.21 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.66 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 125-100 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 125-100 A4 (9.26 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.48E+01	0.00E+00	3.61E-02	5.47E-01	9.75E-03	-5.18E+00
GWP-fossil	[kg CO_2-Eq.]	2.44E+01	0.00E+00	3.56E-02	5.47E-01	9.65E-03	-5.20E+00
GWP-biogenic	[kg CO_2-Eq.]	3.69E-01	0.00E+00	6.65E-05	1.77E-05	7.31E-05	2.69E-02
GWP-luluc	[kg CO_2-Eq.]	7.45E-02	0.00E+00	3.74E-04	7.43E-06	3.03E-05	-3.94E-03
ODP	[kg CFC11-Eq.]	3.76E-10	0.00E+00	6.03E-15	3.38E-14	3.12E-14	2.98E-12
AP	[mol H^+-Eq.]	7.87E-02	0.00E+00	1.30E-04	5.47E-05	6.02E-05	-1.68E-02
EP-freshwater	[kg P-Eq.]	1.26E-04	0.00E+00	9.80E-08	6.10E-09	1.36E-08	-2.79E-06
EP-marine	[kg N-Eq.]	2.11E-02	0.00E+00	6.18E-05	1.26E-05	1.47E-05	-2.61E-03
EP-terrestrial	[mol N-Eq.]	2.33E-01	0.00E+00	6.68E-04	2.59E-04	1.60E-04	-2.55E-02
POCP	[kg NMVOC-Eq.]	5.41E-02	0.00E+00	1.19E-04	3.68E-05	4.55E-05	-9.44E-03
ADPE	[kg Sb-Eq.]	5.17E-05	0.00E+00	2.42E-09	3.90E-10	6.55E-10	-5.55E-05
ADPF	[MJ]	2.90E+02	0.00E+00	4.66E-01	7.09E-02	1.58E-01	-5.63E+01
WDP	[m^3 world-Eq deprived]	3.45E+00	0.00E+00	1.66E-04	4.94E-02	1.13E-03	-7.59E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 125-100 A4 (9.26 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.31E+02	0.00E+00	3.51E-02	1.95E-02	2.57E-02	-2.50E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.33E+02	0.00E+00	3.51E-02	1.95E-02	2.57E-02	-2.50E+00
PENRE	[MJ]	2.78E+02	0.00E+00	4.66E-01	1.10E+01	1.58E-01	-5.63E+01
PENRM	[MJ]	1.29E+01	0.00E+00	0.00E+00	-1.10E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.90E+02	0.00E+00	4.66E-01	7.09E-02	1.58E-01	-5.63E+01
SM	[kg]	7.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.41E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.84E-01	0.00E+00	1.73E-05	1.16E-03	3.32E-05	-4.07E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 125-100 A4 (9.26 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.67E-07	0.00E+00	1.87E-11	3.85E-11	3.41E-11	-1.31E-04
NHWD	[kg]	4.86E+00	0.00E+00	6.50E-05	6.45E-03	4.55E-01	4.70E-01
RWD	[kg]	9.47E-03	0.00E+00	8.79E-07	3.98E-06	2.19E-06	-3.92E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	8.17E+00	0.00E+00	0.00E+00	8.62E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 125-100 A4 (9.26 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.67 HAKU SADDLE PN 16 WITH FLANGED OUTLET: HAKU ABS+FLA 125-80 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN 16 WITH FLANGED OUTLET: HAKU ABS+FLA 125-80 A4 (8.33 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.27E+01	0.00E+00	3.24E-02	4.73E-01	8.77E-03	-4.50E+00
GWP-fossil	[kg CO_2-Eq.]	2.23E+01	0.00E+00	3.20E-02	4.73E-01	8.68E-03	-4.52E+00
GWP-biogenic	[kg CO_2-Eq.]	3.37E-01	0.00E+00	5.98E-05	1.55E-05	6.58E-05	2.33E-02
GWP-luluc	[kg CO_2-Eq.]	6.77E-02	0.00E+00	3.36E-04	6.78E-06	2.73E-05	-3.58E-03
ODP	[kg CFC11-Eq.]	3.42E-10	0.00E+00	5.42E-15	2.96E-14	2.81E-14	2.54E-12
AP	[mol H^+-Eq.]	7.24E-02	0.00E+00	1.17E-04	4.73E-05	5.42E-05	-1.48E-02
EP-freshwater	[kg P-Eq.]	1.15E-04	0.00E+00	8.81E-08	5.58E-09	1.23E-08	-2.50E-06
EP-marine	[kg N-Eq.]	1.93E-02	0.00E+00	5.55E-05	1.10E-05	1.32E-05	-2.30E-03
EP-terrestrial	[mol N-Eq.]	2.13E-01	0.00E+00	6.01E-04	2.24E-04	1.44E-04	-2.25E-02
POCP	[kg NMVOC-Eq.]	4.95E-02	0.00E+00	1.07E-04	3.21E-05	4.09E-05	-8.28E-03
ADPE	[kg Sb-Eq.]	5.07E-05	0.00E+00	2.17E-09	3.43E-10	5.89E-10	-4.97E-05
ADPF	[MJ]	2.66E+02	0.00E+00	4.19E-01	6.22E-02	1.42E-01	-4.91E+01
WDP	[m^3 world-Eq deprived]	3.16E+00	0.00E+00	1.49E-04	4.26E-02	1.01E-03	-6.81E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN 16 WITH FLANGED OUTLET: HAKU ABS+FLA 125-80 A4 (8.33 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.01E+02	0.00E+00	3.16E-02	1.71E-02	2.31E-02	-2.32E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.03E+02	0.00E+00	3.16E-02	1.71E-02	2.31E-02	-2.32E+00
PENRE	[MJ]	2.54E+02	0.00E+00	4.19E-01	1.10E+01	1.42E-01	-4.91E+01
PENRM	[MJ]	1.15E+01	0.00E+00	0.00E+00	-1.10E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.66E+02	0.00E+00	4.19E-01	6.22E-02	1.42E-01	-4.91E+01
SM	[kg]	6.53E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.68E-01	0.00E+00	1.56E-05	9.98E-04	2.99E-05	-3.48E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN 16 WITH FLANGED OUTLET: HAKU ABS+FLA 125-80 A4 (8.33 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.35E-07	0.00E+00	1.68E-11	3.38E-11	3.07E-11	-1.21E-04
NHWD	[kg]	4.44E+00	0.00E+00	5.85E-05	6.12E-03	4.09E-01	4.02E-01
RWD	[kg]	8.67E-03	0.00E+00	7.90E-07	3.48E-06	1.97E-06	-3.41E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	7.45E+00	0.00E+00	0.00E+00	7.76E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.15E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.63E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN 16 WITH FLANGED OUTLET: HAKU ABS+FLA 125-80 A4 (8.33 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.68 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-80 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-80 A4 (11.8 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.12E+01	0.00E+00	4.59E-02	4.33E-01	1.25E-02	-6.60E+00
GWP-fossil	[kg CO_2-Eq.]	3.07E+01	0.00E+00	4.54E-02	4.33E-01	1.24E-02	-6.63E+00
GWP-biogenic	[kg CO_2-Eq.]	4.70E-01	0.00E+00	8.47E-05	1.37E-05	9.39E-05	3.55E-02
GWP-luluc	[kg CO_2-Eq.]	9.47E-02	0.00E+00	4.76E-04	5.14E-06	3.89E-05	-4.67E-03
ODP	[kg CFC11-Eq.]	4.78E-10	0.00E+00	7.68E-15	2.59E-14	4.01E-14	5.04E-12
AP	[mol H^+-Eq.]	9.83E-02	0.00E+00	1.66E-04	4.34E-05	7.73E-05	-2.12E-02
EP-freshwater	[kg P-Eq.]	1.60E-04	0.00E+00	1.25E-07	4.20E-09	1.75E-08	-3.37E-06
EP-marine	[kg N-Eq.]	2.67E-02	0.00E+00	7.87E-05	9.78E-06	1.88E-05	-3.29E-03
EP-terrestrial	[mol N-Eq.]	2.94E-01	0.00E+00	8.51E-04	2.06E-04	2.05E-04	-3.19E-02
POCP	[kg NMVOC-Eq.]	6.81E-02	0.00E+00	1.51E-04	2.87E-05	5.84E-05	-1.20E-02
ADPE	[kg Sb-Eq.]	5.81E-05	0.00E+00	3.08E-09	2.97E-10	8.41E-10	-6.92E-05
ADPF	[MJ]	3.60E+02	0.00E+00	5.93E-01	5.44E-02	2.03E-01	-7.08E+01
WDP	[m^3 world-Eq deprived]	4.35E+00	0.00E+00	2.12E-04	3.94E-02	1.45E-03	-9.33E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-80 A4 (11.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.22E+02	0.00E+00	4.47E-02	1.49E-02	3.30E-02	-2.31E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.23E+02	0.00E+00	4.47E-02	1.49E-02	3.30E-02	-2.31E+00
PENRE	[MJ]	3.48E+02	0.00E+00	5.93E-01	1.24E+01	2.03E-01	-7.08E+01
PENRM	[MJ]	1.28E+01	0.00E+00	0.00E+00	-1.23E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.60E+02	0.00E+00	5.93E-01	5.44E-02	2.03E-01	-7.08E+01
SM	[kg]	9.09E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.33E-01	0.00E+00	2.21E-05	9.24E-04	4.27E-05	-5.36E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-80 A4 (11.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.67E-07	0.00E+00	2.38E-11	2.96E-11	4.38E-11	-1.58E-04
NHWD	[kg]	6.18E+00	0.00E+00	8.28E-05	3.96E-03	5.84E-01	6.23E-01
RWD	[kg]	1.20E-02	0.00E+00	1.12E-06	3.07E-06	2.81E-06	-3.54E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.04E+01	0.00E+00	0.00E+00	1.11E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.75E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.56E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-80 A4 (11.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.69 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-100 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-100 A4 (11.0 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.04E+01	0.00E+00	4.27E-02	4.62E-01	1.16E-02	-5.45E+00
GWP-fossil	[kg CO_2-Eq.]	2.99E+01	0.00E+00	4.22E-02	4.62E-01	1.15E-02	-5.47E+00
GWP-biogenic	[kg CO_2-Eq.]	4.57E-01	0.00E+00	7.88E-05	1.46E-05	8.71E-05	2.87E-02
GWP-luluc	[kg CO_2-Eq.]	9.06E-02	0.00E+00	4.43E-04	5.52E-06	3.61E-05	-4.09E-03
ODP	[kg CFC11-Eq.]	4.61E-10	0.00E+00	7.14E-15	2.76E-14	3.72E-14	3.59E-12
AP	[mol H^+-Eq.]	9.54E-02	0.00E+00	1.54E-04	4.63E-05	7.17E-05	-1.77E-02
EP-freshwater	[kg P-Eq.]	1.55E-04	0.00E+00	1.16E-07	4.51E-09	1.63E-08	-2.90E-06
EP-marine	[kg N-Eq.]	2.60E-02	0.00E+00	7.31E-05	1.04E-05	1.75E-05	-2.75E-03
EP-terrestrial	[mol N-Eq.]	2.86E-01	0.00E+00	7.91E-04	2.19E-04	1.91E-04	-2.68E-02
POCP	[kg NMVOC-Eq.]	6.63E-02	0.00E+00	1.41E-04	3.06E-05	5.42E-05	-9.96E-03
ADPE	[kg Sb-Eq.]	5.44E-05	0.00E+00	2.86E-09	3.17E-10	7.81E-10	-5.85E-05
ADPF	[MJ]	3.52E+02	0.00E+00	5.51E-01	5.81E-02	1.88E-01	-5.89E+01
WDP	[m^3 world-Eq deprived]	4.24E+00	0.00E+00	1.97E-04	4.20E-02	1.34E-03	-7.96E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-100 A4 (11.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.06E+02	0.00E+00	4.16E-02	1.60E-02	3.07E-02	-2.37E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.07E+02	0.00E+00	4.16E-02	1.60E-02	3.07E-02	-2.37E+00
PENRE	[MJ]	3.39E+02	0.00E+00	5.51E-01	1.29E+01	1.88E-01	-5.89E+01
PENRM	[MJ]	1.34E+01	0.00E+00	0.00E+00	-1.29E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.52E+02	0.00E+00	5.51E-01	5.81E-02	1.88E-01	-5.89E+01
SM	[kg]	8.86E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.56E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.24E-01	0.00E+00	2.05E-05	9.84E-04	3.96E-05	-4.32E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-100 A4 (11.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.53E-07	0.00E+00	2.21E-11	3.16E-11	4.06E-11	-1.38E-04
NHWD	[kg]	6.02E+00	0.00E+00	7.70E-05	4.29E-03	5.41E-01	5.00E-01
RWD	[kg]	1.17E-02	0.00E+00	1.04E-06	3.28E-06	2.61E-06	-3.57E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.02E+01	0.00E+00	0.00E+00	1.03E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.30E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.66E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 140-100 A4 (11.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.70 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-80 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-80 A4 (10.6 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.93E+01	0.00E+00	4.13E-02	3.81E-01	1.13E-02	-5.36E+00
GWP-fossil	[kg CO_2-Eq.]	2.87E+01	0.00E+00	4.08E-02	3.81E-01	1.12E-02	-5.39E+00
GWP-biogenic	[kg CO_2-Eq.]	4.40E-01	0.00E+00	7.63E-05	1.20E-05	8.45E-05	2.86E-02
GWP-luluc	[kg CO_2-Eq.]	8.74E-02	0.00E+00	4.29E-04	4.50E-06	3.51E-05	-4.00E-03
ODP	[kg CFC11-Eq.]	4.44E-10	0.00E+00	6.91E-15	2.27E-14	3.61E-14	3.87E-12
AP	[mol H^+-Eq.]	9.20E-02	0.00E+00	1.49E-04	3.82E-05	6.96E-05	-1.75E-02
EP-freshwater	[kg P-Eq.]	1.49E-04	0.00E+00	1.12E-07	3.67E-09	1.58E-08	-2.84E-06
EP-marine	[kg N-Eq.]	2.50E-02	0.00E+00	7.08E-05	8.58E-06	1.70E-05	-2.71E-03
EP-terrestrial	[mol N-Eq.]	2.75E-01	0.00E+00	7.66E-04	1.81E-04	1.85E-04	-2.64E-02
POCP	[kg NMVOC-Eq.]	6.37E-02	0.00E+00	1.36E-04	2.52E-05	5.26E-05	-9.84E-03
ADPE	[kg Sb-Eq.]	5.38E-05	0.00E+00	2.77E-09	2.60E-10	7.57E-10	-5.80E-05
ADPF	[MJ]	3.38E+02	0.00E+00	5.34E-01	4.77E-02	1.82E-01	-5.78E+01
WDP	[m^3 world-Eq deprived]	4.08E+00	0.00E+00	1.90E-04	3.46E-02	1.30E-03	-7.85E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-80 A4 (10.6 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.91E+02	0.00E+00	4.02E-02	1.31E-02	2.97E-02	-2.15E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.93E+02	0.00E+00	4.02E-02	1.31E-02	2.97E-02	-2.15E+00
PENRE	[MJ]	3.26E+02	0.00E+00	5.34E-01	1.15E+01	1.82E-01	-5.78E+01
PENRM	[MJ]	1.20E+01	0.00E+00	0.00E+00	-1.15E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.38E+02	0.00E+00	5.34E-01	4.77E-02	1.82E-01	-5.78E+01
SM	[kg]	8.53E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.54E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.16E-01	0.00E+00	1.99E-05	8.11E-04	3.84E-05	-4.28E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-80 A4 (10.6 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.36E-07	0.00E+00	2.14E-11	2.60E-11	3.94E-11	-1.37E-04
NHWD	[kg]	5.79E+00	0.00E+00	7.45E-05	3.46E-03	5.25E-01	4.97E-01
RWD	[kg]	1.12E-02	0.00E+00	1.01E-06	2.70E-06	2.53E-06	-3.10E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.80E+00	0.00E+00	0.00E+00	9.97E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.69E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.37E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-80 A4 (10.6 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.71 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-100 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-100 A4 (11.0 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.03E+01	0.00E+00	4.27E-02	4.61E-01	1.16E-02	-5.48E+00
GWP-fossil	[kg CO_2-Eq.]	2.98E+01	0.00E+00	4.21E-02	4.61E-01	1.15E-02	-5.51E+00
GWP-biogenic	[kg CO_2-Eq.]	4.56E-01	0.00E+00	7.87E-05	1.46E-05	8.70E-05	2.90E-02
GWP-luluc	[kg CO_2-Eq.]	9.04E-02	0.00E+00	4.42E-04	5.51E-06	3.61E-05	-4.10E-03
ODP	[kg CFC11-Eq.]	4.59E-10	0.00E+00	7.13E-15	2.76E-14	3.72E-14	3.64E-12
AP	[mol H^+-Eq.]	9.50E-02	0.00E+00	1.54E-04	4.62E-05	7.17E-05	-1.78E-02
EP-freshwater	[kg P-Eq.]	1.54E-04	0.00E+00	1.16E-07	4.50E-09	1.62E-08	-2.91E-06
EP-marine	[kg N-Eq.]	2.59E-02	0.00E+00	7.31E-05	1.04E-05	1.75E-05	-2.76E-03
EP-terrestrial	[mol N-Eq.]	2.85E-01	0.00E+00	7.90E-04	2.19E-04	1.90E-04	-2.69E-02
POCP	[kg NMVOC-Eq.]	6.60E-02	0.00E+00	1.41E-04	3.06E-05	5.42E-05	-1.00E-02
ADPE	[kg Sb-Eq.]	5.43E-05	0.00E+00	2.86E-09	3.16E-10	7.80E-10	-5.88E-05
ADPF	[MJ]	3.51E+02	0.00E+00	5.51E-01	5.80E-02	1.88E-01	-5.93E+01
WDP	[m^3 world-Eq deprived]	4.22E+00	0.00E+00	1.97E-04	4.20E-02	1.34E-03	-8.00E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-100 A4 (11.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.05E+02	0.00E+00	4.15E-02	1.59E-02	3.06E-02	-2.36E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.06E+02	0.00E+00	4.15E-02	1.59E-02	3.06E-02	-2.36E+00
PENRE	[MJ]	3.38E+02	0.00E+00	5.51E-01	1.34E+01	1.88E-01	-5.93E+01
PENRM	[MJ]	1.34E+01	0.00E+00	0.00E+00	-1.34E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.51E+02	0.00E+00	5.51E-01	5.80E-02	1.88E-01	-5.93E+01
SM	[kg]	8.82E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.58E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.24E-01	0.00E+00	2.05E-05	9.83E-04	3.96E-05	-4.36E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-100 A4 (11.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.51E-07	0.00E+00	2.21E-11	3.16E-11	4.06E-11	-1.38E-04
NHWD	[kg]	5.99E+00	0.00E+00	7.69E-05	4.29E-03	5.41E-01	5.05E-01
RWD	[kg]	1.16E-02	0.00E+00	1.04E-06	3.28E-06	2.61E-06	-3.57E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.01E+01	0.00E+00	0.00E+00	1.03E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.30E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.65E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 160-100 A4 (11.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.72 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-80 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-80 A4 (11.2 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.05E+01	0.00E+00	4.35E-02	5.58E-01	1.18E-02	-5.95E+00
GWP-fossil	[kg CO_2-Eq.]	3.00E+01	0.00E+00	4.30E-02	5.58E-01	1.17E-02	-5.98E+00
GWP-biogenic	[kg CO_2-Eq.]	4.56E-01	0.00E+00	8.03E-05	1.77E-05	8.85E-05	3.13E-02
GWP-luluc	[kg CO_2-Eq.]	9.07E-02	0.00E+00	4.51E-04	1.69E-05	3.67E-05	-4.33E-03
ODP	[kg CFC11-Eq.]	4.59E-10	0.00E+00	7.28E-15	5.97E-14	3.78E-14	3.83E-12
AP	[mol H^+-Eq.]	9.50E-02	0.00E+00	1.57E-04	6.08E-05	7.28E-05	-1.91E-02
EP-freshwater	[kg P-Eq.]	1.55E-04	0.00E+00	1.18E-07	8.86E-09	1.65E-08	-3.11E-06
EP-marine	[kg N-Eq.]	2.60E-02	0.00E+00	7.45E-05	1.48E-05	1.77E-05	-2.97E-03
EP-terrestrial	[mol N-Eq.]	2.86E-01	0.00E+00	8.06E-04	2.85E-04	1.94E-04	-2.89E-02
POCP	[kg NMVOC-Eq.]	6.64E-02	0.00E+00	1.44E-04	4.30E-05	5.51E-05	-1.08E-02
ADPE	[kg Sb-Eq.]	5.42E-05	0.00E+00	2.92E-09	6.65E-10	7.92E-10	-6.25E-05
ADPF	[MJ]	3.56E+02	0.00E+00	5.62E-01	1.25E-01	1.91E-01	-6.44E+01
WDP	[m^3 world-Eq deprived]	4.20E+00	0.00E+00	2.01E-04	5.14E-02	1.36E-03	-8.50E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-80 A4 (11.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.05E+02	0.00E+00	4.24E-02	3.18E-02	3.11E-02	-2.52E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.06E+02	0.00E+00	4.24E-02	3.18E-02	3.11E-02	-2.52E+00
PENRE	[MJ]	3.41E+02	0.00E+00	5.62E-01	1.13E+01	1.91E-01	-6.44E+01
PENRM	[MJ]	1.48E+01	0.00E+00	0.00E+00	-1.12E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.56E+02	0.00E+00	5.62E-01	1.25E-01	1.91E-01	-6.44E+01
SM	[kg]	8.76E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.81E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.24E-01	0.00E+00	2.09E-05	1.21E-03	4.02E-05	-4.76E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-80 A4 (11.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.50E-07	0.00E+00	2.25E-11	6.39E-11	4.12E-11	-1.44E-04
NHWD	[kg]	5.96E+00	0.00E+00	7.85E-05	1.90E-02	5.50E-01	5.51E-01
RWD	[kg]	1.16E-02	0.00E+00	1.06E-06	5.30E-06	2.65E-06	-4.06E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.01E+01	0.00E+00	0.00E+00	1.04E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.09E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.95E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-80 A4 (11.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.73 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-100 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-100 A4 (12.2 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.35E+01	0.00E+00	4.75E-02	6.40E-01	1.29E-02	-6.35E+00
GWP-fossil	[kg CO_2-Eq.]	3.29E+01	0.00E+00	4.69E-02	6.40E-01	1.27E-02	-6.38E+00
GWP-biogenic	[kg CO_2-Eq.]	5.02E-01	0.00E+00	8.76E-05	2.03E-05	9.65E-05	3.32E-02
GWP-luluc	[kg CO_2-Eq.]	9.94E-02	0.00E+00	4.93E-04	1.79E-05	4.00E-05	-4.57E-03
ODP	[kg CFC11-Eq.]	5.04E-10	0.00E+00	7.94E-15	6.47E-14	4.12E-14	3.92E-12
AP	[mol H^+-Eq.]	1.04E-01	0.00E+00	1.71E-04	6.91E-05	7.94E-05	-2.02E-02
EP-freshwater	[kg P-Eq.]	1.70E-04	0.00E+00	1.29E-07	9.72E-09	1.80E-08	-3.29E-06
EP-marine	[kg N-Eq.]	2.85E-02	0.00E+00	8.13E-05	1.67E-05	1.93E-05	-3.15E-03
EP-terrestrial	[mol N-Eq.]	3.14E-01	0.00E+00	8.80E-04	3.24E-04	2.11E-04	-3.07E-02
POCP	[kg NMVOC-Eq.]	7.29E-02	0.00E+00	1.57E-04	4.85E-05	6.00E-05	-1.15E-02
ADPE	[kg Sb-Eq.]	5.56E-05	0.00E+00	3.18E-09	7.23E-10	8.64E-10	-6.58E-05
ADPF	[MJ]	3.91E+02	0.00E+00	6.13E-01	1.35E-01	2.08E-01	-6.87E+01
WDP	[m^3 world-Eq deprived]	4.61E+00	0.00E+00	2.19E-04	5.89E-02	1.49E-03	-8.97E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-100 A4 (12.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.45E+02	0.00E+00	4.62E-02	3.47E-02	3.39E-02	-2.73E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.46E+02	0.00E+00	4.62E-02	3.47E-02	3.39E-02	-2.73E+00
PENRE	[MJ]	3.75E+02	0.00E+00	6.13E-01	1.62E+01	2.08E-01	-6.87E+01
PENRM	[MJ]	1.66E+01	0.00E+00	0.00E+00	-1.61E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.91E+02	0.00E+00	6.13E-01	1.35E-01	2.08E-01	-6.87E+01
SM	[kg]	9.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.46E-01	0.00E+00	2.28E-05	1.39E-03	4.38E-05	-5.08E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-100 A4 (12.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.95E-07	0.00E+00	2.46E-11	6.97E-11	4.50E-11	-1.50E-04
NHWD	[kg]	6.55E+00	0.00E+00	8.56E-05	1.98E-02	6.00E-01	5.89E-01
RWD	[kg]	1.27E-02	0.00E+00	1.16E-06	5.89E-06	2.89E-06	-4.57E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.11E+01	0.00E+00	0.00E+00	1.14E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.26E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.24E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 180-100 A4 (12.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.74 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-80 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-80 A4 (12.8 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.40E+01	0.00E+00	4.98E-02	3.93E-01	1.36E-02	-6.97E+00
GWP-fossil	[kg CO_2-Eq.]	3.34E+01	0.00E+00	4.92E-02	3.93E-01	1.35E-02	-7.00E+00
GWP-biogenic	[kg CO_2-Eq.]	5.15E-01	0.00E+00	9.19E-05	1.24E-05	1.02E-04	3.79E-02
GWP-luluc	[kg CO_2-Eq.]	1.03E-01	0.00E+00	5.17E-04	4.64E-06	4.23E-05	-4.73E-03
ODP	[kg CFC11-Eq.]	5.21E-10	0.00E+00	8.33E-15	2.35E-14	4.36E-14	5.71E-12
AP	[mol H^+-Eq.]	1.06E-01	0.00E+00	1.80E-04	3.94E-05	8.40E-05	-2.22E-02
EP-freshwater	[kg P-Eq.]	1.75E-04	0.00E+00	1.35E-07	3.79E-09	1.90E-08	-3.46E-06
EP-marine	[kg N-Eq.]	2.91E-02	0.00E+00	8.53E-05	8.87E-06	2.05E-05	-3.44E-03
EP-terrestrial	[mol N-Eq.]	3.21E-01	0.00E+00	9.23E-04	1.87E-04	2.23E-04	-3.33E-02
POCP	[kg NMVOC-Eq.]	7.41E-02	0.00E+00	1.64E-04	2.60E-05	6.35E-05	-1.26E-02
ADPE	[kg Sb-Eq.]	5.61E-05	0.00E+00	3.34E-09	2.69E-10	9.14E-10	-7.18E-05
ADPF	[MJ]	3.91E+02	0.00E+00	6.43E-01	4.93E-02	2.20E-01	-7.44E+01
WDP	[m^3 world-Eq deprived]	4.73E+00	0.00E+00	2.30E-04	3.58E-02	1.57E-03	-9.62E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-80 A4 (12.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.61E+02	0.00E+00	4.85E-02	1.36E-02	3.59E-02	-2.09E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.62E+02	0.00E+00	4.85E-02	1.36E-02	3.59E-02	-2.09E+00
PENRE	[MJ]	3.78E+02	0.00E+00	6.43E-01	1.28E+01	2.20E-01	-7.44E+01
PENRM	[MJ]	1.30E+01	0.00E+00	0.00E+00	-1.28E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.91E+02	0.00E+00	6.43E-01	4.93E-02	2.20E-01	-7.44E+01
SM	[kg]	9.95E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.38E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.54E-01	0.00E+00	2.40E-05	8.38E-04	4.64E-05	-5.75E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-80 A4 (12.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.10E-07	0.00E+00	2.58E-11	2.68E-11	4.76E-11	-1.59E-04
NHWD	[kg]	6.76E+00	0.00E+00	8.98E-05	3.56E-03	6.34E-01	6.69E-01
RWD	[kg]	1.30E-02	0.00E+00	1.21E-06	2.79E-06	3.05E-06	-3.32E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.15E+01	0.00E+00	0.00E+00	1.20E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.95E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.41E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-80 A4 (12.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.75 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-100 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-100 A4 (13.4 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.62E+01	0.00E+00	5.22E-02	4.76E-01	1.42E-02	-7.02E+00
GWP-fossil	[kg CO_2-Eq.]	3.56E+01	0.00E+00	5.16E-02	4.76E-01	1.41E-02	-7.05E+00
GWP-biogenic	[kg CO_2-Eq.]	5.49E-01	0.00E+00	9.64E-05	1.51E-05	1.07E-04	3.78E-02
GWP-luluc	[kg CO_2-Eq.]	1.09E-01	0.00E+00	5.42E-04	5.70E-06	4.43E-05	-4.82E-03
ODP	[kg CFC11-Eq.]	5.53E-10	0.00E+00	8.73E-15	2.85E-14	4.56E-14	5.38E-12
AP	[mol H^+-Eq.]	1.13E-01	0.00E+00	1.88E-04	4.77E-05	8.80E-05	-2.23E-02
EP-freshwater	[kg P-Eq.]	1.86E-04	0.00E+00	1.42E-07	4.66E-09	1.99E-08	-3.52E-06
EP-marine	[kg N-Eq.]	3.10E-02	0.00E+00	8.95E-05	1.08E-05	2.14E-05	-3.47E-03
EP-terrestrial	[mol N-Eq.]	3.42E-01	0.00E+00	9.68E-04	2.26E-04	2.34E-04	-3.36E-02
POCP	[kg NMVOC-Eq.]	7.89E-02	0.00E+00	1.72E-04	3.16E-05	6.65E-05	-1.27E-02
ADPE	[kg Sb-Eq.]	5.71E-05	0.00E+00	3.50E-09	3.27E-10	9.57E-10	-7.22E-05
ADPF	[MJ]	4.18E+02	0.00E+00	6.74E-01	5.99E-02	2.31E-01	-7.52E+01
WDP	[m^3 world-Eq deprived]	5.04E+00	0.00E+00	2.41E-04	4.33E-02	1.65E-03	-9.72E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-100 A4 (13.4 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.89E+02	0.00E+00	5.08E-02	1.65E-02	3.76E-02	-2.32E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.90E+02	0.00E+00	5.08E-02	1.65E-02	3.76E-02	-2.32E+00
PENRE	[MJ]	4.03E+02	0.00E+00	6.74E-01	1.42E+01	2.31E-01	-7.52E+01
PENRM	[MJ]	1.47E+01	0.00E+00	0.00E+00	-1.41E+01	0.00E+00	0.00E+00
PENRT	[MJ]	4.18E+02	0.00E+00	6.74E-01	5.99E-02	2.31E-01	-7.52E+01
SM	[kg]	1.06E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.39E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.69E-01	0.00E+00	2.51E-05	1.01E-03	4.86E-05	-5.75E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-100 A4 (13.4 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.43E-07	0.00E+00	2.71E-11	3.26E-11	4.98E-11	-1.61E-04
NHWD	[kg]	7.19E+00	0.00E+00	9.42E-05	4.44E-03	6.64E-01	6.68E-01
RWD	[kg]	1.39E-02	0.00E+00	1.27E-06	3.38E-06	3.20E-06	-3.79E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.22E+01	0.00E+00	0.00E+00	1.26E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.59E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.71E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 200-100 A4 (13.4 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.76 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-80 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-80 A4 (14.2 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.83E+01	0.00E+00	5.52E-02	3.88E-01	1.51E-02	-7.31E+00
GWP-fossil	[kg CO_2-Eq.]	3.76E+01	0.00E+00	5.45E-02	3.88E-01	1.49E-02	-7.34E+00
GWP-biogenic	[kg CO_2-Eq.]	5.83E-01	0.00E+00	1.02E-04	1.23E-05	1.13E-04	3.99E-02
GWP-luluc	[kg CO_2-Eq.]	1.16E-01	0.00E+00	5.72E-04	4.61E-06	4.69E-05	-4.94E-03
ODP	[kg CFC11-Eq.]	5.87E-10	0.00E+00	9.23E-15	2.32E-14	4.84E-14	6.11E-12
AP	[mol H^+-Eq.]	1.19E-01	0.00E+00	1.99E-04	3.89E-05	9.32E-05	-2.33E-02
EP-freshwater	[kg P-Eq.]	1.98E-04	0.00E+00	1.50E-07	3.77E-09	2.11E-08	-3.62E-06
EP-marine	[kg N-Eq.]	3.29E-02	0.00E+00	9.45E-05	8.76E-06	2.27E-05	-3.61E-03
EP-terrestrial	[mol N-Eq.]	3.62E-01	0.00E+00	1.02E-03	1.84E-04	2.48E-04	-3.49E-02
POCP	[kg NMVOC-Eq.]	8.35E-02	0.00E+00	1.82E-04	2.57E-05	7.04E-05	-1.33E-02
ADPE	[kg Sb-Eq.]	5.82E-05	0.00E+00	3.70E-09	2.66E-10	1.01E-09	-7.53E-05
ADPF	[MJ]	4.40E+02	0.00E+00	7.13E-01	4.88E-02	2.44E-01	-7.79E+01
WDP	[m^3 world-Eq deprived]	5.34E+00	0.00E+00	2.54E-04	3.53E-02	1.75E-03	-1.01E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-80 A4 (14.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.19E+02	0.00E+00	5.37E-02	1.34E-02	3.98E-02	-2.12E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.20E+02	0.00E+00	5.37E-02	1.34E-02	3.98E-02	-2.12E+00
PENRE	[MJ]	4.26E+02	0.00E+00	7.13E-01	1.35E+01	2.44E-01	-7.79E+01
PENRM	[MJ]	1.40E+01	0.00E+00	0.00E+00	-1.35E+01	0.00E+00	0.00E+00
PENRT	[MJ]	4.40E+02	0.00E+00	7.13E-01	4.88E-02	2.44E-01	-7.79E+01
SM	[kg]	1.13E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.56E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.85E-01	0.00E+00	2.65E-05	8.28E-04	5.14E-05	-6.04E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-80 A4 (14.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.76E-07	0.00E+00	2.86E-11	2.65E-11	5.28E-11	-1.67E-04
NHWD	[kg]	7.65E+00	0.00E+00	9.95E-05	3.56E-03	7.03E-01	7.03E-01
RWD	[kg]	1.47E-02	0.00E+00	1.35E-06	2.75E-06	3.39E-06	-3.34E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.30E+01	0.00E+00	0.00E+00	1.33E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.83E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.39E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2- optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-80 A4 (14.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.77 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-100 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-100 A4 (16.0 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.25E+01	0.00E+00	6.23E-02	4.81E-01	1.70E-02	-8.58E+00
GWP-fossil	[kg CO_2-Eq.]	4.17E+01	0.00E+00	6.15E-02	4.81E-01	1.68E-02	-8.62E+00
GWP-biogenic	[kg CO_2-Eq.]	6.47E-01	0.00E+00	1.15E-04	1.52E-05	1.28E-04	4.68E-02
GWP-luluc	[kg CO_2-Eq.]	1.29E-01	0.00E+00	6.46E-04	5.78E-06	5.29E-05	-5.54E-03
ODP	[kg CFC11-Eq.]	6.53E-10	0.00E+00	1.04E-14	2.88E-14	5.45E-14	7.20E-12
AP	[mol H^+-Eq.]	1.31E-01	0.00E+00	2.24E-04	4.82E-05	1.05E-04	-2.69E-02
EP-freshwater	[kg P-Eq.]	2.20E-04	0.00E+00	1.69E-07	4.72E-09	2.38E-08	-4.13E-06
EP-marine	[kg N-Eq.]	3.65E-02	0.00E+00	1.07E-04	1.09E-05	2.56E-05	-4.18E-03
EP-terrestrial	[mol N-Eq.]	4.02E-01	0.00E+00	1.15E-03	2.28E-04	2.79E-04	-4.04E-02
POCP	[kg NMVOC-Eq.]	9.25E-02	0.00E+00	2.05E-04	3.19E-05	7.94E-05	-1.54E-02
ADPE	[kg Sb-Eq.]	6.01E-05	0.00E+00	4.17E-09	3.30E-10	1.14E-09	-8.58E-05
ADPF	[MJ]	4.88E+02	0.00E+00	8.04E-01	6.05E-02	2.75E-01	-9.13E+01
WDP	[m^3 world-Eq deprived]	5.91E+00	0.00E+00	2.87E-04	4.37E-02	1.97E-03	-1.15E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-100 A4 (16.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.78E+02	0.00E+00	6.06E-02	1.66E-02	4.49E-02	-2.26E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.79E+02	0.00E+00	6.06E-02	1.66E-02	4.49E-02	-2.26E+00
PENRE	[MJ]	4.72E+02	0.00E+00	8.04E-01	1.56E+01	2.75E-01	-9.13E+01
PENRM	[MJ]	1.60E+01	0.00E+00	0.00E+00	-1.55E+01	0.00E+00	0.00E+00
PENRT	[MJ]	4.88E+02	0.00E+00	8.04E-01	6.05E-02	2.75E-01	-9.13E+01
SM	[kg]	1.25E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.21E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.18E-01	0.00E+00	3.00E-05	1.02E-03	5.80E-05	-7.17E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-100 A4 (16.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	6.40E-07	0.00E+00	3.23E-11	3.29E-11	5.95E-11	-1.84E-04
NHWD	[kg]	8.47E+00	0.00E+00	1.12E-04	4.52E-03	7.93E-01	8.35E-01
RWD	[kg]	1.63E-02	0.00E+00	1.52E-06	3.42E-06	3.82E-06	-3.97E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.44E+01	0.00E+00	0.00E+00	1.50E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.68E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.72E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 225-100 A4 (16.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.78 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-80 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-80 A4 (15.3 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.14E+01	0.00E+00	5.97E-02	8.56E-01	1.61E-02	-8.77E+00
GWP-fossil	[kg CO_2-Eq.]	4.07E+01	0.00E+00	5.89E-02	8.56E-01	1.60E-02	-8.81E+00
GWP-biogenic	[kg CO_2-Eq.]	6.04E-01	0.00E+00	1.10E-04	2.98E-05	1.21E-04	4.57E-02
GWP-luluc	[kg CO_2-Eq.]	1.23E-01	0.00E+00	6.19E-04	1.64E-05	5.02E-05	-7.78E-03
ODP	[kg CFC11-Eq.]	6.24E-10	0.00E+00	9.98E-15	5.85E-14	5.17E-14	5.13E-12
AP	[mol H^+-Eq.]	1.37E-01	0.00E+00	2.15E-04	8.52E-05	9.96E-05	-3.03E-02
EP-freshwater	[kg P-Eq.]	2.07E-04	0.00E+00	1.62E-07	1.37E-08	2.26E-08	-5.24E-06
EP-marine	[kg N-Eq.]	3.50E-02	0.00E+00	1.02E-04	2.11E-05	2.43E-05	-4.65E-03
EP-terrestrial	[mol N-Eq.]	3.86E-01	0.00E+00	1.11E-03	4.04E-04	2.65E-04	-4.60E-02
POCP	[kg NMVOC-Eq.]	9.01E-02	0.00E+00	1.97E-04	6.07E-05	7.53E-05	-1.66E-02
ADPE	[kg Sb-Eq.]	1.25E-04	0.00E+00	4.00E-09	6.88E-10	1.08E-09	-1.05E-04
ADPF	[MJ]	4.85E+02	0.00E+00	7.70E-01	1.23E-01	2.61E-01	-9.61E+01
WDP	[m^3 world-Eq deprived]	5.79E+00	0.00E+00	2.75E-04	7.55E-02	1.87E-03	-1.44E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-80 A4 (15.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.46E+02	0.00E+00	5.81E-02	3.37E-02	4.26E-02	-5.09E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.47E+02	0.00E+00	5.81E-02	3.37E-02	4.26E-02	-5.09E+00
PENRE	[MJ]	4.66E+02	0.00E+00	7.70E-01	1.89E+01	2.61E-01	-9.61E+01
PENRM	[MJ]	1.93E+01	0.00E+00	0.00E+00	-1.88E+01	0.00E+00	0.00E+00
PENRT	[MJ]	4.85E+02	0.00E+00	7.70E-01	1.23E-01	2.61E-01	-9.61E+01
SM	[kg]	1.18E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.93E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.07E-01	0.00E+00	2.87E-05	1.77E-03	5.50E-05	-6.57E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-80 A4 (15.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	6.05E-07	0.00E+00	3.09E-11	6.64E-11	5.64E-11	-2.75E-04
NHWD	[kg]	8.05E+00	0.00E+00	1.08E-04	1.75E-02	7.52E-01	7.55E-01
RWD	[kg]	1.58E-02	0.00E+00	1.45E-06	6.72E-06	3.62E-06	-6.16E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.33E+01	0.00E+00	0.00E+00	1.43E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.51E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.70E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-80 A4 (15.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.79 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-150 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-150 A4 (19.3 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	5.14E+01	0.00E+00	7.51E-02	1.00E+00	2.04E-02	-1.11E+01
GWP-fossil	[kg CO_2-Eq.]	5.05E+01	0.00E+00	7.42E-02	1.00E+00	2.01E-02	-1.12E+01
GWP-biogenic	[kg CO_2-Eq.]	7.58E-01	0.00E+00	1.39E-04	3.40E-05	1.53E-04	5.85E-02
GWP-luluc	[kg CO_2-Eq.]	1.54E-01	0.00E+00	7.79E-04	1.72E-05	6.33E-05	-8.99E-03
ODP	[kg CFC11-Eq.]	7.79E-10	0.00E+00	1.26E-14	6.61E-14	6.52E-14	7.11E-12
AP	[mol H^+-Eq.]	1.66E-01	0.00E+00	2.71E-04	1.00E-04	1.26E-04	-3.71E-02
EP-freshwater	[kg P-Eq.]	2.59E-04	0.00E+00	2.04E-07	1.42E-08	2.85E-08	-6.23E-06
EP-marine	[kg N-Eq.]	4.36E-02	0.00E+00	1.29E-04	2.41E-05	3.06E-05	-5.74E-03
EP-terrestrial	[mol N-Eq.]	4.80E-01	0.00E+00	1.39E-03	4.74E-04	3.34E-04	-5.63E-02
POCP	[kg NMVOC-Eq.]	1.12E-01	0.00E+00	2.48E-04	6.98E-05	9.50E-05	-2.06E-02
ADPE	[kg Sb-Eq.]	1.30E-04	0.00E+00	5.03E-09	7.72E-10	1.37E-09	-1.26E-04
ADPF	[MJ]	6.00E+02	0.00E+00	9.70E-01	1.39E-01	3.29E-01	-1.21E+02
WDP	[m^3 world-Eq deprived]	7.16E+00	0.00E+00	3.46E-04	8.93E-02	2.35E-03	-1.71E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-150 A4 (19.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.84E+02	0.00E+00	7.31E-02	3.81E-02	5.37E-02	-5.45E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.85E+02	0.00E+00	7.31E-02	3.81E-02	5.37E-02	-5.45E+00
PENRE	[MJ]	5.76E+02	0.00E+00	9.70E-01	2.31E+01	3.29E-01	-1.21E+02
PENRM	[MJ]	2.35E+01	0.00E+00	0.00E+00	-2.30E+01	0.00E+00	0.00E+00
PENRT	[MJ]	6.00E+02	0.00E+00	9.70E-01	1.39E-01	3.29E-01	-1.21E+02
SM	[kg]	1.48E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.13E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.82E-01	0.00E+00	3.61E-05	2.09E-03	6.94E-05	-8.62E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-150 A4 (19.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.57E-07	0.00E+00	3.89E-11	7.51E-11	7.12E-11	-3.11E-04
NHWD	[kg]	1.00E+01	0.00E+00	1.35E-04	1.72E-02	9.49E-01	9.96E-01
RWD	[kg]	1.96E-02	0.00E+00	1.83E-06	7.66E-06	4.57E-06	-7.34E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.68E+01	0.00E+00	0.00E+00	1.80E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.84E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.29E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-150 A4 (19.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.80 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-150 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-150 A4 (21.0 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	5.78E+01	0.00E+00	8.15E-02	1.02E+00	2.21E-02	-1.09E+01
GWP-fossil	[kg CO_2-Eq.]	5.68E+01	0.00E+00	8.05E-02	1.02E+00	2.19E-02	-1.09E+01
GWP-biogenic	[kg CO_2-Eq.]	8.58E-01	0.00E+00	1.50E-04	3.49E-05	1.66E-04	5.70E-02
GWP-luluc	[kg CO_2-Eq.]	1.72E-01	0.00E+00	8.46E-04	1.81E-05	6.88E-05	-8.86E-03
ODP	[kg CFC11-Eq.]	8.72E-10	0.00E+00	1.36E-14	6.81E-14	7.09E-14	6.77E-12
AP	[mol H^+-Eq.]	1.85E-01	0.00E+00	2.94E-04	1.02E-04	1.37E-04	-3.63E-02
EP-freshwater	[kg P-Eq.]	2.92E-04	0.00E+00	2.22E-07	1.50E-08	3.09E-08	-6.12E-06
EP-marine	[kg N-Eq.]	4.91E-02	0.00E+00	1.40E-04	2.48E-05	3.33E-05	-5.61E-03
EP-terrestrial	[mol N-Eq.]	5.41E-01	0.00E+00	1.51E-03	4.84E-04	3.63E-04	-5.51E-02
POCP	[kg NMVOC-Eq.]	1.26E-01	0.00E+00	2.69E-04	7.16E-05	1.03E-04	-2.02E-02
ADPE	[kg Sb-Eq.]	1.33E-04	0.00E+00	5.46E-09	7.97E-10	1.49E-09	-1.23E-04
ADPF	[MJ]	6.74E+02	0.00E+00	1.05E+00	1.43E-01	3.58E-01	-1.18E+02
WDP	[m^3 world-Eq deprived]	8.07E+00	0.00E+00	3.76E-04	9.08E-02	2.56E-03	-1.68E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-150 A4 (21.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.66E+02	0.00E+00	7.94E-02	3.92E-02	5.83E-02	-5.48E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.68E+02	0.00E+00	7.94E-02	3.92E-02	5.83E-02	-5.48E+00
PENRE	[MJ]	6.48E+02	0.00E+00	1.05E+00	2.53E+01	3.58E-01	-1.18E+02
PENRM	[MJ]	2.56E+01	0.00E+00	0.00E+00	-2.51E+01	0.00E+00	0.00E+00
PENRT	[MJ]	6.74E+02	0.00E+00	1.05E+00	1.43E-01	3.58E-01	-1.18E+02
SM	[kg]	1.67E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.99E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.27E-01	0.00E+00	3.92E-05	2.13E-03	7.54E-05	-8.38E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-150 A4 (21.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.53E-07	0.00E+00	4.22E-11	7.73E-11	7.73E-11	-3.07E-04
NHWD	[kg]	1.13E+01	0.00E+00	1.47E-04	1.84E-02	1.03E+00	9.67E-01
RWD	[kg]	2.21E-02	0.00E+00	1.99E-06	7.87E-06	4.96E-06	-7.36E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.90E+01	0.00E+00	0.00E+00	1.96E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.86E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.32E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-150 A4 (21.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.81 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-80 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-80 A4 (20.0 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	5.31E+01	0.00E+00	7.80E-02	8.16E-01	2.12E-02	-1.15E+01
GWP-fossil	[kg CO_2-Eq.]	5.22E+01	0.00E+00	7.70E-02	8.16E-01	2.10E-02	-1.15E+01
GWP-biogenic	[kg CO_2-Eq.]	7.90E-01	0.00E+00	1.44E-04	2.83E-05	1.59E-04	6.14E-02
GWP-luluc	[kg CO_2-Eq.]	1.60E-01	0.00E+00	8.09E-04	1.54E-05	6.60E-05	-9.07E-03
ODP	[kg CFC11-Eq.]	8.10E-10	0.00E+00	1.30E-14	5.54E-14	6.80E-14	8.41E-12
AP	[mol H^+-Eq.]	1.72E-01	0.00E+00	2.81E-04	8.13E-05	1.31E-04	-3.83E-02
EP-freshwater	[kg P-Eq.]	2.70E-04	0.00E+00	2.12E-07	1.28E-08	2.97E-08	-6.32E-06
EP-marine	[kg N-Eq.]	4.53E-02	0.00E+00	1.34E-04	2.00E-05	3.19E-05	-5.90E-03
EP-terrestrial	[mol N-Eq.]	4.99E-01	0.00E+00	1.45E-03	3.85E-04	3.48E-04	-5.78E-02
POCP	[kg NMVOC-Eq.]	1.16E-01	0.00E+00	2.57E-04	5.77E-05	9.90E-05	-2.13E-02
ADPE	[kg Sb-Eq.]	1.31E-04	0.00E+00	5.23E-09	6.51E-10	1.43E-09	-1.29E-04
ADPF	[MJ]	6.16E+02	0.00E+00	1.01E+00	1.16E-01	3.43E-01	-1.24E+02
WDP	[m^3 world-Eq deprived]	7.43E+00	0.00E+00	3.59E-04	7.21E-02	2.45E-03	-1.75E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-80 A4 (20.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.12E+02	0.00E+00	7.59E-02	3.19E-02	5.60E-02	-4.95E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.13E+02	0.00E+00	7.59E-02	3.19E-02	5.60E-02	-4.95E+00
PENRE	[MJ]	5.95E+02	0.00E+00	1.01E+00	2.09E+01	3.43E-01	-1.24E+02
PENRM	[MJ]	2.13E+01	0.00E+00	0.00E+00	-2.08E+01	0.00E+00	0.00E+00
PENRT	[MJ]	6.16E+02	0.00E+00	1.01E+00	1.16E-01	3.43E-01	-1.24E+02
SM	[kg]	1.54E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.36E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.97E-01	0.00E+00	3.75E-05	1.69E-03	7.23E-05	-9.01E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-80 A4 (20.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.88E-07	0.00E+00	4.04E-11	6.29E-11	7.42E-11	-1.31E-04
NHWD	[kg]	1.05E+01	0.00E+00	1.41E-04	1.62E-02	9.89E-01	4.70E-01
RWD	[kg]	2.04E-02	0.00E+00	1.90E-06	6.37E-06	4.76E-06	-3.92E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.75E+01	0.00E+00	0.00E+00	1.88E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.45E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.59E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-80 A4 (20.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.82 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-150 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-150 A4 (23.5 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.26E+01	0.00E+00	9.14E-02	1.12E+00	2.48E-02	-1.32E+01
GWP-fossil	[kg CO_2-Eq.]	6.15E+01	0.00E+00	9.03E-02	1.12E+00	2.45E-02	-1.32E+01
GWP-biogenic	[kg CO_2-Eq.]	9.33E-01	0.00E+00	1.69E-04	3.83E-05	1.86E-04	6.99E-02
GWP-luluc	[kg CO_2-Eq.]	1.89E-01	0.00E+00	9.48E-04	2.01E-05	7.72E-05	-1.00E-02
ODP	[kg CFC11-Eq.]	9.53E-10	0.00E+00	1.53E-14	7.47E-14	7.95E-14	9.10E-12
AP	[mol H^+-Eq.]	1.99E-01	0.00E+00	3.30E-04	1.11E-04	1.53E-04	-4.31E-02
EP-freshwater	[kg P-Eq.]	3.18E-04	0.00E+00	2.48E-07	1.67E-08	3.47E-08	-7.06E-06
EP-marine	[kg N-Eq.]	5.33E-02	0.00E+00	1.57E-04	2.71E-05	3.73E-05	-6.67E-03
EP-terrestrial	[mol N-Eq.]	5.87E-01	0.00E+00	1.69E-03	5.28E-04	4.07E-04	-6.51E-02
POCP	[kg NMVOC-Eq.]	1.36E-01	0.00E+00	3.02E-04	7.83E-05	1.16E-04	-2.42E-02
ADPE	[kg Sb-Eq.]	1.35E-04	0.00E+00	6.13E-09	8.76E-10	1.67E-09	-1.43E-04
ADPF	[MJ]	7.28E+02	0.00E+00	1.18E+00	1.57E-01	4.01E-01	-1.42E+02
WDP	[m^3 world-Eq deprived]	8.72E+00	0.00E+00	4.21E-04	9.90E-02	2.87E-03	-1.95E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-150 A4 (23.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.39E+02	0.00E+00	8.90E-02	4.31E-02	6.55E-02	-5.61E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.40E+02	0.00E+00	8.90E-02	4.31E-02	6.55E-02	-5.61E+00
PENRE	[MJ]	7.01E+02	0.00E+00	1.18E+00	2.69E+01	4.01E-01	-1.42E+02
PENRM	[MJ]	2.72E+01	0.00E+00	0.00E+00	-2.67E+01	0.00E+00	0.00E+00
PENRT	[MJ]	7.28E+02	0.00E+00	1.18E+00	1.57E-01	4.01E-01	-1.42E+02
SM	[kg]	1.81E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.18E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.66E-01	0.00E+00	4.40E-05	2.32E-03	8.46E-05	-1.04E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-150 A4 (23.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.29E-07	0.00E+00	4.74E-11	8.49E-11	8.67E-11	-3.42E-04
NHWD	[kg]	1.23E+01	0.00E+00	1.65E-04	2.07E-02	1.16E+00	1.21E+00
RWD	[kg]	2.39E-02	0.00E+00	2.23E-06	8.63E-06	5.57E-06	-8.03E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.07E+01	0.00E+00	0.00E+00	2.19E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.02E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.60E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 315-150 A4 (23.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.83 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-100 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-100 A4 (18.0 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.80E+01	0.00E+00	7.00E-02	7.91E-01	1.90E-02	-1.04E+01
GWP-fossil	[kg CO_2-Eq.]	4.71E+01	0.00E+00	6.92E-02	7.91E-01	1.88E-02	-1.04E+01
GWP-biogenic	[kg CO_2-Eq.]	7.08E-01	0.00E+00	1.29E-04	2.69E-05	1.43E-04	5.51E-02
GWP-luluc	[kg CO_2-Eq.]	1.44E-01	0.00E+00	7.27E-04	1.37E-05	5.92E-05	-8.54E-03
ODP	[kg CFC11-Eq.]	7.28E-10	0.00E+00	1.17E-14	5.23E-14	6.10E-14	7.12E-12
AP	[mol H^+-Eq.]	1.56E-01	0.00E+00	2.53E-04	7.89E-05	1.18E-04	-3.50E-02
EP-freshwater	[kg P-Eq.]	2.42E-04	0.00E+00	1.90E-07	1.13E-08	2.66E-08	-5.87E-06
EP-marine	[kg N-Eq.]	4.08E-02	0.00E+00	1.20E-04	1.90E-05	2.86E-05	-5.39E-03
EP-terrestrial	[mol N-Eq.]	4.49E-01	0.00E+00	1.30E-03	3.74E-04	3.12E-04	-5.30E-02
POCP	[kg NMVOC-Eq.]	1.04E-01	0.00E+00	2.31E-04	5.51E-05	8.88E-05	-1.94E-02
ADPE	[kg Sb-Eq.]	1.28E-04	0.00E+00	4.70E-09	6.11E-10	1.28E-09	-1.20E-04
ADPF	[MJ]	5.57E+02	0.00E+00	9.05E-01	1.10E-01	3.08E-01	-1.12E+02
WDP	[m^3 world-Eq deprived]	6.70E+00	0.00E+00	3.23E-04	7.03E-02	2.20E-03	-1.63E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-100 A4 (18.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.39E+02	0.00E+00	6.82E-02	3.01E-02	5.02E-02	-4.98E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.40E+02	0.00E+00	6.82E-02	3.01E-02	5.02E-02	-4.98E+00
PENRE	[MJ]	5.37E+02	0.00E+00	9.05E-01	1.98E+01	3.08E-01	-1.12E+02
PENRM	[MJ]	2.02E+01	0.00E+00	0.00E+00	-1.96E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.57E+02	0.00E+00	9.05E-01	1.10E-01	3.08E-01	-1.12E+02
SM	[kg]	1.38E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.77E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.57E-01	0.00E+00	3.37E-05	1.65E-03	6.49E-05	-8.01E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-100 A4 (18.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.08E-07	0.00E+00	3.63E-11	5.94E-11	6.66E-11	-3.00E-04
NHWD	[kg]	9.40E+00	0.00E+00	1.26E-04	1.38E-02	8.87E-01	9.25E-01
RWD	[kg]	1.84E-02	0.00E+00	1.71E-06	6.05E-06	4.27E-06	-6.15E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.56E+01	0.00E+00	0.00E+00	1.68E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.45E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.59E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 250-100 A4 (18.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.84 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-100 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-100 A4 (19.9 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	5.34E+01	0.00E+00	7.74E-02	8.52E-01	2.11E-02	-1.11E+01
GWP-fossil	[kg CO_2-Eq.]	5.24E+01	0.00E+00	7.65E-02	8.52E-01	2.08E-02	-1.12E+01
GWP-biogenic	[kg CO_2-Eq.]	7.92E-01	0.00E+00	1.43E-04	2.92E-05	1.58E-04	5.93E-02
GWP-luluc	[kg CO_2-Eq.]	1.60E-01	0.00E+00	8.03E-04	1.53E-05	6.55E-05	-8.92E-03
ODP	[kg CFC11-Eq.]	8.11E-10	0.00E+00	1.30E-14	5.69E-14	6.75E-14	7.81E-12
AP	[mol H^+-Eq.]	1.72E-01	0.00E+00	2.79E-04	8.49E-05	1.30E-04	-3.73E-02
EP-freshwater	[kg P-Eq.]	2.70E-04	0.00E+00	2.10E-07	1.26E-08	2.94E-08	-6.19E-06
EP-marine	[kg N-Eq.]	4.54E-02	0.00E+00	1.33E-04	2.07E-05	3.17E-05	-5.75E-03
EP-terrestrial	[mol N-Eq.]	5.00E-01	0.00E+00	1.44E-03	4.02E-04	3.45E-04	-5.63E-02
POCP	[kg NMVOC-Eq.]	1.16E-01	0.00E+00	2.55E-04	5.97E-05	9.82E-05	-2.07E-02
ADPE	[kg Sb-Eq.]	1.31E-04	0.00E+00	5.19E-09	6.67E-10	1.41E-09	-1.26E-04
ADPF	[MJ]	6.19E+02	0.00E+00	1.00E+00	1.19E-01	3.41E-01	-1.20E+02
WDP	[m^3 world-Eq deprived]	7.45E+00	0.00E+00	3.57E-04	7.55E-02	2.43E-03	-1.71E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-100 A4 (19.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.12E+02	0.00E+00	7.54E-02	3.28E-02	5.55E-02	-5.07E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.14E+02	0.00E+00	7.54E-02	3.28E-02	5.55E-02	-5.07E+00
PENRE	[MJ]	5.97E+02	0.00E+00	1.00E+00	2.17E+01	3.41E-01	-1.20E+02
PENRM	[MJ]	2.21E+01	0.00E+00	0.00E+00	-2.16E+01	0.00E+00	0.00E+00
PENRT	[MJ]	6.19E+02	0.00E+00	1.00E+00	1.19E-01	3.41E-01	-1.20E+02
SM	[kg]	1.54E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.17E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.97E-01	0.00E+00	3.73E-05	1.77E-03	7.18E-05	-8.69E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-100 A4 (19.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.89E-07	0.00E+00	4.01E-11	6.47E-11	7.36E-11	-3.12E-04
NHWD	[kg]	1.05E+01	0.00E+00	1.40E-04	1.57E-02	9.81E-01	1.00E+00
RWD	[kg]	2.04E-02	0.00E+00	1.89E-06	6.57E-06	4.72E-06	-6.49E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.75E+01	0.00E+00	0.00E+00	1.86E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.54E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.75E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 280-100 A4 (19.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.85 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 355-150

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 355-150 (36.2 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.76E+01	0.00E+00	1.41E-01	6.63E-01	3.86E-02	-2.18E+01
GWP-fossil	[kg CO_2-Eq.]	9.59E+01	0.00E+00	1.39E-01	6.63E-01	3.82E-02	-2.19E+01
GWP-biogenic	[kg CO_2-Eq.]	1.40E+00	0.00E+00	2.60E-04	4.06E-05	2.89E-04	1.19E-01
GWP-luluc	[kg CO_2-Eq.]	2.90E-01	0.00E+00	1.46E-03	1.49E-05	1.20E-04	-2.15E-02
ODP	[kg CFC11-Eq.]	1.46E-09	0.00E+00	2.36E-14	5.93E-14	1.24E-13	1.73E-11
AP	[mol H^+-Eq.]	3.36E-01	0.00E+00	5.08E-04	3.70E-04	2.38E-04	-8.00E-02
EP-freshwater	[kg P-Eq.]	4.82E-04	0.00E+00	3.83E-07	1.49E-08	5.40E-08	-1.40E-05
EP-marine	[kg N-Eq.]	8.25E-02	0.00E+00	2.41E-04	1.78E-04	5.81E-05	-1.21E-02
EP-terrestrial	[mol N-Eq.]	9.08E-01	0.00E+00	2.61E-03	2.06E-03	6.33E-04	-1.21E-01
POCP	[kg NMVOC-Eq.]	2.13E-01	0.00E+00	4.65E-04	4.58E-04	1.80E-04	-4.27E-02
ADPE	[kg Sb-Eq.]	3.93E-04	0.00E+00	9.44E-09	7.51E-10	2.59E-09	-2.91E-04
ADPF	[MJ]	1.13E+03	0.00E+00	1.82E+00	1.67E-01	6.25E-01	-2.37E+02
WDP	[m^3 world-Eq deprived]	1.37E+01	0.00E+00	6.49E-04	5.98E-02	4.46E-03	-3.95E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 355-150 (36.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.28E+03	0.00E+00	1.37E-01	3.30E-02	1.02E-01	-1.22E+01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.28E+03	0.00E+00	1.37E-01	3.30E-02	1.02E-01	-1.22E+01
PENRE	[MJ]	1.10E+03	0.00E+00	1.82E+00	2.73E+01	6.25E-01	-2.37E+02
PENRM	[MJ]	2.76E+01	0.00E+00	0.00E+00	-2.71E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.13E+03	0.00E+00	1.82E+00	1.67E-01	6.25E-01	-2.37E+02
SM	[kg]	2.80E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.65E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.22E-01	0.00E+00	6.78E-05	1.41E-03	1.32E-04	-1.59E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 355-150 (36.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.41E-06	0.00E+00	7.30E-11	6.67E-11	1.35E-10	-8.10E-04
NHWD	[kg]	1.90E+01	0.00E+00	2.54E-04	1.54E-02	1.80E+00	1.83E+00
RWD	[kg]	3.73E-02	0.00E+00	3.43E-06	6.17E-06	8.66E-06	-8.70E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.08E+01	0.00E+00	0.00E+00	3.41E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.10E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.96E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 355-150 (36.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.86 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 450-150

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 450-150 (42.0 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.13E+02	0.00E+00	1.63E-01	6.64E-01	4.48E-02	-2.58E+01
GWP-fossil	[kg CO_2-Eq.]	1.11E+02	0.00E+00	1.61E-01	6.64E-01	4.44E-02	-2.59E+01
GWP-biogenic	[kg CO_2-Eq.]	1.62E+00	0.00E+00	3.02E-04	4.07E-05	3.36E-04	1.40E-01
GWP-luluc	[kg CO_2-Eq.]	3.37E-01	0.00E+00	1.70E-03	1.49E-05	1.39E-04	-2.65E-02
ODP	[kg CFC11-Eq.]	1.70E-09	0.00E+00	2.73E-14	5.94E-14	1.44E-13	2.03E-11
AP	[mol H^+-Eq.]	3.94E-01	0.00E+00	5.89E-04	3.70E-04	2.77E-04	-9.65E-02
EP-freshwater	[kg P-Eq.]	5.59E-04	0.00E+00	4.44E-07	1.49E-08	6.27E-08	-1.71E-05
EP-marine	[kg N-Eq.]	9.59E-02	0.00E+00	2.80E-04	1.78E-04	6.74E-05	-1.46E-02
EP-terrestrial	[mol N-Eq.]	1.06E+00	0.00E+00	3.03E-03	2.06E-03	7.35E-04	-1.46E-01
POCP	[kg NMVOC-Eq.]	2.47E-01	0.00E+00	5.39E-04	4.59E-04	2.09E-04	-5.11E-02
ADPE	[kg Sb-Eq.]	5.21E-04	0.00E+00	1.10E-08	7.52E-10	3.01E-09	-3.55E-04
ADPF	[MJ]	1.30E+03	0.00E+00	2.11E+00	1.67E-01	7.25E-01	-2.81E+02
WDP	[m^3 world-Eq deprived]	1.63E+01	0.00E+00	7.53E-04	5.99E-02	5.18E-03	-4.83E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 450-150 (42.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.48E+03	0.00E+00	1.59E-01	3.31E-02	1.18E-01	-1.54E+01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.48E+03	0.00E+00	1.59E-01	3.31E-02	1.18E-01	-1.54E+01
PENRE	[MJ]	1.27E+03	0.00E+00	2.11E+00	3.03E+01	7.25E-01	-2.81E+02
PENRM	[MJ]	3.06E+01	0.00E+00	0.00E+00	-3.01E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.30E+03	0.00E+00	2.11E+00	1.67E-01	7.25E-01	-2.81E+02
SM	[kg]	3.25E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E+01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.46E-01	0.00E+00	7.86E-05	1.41E-03	1.53E-04	-1.85E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 450-150 (42.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.64E-06	0.00E+00	8.47E-11	6.68E-11	1.57E-10	-1.01E-03
NHWD	[kg]	2.21E+01	0.00E+00	2.95E-04	1.54E-02	2.09E+00	2.12E+00
RWD	[kg]	4.32E-02	0.00E+00	3.98E-06	6.18E-06	1.01E-05	-1.01E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.57E+01	0.00E+00	0.00E+00	3.96E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.10E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.97E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 450-150 (42.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.87 HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 500-150

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 500-150 (45.2 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.22E+02	0.00E+00	1.76E-01	6.69E-01	4.83E-02	-2.74E+01
GWP-fossil	[kg CO_2-Eq.]	1.20E+02	0.00E+00	1.74E-01	6.69E-01	4.78E-02	-2.76E+01
GWP-biogenic	[kg CO_2-Eq.]	1.75E+00	0.00E+00	3.25E-04	4.12E-05	3.62E-04	1.50E-01
GWP-luluc	[kg CO_2-Eq.]	3.63E-01	0.00E+00	1.82E-03	1.50E-05	1.50E-04	-2.74E-02
ODP	[kg CFC11-Eq.]	1.83E-09	0.00E+00	2.94E-14	6.00E-14	1.55E-13	2.22E-11
AP	[mol H^+-Eq.]	4.19E-01	0.00E+00	6.34E-04	3.77E-04	2.98E-04	-1.02E-01
EP-freshwater	[kg P-Eq.]	6.03E-04	0.00E+00	4.78E-07	1.50E-08	6.75E-08	-1.78E-05
EP-marine	[kg N-Eq.]	1.03E-01	0.00E+00	3.01E-04	1.82E-04	7.26E-05	-1.54E-02
EP-terrestrial	[mol N-Eq.]	1.13E+00	0.00E+00	3.26E-03	2.10E-03	7.92E-04	-1.53E-01
POCP	[kg NMVOC-Eq.]	2.65E-01	0.00E+00	5.80E-04	4.67E-04	2.25E-04	-5.41E-02
ADPE	[kg Sb-Eq.]	5.28E-04	0.00E+00	1.18E-08	7.59E-10	3.24E-09	-3.71E-04
ADPF	[MJ]	1.40E+03	0.00E+00	2.27E+00	1.69E-01	7.81E-01	-2.98E+02
WDP	[m^3 world-Eq deprived]	1.74E+01	0.00E+00	8.11E-04	6.04E-02	5.58E-03	-5.03E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 500-150 (45.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.59E+03	0.00E+00	1.71E-01	3.34E-02	1.27E-01	-1.54E+01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.60E+03	0.00E+00	1.71E-01	3.34E-02	1.27E-01	-1.54E+01
PENRE	[MJ]	1.36E+03	0.00E+00	2.27E+00	3.22E+01	7.81E-01	-2.98E+02
PENRM	[MJ]	3.25E+01	0.00E+00	0.00E+00	-3.20E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.40E+03	0.00E+00	2.27E+00	1.69E-01	7.81E-01	-2.98E+02
SM	[kg]	3.50E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E+01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.09E-01	0.00E+00	8.46E-05	1.42E-03	1.64E-04	-2.00E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 500-150 (45.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.77E-06	0.00E+00	9.11E-11	6.74E-11	1.69E-10	-1.04E-03
NHWD	[kg]	2.38E+01	0.00E+00	3.17E-04	1.55E-02	2.25E+00	2.29E+00
RWD	[kg]	4.64E-02	0.00E+00	4.29E-06	6.23E-06	1.08E-05	-1.03E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.86E+01	0.00E+00	0.00E+00	4.27E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.11E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.98E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE PN16 FLANGED OUTLET: HAKU ABS+FLA 500-150 (45.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.88 HAKU SADDLE FLANGED OUTLET : HAKU ABS+FLA 630-150

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SADDLE FLANGED OUTLET : HAKU ABS+FLA 630-150 (50.2 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.38E+02	0.00E+00	1.95E-01	6.54E-01	5.36E-02	-2.80E+01
GWP-fossil	[kg CO_2-Eq.]	1.35E+02	0.00E+00	1.93E-01	6.54E-01	5.31E-02	-2.81E+01
GWP-biogenic	[kg CO_2-Eq.]	2.01E+00	0.00E+00	3.61E-04	4.04E-05	4.02E-04	1.54E-01
GWP-luluc	[kg CO_2-Eq.]	4.10E-01	0.00E+00	2.03E-03	1.46E-05	1.67E-04	-2.64E-02
ODP	[kg CFC11-Eq.]	2.07E-09	0.00E+00	3.27E-14	5.88E-14	1.72E-13	2.36E-11
AP	[mol H^+-Eq.]	4.62E-01	0.00E+00	7.04E-04	3.71E-04	3.31E-04	-1.01E-01
EP-freshwater	[kg P-Eq.]	6.89E-04	0.00E+00	5.31E-07	1.47E-08	7.50E-08	-1.74E-05
EP-marine	[kg N-Eq.]	1.17E-01	0.00E+00	3.35E-04	1.79E-04	8.07E-05	-1.54E-02
EP-terrestrial	[mol N-Eq.]	1.29E+00	0.00E+00	3.62E-03	2.07E-03	8.80E-04	-1.53E-01
POCP	[kg NMVOC-Eq.]	3.00E-01	0.00E+00	6.45E-04	4.61E-04	2.50E-04	-5.45E-02
ADPE	[kg Sb-Eq.]	5.05E-04	0.00E+00	1.31E-08	7.44E-10	3.60E-09	-3.64E-04
ADPF	[MJ]	1.58E+03	0.00E+00	2.52E+00	1.66E-01	8.68E-01	-3.03E+02
WDP	[m^3 world-Eq deprived]	1.96E+01	0.00E+00	9.00E-04	5.91E-02	6.20E-03	-4.92E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SADDLE FLANGED OUTLET : HAKU ABS+FLA 630-150 (50.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.81E+03	0.00E+00	1.90E-01	3.27E-02	1.42E-01	-1.40E+01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.81E+03	0.00E+00	1.90E-01	3.27E-02	1.42E-01	-1.40E+01
PENRE	[MJ]	1.54E+03	0.00E+00	2.52E+00	3.59E+01	8.68E-01	-3.03E+02
PENRM	[MJ]	3.62E+01	0.00E+00	0.00E+00	-3.57E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.58E+03	0.00E+00	2.52E+00	1.66E-01	8.68E-01	-3.03E+02
SM	[kg]	3.99E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E+01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.02E+00	0.00E+00	9.40E-05	1.39E-03	1.83E-04	-2.09E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SADDLE FLANGED OUTLET : HAKU ABS+FLA 630-150 (50.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.01E-06	0.00E+00	1.01E-10	6.61E-11	1.88E-10	-9.91E-04
NHWD	[kg]	2.71E+01	0.00E+00	3.52E-04	1.51E-02	2.50E+00	2.41E+00
RWD	[kg]	5.26E-02	0.00E+00	4.76E-06	6.10E-06	1.20E-05	-9.90E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.46E+01	0.00E+00	0.00E+00	4.74E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.09E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.94E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SADDLE FLANGED OUTLET : HAKU ABS+FLA 630-150 (50.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.89 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-1" A4 (3.13 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.78E+00	0.00E+00	1.22E-02	3.58E-01	3.21E-03	-1.97E+00
GWP-fossil	[kg CO_2-Eq.]	8.64E+00	0.00E+00	1.20E-02	3.58E-01	3.18E-03	-1.98E+00
GWP-biogenic	[kg CO_2-Eq.]	1.19E-01	0.00E+00	2.25E-05	1.25E-05	2.41E-05	9.48E-03
GWP-luluc	[kg CO_2-Eq.]	2.49E-02	0.00E+00	1.26E-04	1.70E-05	9.99E-06	-2.24E-03
ODP	[kg CFC11-Eq.]	1.24E-10	0.00E+00	2.04E-15	5.06E-14	1.03E-14	3.36E-13
AP	[mol H^+-Eq.]	3.05E-02	0.00E+00	4.39E-05	4.05E-05	1.98E-05	-7.34E-03
EP-freshwater	[kg P-Eq.]	5.96E-05	0.00E+00	3.31E-08	9.12E-09	4.49E-09	-1.42E-06
EP-marine	[kg N-Eq.]	7.17E-03	0.00E+00	2.09E-05	1.10E-05	4.83E-06	-1.12E-03
EP-terrestrial	[mol N-Eq.]	7.88E-02	0.00E+00	2.26E-04	1.89E-04	5.27E-05	-1.14E-02
POCP	[kg NMVOC-Eq.]	1.88E-02	0.00E+00	4.02E-05	3.14E-05	1.50E-05	-3.87E-03
ADPE	[kg Sb-Eq.]	4.16E-05	0.00E+00	8.16E-10	5.68E-10	2.16E-10	-2.72E-05
ADPF	[MJ]	1.07E+02	0.00E+00	1.57E-01	1.05E-01	5.20E-02	-2.24E+01
WDP	[m^3 world-Eq deprived]	3.11E+00	0.00E+00	5.61E-05	3.22E-02	3.71E-04	-3.83E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-1" A4 (3.13 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.67E+01	0.00E+00	3.86E-03	8.64E-03	2.76E-03	-9.13E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.79E+01	0.00E+00	3.86E-03	8.64E-03	2.76E-03	-9.13E-01
PENRE	[MJ]	3.14E+01	0.00E+00	5.13E-02	1.48E+00	1.69E-02	-1.74E+01
PENRM	[MJ]	1.96E+00	0.00E+00	0.00E+00	-1.45E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.34E+01	0.00E+00	5.13E-02	3.43E-02	1.69E-02	-1.74E+01
SM	[kg]	7.68E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.09E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.06E-02	0.00E+00	1.91E-06	2.48E-04	3.57E-06	-1.18E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-1" A4 (3.13 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.07E-08	0.00E+00	2.06E-12	1.74E-11	3.66E-12	-5.38E-05
NHWD	[kg]	5.23E-01	0.00E+00	7.16E-06	6.85E-03	4.88E-02	1.35E-01
RWD	[kg]	1.05E-03	0.00E+00	9.68E-08	1.35E-06	2.35E-07	-9.23E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.03E-01	0.00E+00	0.00E+00	9.26E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-1" A4 (3.13 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.90 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-5/4" A4 (3.20 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.97E+00	0.00E+00	1.25E-02	3.62E-01	3.29E-03	-2.00E+00
GWP-fossil	[kg CO_2-Eq.]	8.83E+00	0.00E+00	1.23E-02	3.62E-01	3.25E-03	-2.01E+00
GWP-biogenic	[kg CO_2-Eq.]	1.22E-01	0.00E+00	2.30E-05	1.27E-05	2.46E-05	9.65E-03
GWP-luluc	[kg CO_2-Eq.]	2.54E-02	0.00E+00	1.29E-04	1.71E-05	1.02E-05	-2.25E-03
ODP	[kg CFC11-Eq.]	1.27E-10	0.00E+00	2.08E-15	5.08E-14	1.05E-14	3.60E-13
AP	[mol H^+-Eq.]	3.11E-02	0.00E+00	4.49E-05	4.09E-05	2.03E-05	-7.43E-03
EP-freshwater	[kg P-Eq.]	6.06E-05	0.00E+00	3.38E-08	9.21E-09	4.60E-09	-1.43E-06
EP-marine	[kg N-Eq.]	7.33E-03	0.00E+00	2.13E-05	1.11E-05	4.94E-06	-1.14E-03
EP-terrestrial	[mol N-Eq.]	8.06E-02	0.00E+00	2.31E-04	1.91E-04	5.39E-05	-1.15E-02
POCP	[kg NMVOC-Eq.]	1.92E-02	0.00E+00	4.11E-05	3.17E-05	1.53E-05	-3.92E-03
ADPE	[kg Sb-Eq.]	4.17E-05	0.00E+00	8.35E-10	5.72E-10	2.21E-10	-2.75E-05
ADPF	[MJ]	1.10E+02	0.00E+00	1.61E-01	1.06E-01	5.32E-02	-2.27E+01
WDP	[m^3 world-Eq deprived]	3.13E+00	0.00E+00	5.74E-05	3.26E-02	3.80E-04	-3.86E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-5/4" A4 (3.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.31E+01	0.00E+00	2.41E-03	5.31E-03	1.73E-03	-5.04E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.43E+01	0.00E+00	2.41E-03	5.31E-03	1.73E-03	-5.04E-01
PENRE	[MJ]	1.99E+01	0.00E+00	3.20E-02	5.20E-01	1.06E-02	-1.16E+01
PENRM	[MJ]	1.38E+00	0.00E+00	0.00E+00	-4.99E-01	0.00E+00	0.00E+00
PENRT	[MJ]	2.13E+01	0.00E+00	3.20E-02	2.11E-02	1.06E-02	-1.16E+01
SM	[kg]	4.82E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.96E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.92E-02	0.00E+00	1.19E-06	1.53E-04	2.23E-06	-8.30E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-5/4" A4 (3.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.58E-08	0.00E+00	1.28E-12	1.07E-11	2.29E-12	-3.23E-05
NHWD	[kg]	3.27E-01	0.00E+00	4.47E-06	4.20E-03	3.05E-02	9.58E-02
RWD	[kg]	6.71E-04	0.00E+00	6.04E-08	8.30E-07	1.47E-07	-5.62E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.65E-01	0.00E+00	0.00E+00	5.78E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-5/4" A4 (3.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.91 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-6/4" A4 (3.36 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.43E+00	0.00E+00	1.31E-02	3.83E-01	3.45E-03	-2.08E+00
GWP-fossil	[kg CO_2-Eq.]	9.28E+00	0.00E+00	1.29E-02	3.83E-01	3.41E-03	-2.08E+00
GWP-biogenic	[kg CO_2-Eq.]	1.28E-01	0.00E+00	2.41E-05	1.33E-05	2.59E-05	9.97E-03
GWP-luluc	[kg CO_2-Eq.]	2.67E-02	0.00E+00	1.36E-04	1.90E-05	1.07E-05	-2.29E-03
ODP	[kg CFC11-Eq.]	1.34E-10	0.00E+00	2.19E-15	5.64E-14	1.10E-14	3.57E-13
AP	[mol H^+-Eq.]	3.24E-02	0.00E+00	4.71E-05	4.38E-05	2.13E-05	-7.62E-03
EP-freshwater	[kg P-Eq.]	6.62E-05	0.00E+00	3.55E-08	9.90E-09	4.82E-09	-1.46E-06
EP-marine	[kg N-Eq.]	7.71E-03	0.00E+00	2.24E-05	1.19E-05	5.19E-06	-1.17E-03
EP-terrestrial	[mol N-Eq.]	8.48E-02	0.00E+00	2.42E-04	2.04E-04	5.66E-05	-1.18E-02
POCP	[kg NMVOC-Eq.]	2.02E-02	0.00E+00	4.31E-05	3.40E-05	1.61E-05	-4.04E-03
ADPE	[kg Sb-Eq.]	4.19E-05	0.00E+00	8.76E-10	6.32E-10	2.32E-10	-2.80E-05
ADPF	[MJ]	1.15E+02	0.00E+00	1.69E-01	1.17E-01	5.58E-02	-2.35E+01
WDP	[m^3 world-Eq deprived]	3.53E+00	0.00E+00	6.03E-05	3.46E-02	3.99E-04	-3.94E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-6/4" A4 (3.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.07E+01	0.00E+00	2.39E-03	5.53E-03	1.71E-03	-4.74E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.19E+01	0.00E+00	2.39E-03	5.53E-03	1.71E-03	-4.74E-01
PENRE	[MJ]	1.72E+01	0.00E+00	3.18E-02	5.21E-01	1.05E-02	-1.13E+01
PENRM	[MJ]	1.01E+00	0.00E+00	0.00E+00	-4.99E-01	0.00E+00	0.00E+00
PENRT	[MJ]	1.82E+01	0.00E+00	3.18E-02	2.21E-02	1.05E-02	-1.13E+01
SM	[kg]	5.41E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.82E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.41E-02	0.00E+00	1.18E-06	1.54E-04	2.21E-06	-8.08E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-6/4" A4 (3.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.21E-08	0.00E+00	1.27E-12	1.11E-11	2.27E-12	-3.04E-05
NHWD	[kg]	2.30E-01	0.00E+00	4.43E-06	4.42E-03	3.02E-02	9.33E-02
RWD	[kg]	6.30E-04	0.00E+00	6.00E-08	8.53E-07	1.46E-07	-5.51E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.87E-01	0.00E+00	0.00E+00	5.74E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.21E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.17E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-6/4" A4 (3.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.92 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-2" A4 (3.51 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.76E+00	0.00E+00	1.37E-02	4.23E-01	3.59E-03	-2.23E+00
GWP-fossil	[kg CO_2-Eq.]	9.60E+00	0.00E+00	1.35E-02	4.23E-01	3.55E-03	-2.24E+00
GWP-biogenic	[kg CO_2-Eq.]	1.32E-01	0.00E+00	2.52E-05	1.48E-05	2.69E-05	1.07E-02
GWP-luluc	[kg CO_2-Eq.]	2.77E-02	0.00E+00	1.42E-04	2.07E-05	1.12E-05	-2.47E-03
ODP	[kg CFC11-Eq.]	1.38E-10	0.00E+00	2.28E-15	6.14E-14	1.15E-14	3.43E-13
AP	[mol H^+-Eq.]	3.36E-02	0.00E+00	4.92E-05	4.83E-05	2.22E-05	-8.20E-03
EP-freshwater	[kg P-Eq.]	6.89E-05	0.00E+00	3.71E-08	1.09E-08	5.02E-09	-1.57E-06
EP-marine	[kg N-Eq.]	7.96E-03	0.00E+00	2.34E-05	1.32E-05	5.40E-06	-1.26E-03
EP-terrestrial	[mol N-Eq.]	8.76E-02	0.00E+00	2.53E-04	2.25E-04	5.89E-05	-1.27E-02
POCP	[kg NMVOC-Eq.]	2.09E-02	0.00E+00	4.51E-05	3.74E-05	1.68E-05	-4.34E-03
ADPE	[kg Sb-Eq.]	4.42E-05	0.00E+00	9.16E-10	6.89E-10	2.41E-10	-3.01E-05
ADPF	[MJ]	1.19E+02	0.00E+00	1.76E-01	1.28E-01	5.81E-02	-2.54E+01
WDP	[m^3 world-Eq deprived]	3.70E+00	0.00E+00	6.30E-05	3.82E-02	4.15E-04	-4.24E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-2" A4 (3.51 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.76E+01	0.00E+00	1.82E-03	4.39E-03	1.30E-03	-3.56E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.88E+01	0.00E+00	1.82E-03	4.39E-03	1.30E-03	-3.56E-01
PENRE	[MJ]	1.50E+01	0.00E+00	2.41E-02	6.04E-01	7.95E-03	-9.03E+00
PENRM	[MJ]	1.10E+00	0.00E+00	0.00E+00	-5.86E-01	0.00E+00	0.00E+00
PENRT	[MJ]	1.61E+01	0.00E+00	2.41E-02	1.75E-02	7.95E-03	-9.03E+00
SM	[kg]	3.67E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.91E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.23E-02	0.00E+00	8.99E-07	1.24E-04	1.67E-06	-6.58E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-2" A4 (3.51 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.98E-08	0.00E+00	9.68E-13	8.84E-12	1.72E-12	-2.34E-05
NHWD	[kg]	2.49E-01	0.00E+00	3.37E-06	3.49E-03	2.29E-02	7.61E-02
RWD	[kg]	5.19E-04	0.00E+00	4.55E-08	6.80E-07	1.10E-07	-4.35E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.30E-01	0.00E+00	0.00E+00	4.34E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.74E-02	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.74E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-2" A4 (3.51 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.93 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-1" A4 (3.66 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.02E+01	0.00E+00	1.42E-02	4.10E-01	3.76E-03	-2.26E+00
GWP-fossil	[kg CO_2-Eq.]	1.00E+01	0.00E+00	1.41E-02	4.10E-01	3.72E-03	-2.27E+00
GWP-biogenic	[kg CO_2-Eq.]	1.40E-01	0.00E+00	2.63E-05	1.45E-05	2.82E-05	1.10E-02
GWP-luluc	[kg CO_2-Eq.]	2.91E-02	0.00E+00	1.48E-04	1.84E-05	1.17E-05	-2.40E-03
ODP	[kg CFC11-Eq.]	1.45E-10	0.00E+00	2.38E-15	5.45E-14	1.20E-14	4.90E-13
AP	[mol H^+-Eq.]	3.46E-02	0.00E+00	5.14E-05	4.57E-05	2.32E-05	-8.19E-03
EP-freshwater	[kg P-Eq.]	6.68E-05	0.00E+00	3.87E-08	1.02E-08	5.26E-09	-1.54E-06
EP-marine	[kg N-Eq.]	8.34E-03	0.00E+00	2.44E-05	1.24E-05	5.65E-06	-1.26E-03
EP-terrestrial	[mol N-Eq.]	9.17E-02	0.00E+00	2.64E-04	2.14E-04	6.17E-05	-1.26E-02
POCP	[kg NMVOC-Eq.]	2.18E-02	0.00E+00	4.70E-05	3.53E-05	1.75E-05	-4.37E-03
ADPE	[kg Sb-Eq.]	4.22E-05	0.00E+00	9.55E-10	6.16E-10	2.53E-10	-2.97E-05
ADPF	[MJ]	1.24E+02	0.00E+00	1.84E-01	1.14E-01	6.08E-02	-2.55E+01
WDP	[m^3 world-Eq deprived]	3.30E+00	0.00E+00	6.56E-05	3.67E-02	4.35E-04	-4.17E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-1" A4 (3.66 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.11E+01	0.00E+00	1.14E-03	2.36E-03	8.13E-04	-1.76E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.23E+01	0.00E+00	1.14E-03	2.36E-03	8.13E-04	-1.76E-01
PENRE	[MJ]	1.07E+01	0.00E+00	1.51E-02	9.73E-01	4.99E-03	-5.71E+00
PENRM	[MJ]	1.48E+00	0.00E+00	0.00E+00	-9.64E-01	0.00E+00	0.00E+00
PENRT	[MJ]	1.22E+01	0.00E+00	1.51E-02	9.32E-03	4.99E-03	-5.71E+00
SM	[kg]	2.24E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.57E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.01E-02	0.00E+00	5.62E-07	7.11E-05	1.05E-06	-4.35E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-1" A4 (3.66 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.27E-08	0.00E+00	6.05E-13	4.74E-12	1.08E-12	-1.31E-05
NHWD	[kg]	1.52E-01	0.00E+00	2.11E-06	1.85E-03	1.44E-02	5.05E-02
RWD	[kg]	3.49E-04	0.00E+00	2.85E-08	3.76E-07	6.92E-08	-2.47E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.61E-01	0.00E+00	0.00E+00	2.73E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.58E-02	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-1" A4 (3.66 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.94 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-5/4" A4 (3.63 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.01E+01	0.00E+00	1.41E-02	4.15E-01	3.73E-03	-2.25E+00
GWP-fossil	[kg CO_2-Eq.]	9.93E+00	0.00E+00	1.40E-02	4.15E-01	3.69E-03	-2.26E+00
GWP-biogenic	[kg CO_2-Eq.]	1.38E-01	0.00E+00	2.61E-05	1.47E-05	2.79E-05	1.09E-02
GWP-luluc	[kg CO_2-Eq.]	2.88E-02	0.00E+00	1.47E-04	1.84E-05	1.16E-05	-2.39E-03
ODP	[kg CFC11-Eq.]	1.44E-10	0.00E+00	2.36E-15	5.48E-14	1.19E-14	4.57E-13
AP	[mol H^+-Eq.]	3.43E-02	0.00E+00	5.09E-05	4.61E-05	2.30E-05	-8.14E-03
EP-freshwater	[kg P-Eq.]	6.63E-05	0.00E+00	3.84E-08	1.03E-08	5.21E-09	-1.54E-06
EP-marine	[kg N-Eq.]	8.27E-03	0.00E+00	2.42E-05	1.25E-05	5.60E-06	-1.25E-03
EP-terrestrial	[mol N-Eq.]	9.10E-02	0.00E+00	2.62E-04	2.16E-04	6.11E-05	-1.26E-02
POCP	[kg NMVOC-Eq.]	2.16E-02	0.00E+00	4.66E-05	3.56E-05	1.74E-05	-4.34E-03
ADPE	[kg Sb-Eq.]	4.22E-05	0.00E+00	9.47E-10	6.19E-10	2.50E-10	-2.96E-05
ADPF	[MJ]	1.23E+02	0.00E+00	1.82E-01	1.14E-01	6.03E-02	-2.54E+01
WDP	[m^3 world-Eq deprived]	3.28E+00	0.00E+00	6.51E-05	3.71E-02	4.31E-04	-4.15E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-5/4" A4 (3.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.50E+01	0.00E+00	1.53E-03	3.23E-03	1.10E-03	-2.50E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.62E+01	0.00E+00	1.53E-03	3.23E-03	1.10E-03	-2.50E-01
PENRE	[MJ]	1.35E+01	0.00E+00	2.04E-02	7.53E-01	6.73E-03	-7.59E+00
PENRM	[MJ]	1.25E+00	0.00E+00	0.00E+00	-7.41E-01	0.00E+00	0.00E+00
PENRT	[MJ]	1.47E+01	0.00E+00	2.04E-02	1.27E-02	6.73E-03	-7.59E+00
SM	[kg]	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.38E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.36E-02	0.00E+00	7.58E-07	9.77E-05	1.42E-06	-5.71E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-5/4" A4 (3.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.69E-08	0.00E+00	8.17E-13	6.49E-12	1.45E-12	-1.80E-05
NHWD	[kg]	2.11E-01	0.00E+00	2.84E-06	2.53E-03	1.94E-02	6.63E-02
RWD	[kg]	4.50E-04	0.00E+00	3.84E-08	5.15E-07	9.33E-08	-3.39E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.63E-01	0.00E+00	0.00E+00	3.68E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.67E-02	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.37E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-5/4" A4 (3.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.95 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-6/4" A4 (3.95 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.09E+01	0.00E+00	1.54E-02	4.38E-01	4.06E-03	-2.42E+00
GWP-fossil	[kg CO_2-Eq.]	1.08E+01	0.00E+00	1.52E-02	4.38E-01	4.02E-03	-2.43E+00
GWP-biogenic	[kg CO_2-Eq.]	1.51E-01	0.00E+00	2.84E-05	1.54E-05	3.04E-05	1.18E-02
GWP-luluc	[kg CO_2-Eq.]	3.13E-02	0.00E+00	1.59E-04	2.05E-05	1.26E-05	-2.48E-03
ODP	[kg CFC11-Eq.]	1.57E-10	0.00E+00	2.57E-15	6.08E-14	1.30E-14	5.58E-13
AP	[mol H^+-Eq.]	3.68E-02	0.00E+00	5.54E-05	4.94E-05	2.51E-05	-8.63E-03
EP-freshwater	[kg P-Eq.]	7.40E-05	0.00E+00	4.18E-08	1.11E-08	5.68E-09	-1.61E-06
EP-marine	[kg N-Eq.]	8.98E-03	0.00E+00	2.63E-05	1.34E-05	6.11E-06	-1.33E-03
EP-terrestrial	[mol N-Eq.]	9.88E-02	0.00E+00	2.85E-04	2.31E-04	6.66E-05	-1.33E-02
POCP	[kg NMVOC-Eq.]	2.34E-02	0.00E+00	5.07E-05	3.82E-05	1.89E-05	-4.63E-03
ADPE	[kg Sb-Eq.]	4.26E-05	0.00E+00	1.03E-09	6.85E-10	2.73E-10	-3.10E-05
ADPF	[MJ]	1.33E+02	0.00E+00	1.99E-01	1.27E-01	6.57E-02	-2.72E+01
WDP	[m^3 world-Eq deprived]	3.74E+00	0.00E+00	7.08E-05	3.94E-02	4.69E-04	-4.35E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-6/4" A4 (3.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.92E+01	0.00E+00	1.05E-02	2.23E-02	7.48E-03	-2.47E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.00E+02	0.00E+00	1.05E-02	2.23E-02	7.48E-03	-2.47E+00
PENRE	[MJ]	8.27E+01	0.00E+00	1.39E-01	3.70E+00	4.59E-02	-3.35E+01
PENRM	[MJ]	3.61E+00	0.00E+00	0.00E+00	-3.61E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.63E+01	0.00E+00	1.39E-01	8.85E-02	4.59E-02	-3.35E+01
SM	[kg]	2.10E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.71E-02	0.00E+00	5.17E-06	6.50E-04	9.67E-06	-2.02E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-6/4" A4 (3.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.10E-07	0.00E+00	5.56E-12	4.49E-11	9.92E-12	-1.25E-04
NHWD	[kg]	1.43E+00	0.00E+00	1.94E-05	1.77E-02	1.32E-01	2.28E-01
RWD	[kg]	2.78E-03	0.00E+00	2.62E-07	3.50E-06	6.36E-07	-2.32E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.47E+00	0.00E+00	0.00E+00	2.51E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.11E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.16E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-6/4" A4 (3.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.96 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-2" A4 (4.01 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.11E+01	0.00E+00	1.56E-02	4.51E-01	4.12E-03	-2.45E+00
GWP-fossil	[kg CO_2-Eq.]	1.09E+01	0.00E+00	1.54E-02	4.51E-01	4.07E-03	-2.46E+00
GWP-biogenic	[kg CO_2-Eq.]	1.54E-01	0.00E+00	2.88E-05	1.59E-05	3.09E-05	1.19E-02
GWP-luluc	[kg CO_2-Eq.]	3.18E-02	0.00E+00	1.62E-04	2.08E-05	1.28E-05	-2.51E-03
ODP	[kg CFC11-Eq.]	1.59E-10	0.00E+00	2.61E-15	6.18E-14	1.32E-14	5.51E-13
AP	[mol H^+-Eq.]	3.73E-02	0.00E+00	5.63E-05	5.07E-05	2.54E-05	-8.73E-03
EP-freshwater	[kg P-Eq.]	7.48E-05	0.00E+00	4.24E-08	1.14E-08	5.76E-09	-1.63E-06
EP-marine	[kg N-Eq.]	9.12E-03	0.00E+00	2.67E-05	1.38E-05	6.19E-06	-1.35E-03
EP-terrestrial	[mol N-Eq.]	1.00E-01	0.00E+00	2.89E-04	2.37E-04	6.76E-05	-1.35E-02
POCP	[kg NMVOC-Eq.]	2.38E-02	0.00E+00	5.15E-05	3.92E-05	1.92E-05	-4.69E-03
ADPE	[kg Sb-Eq.]	4.27E-05	0.00E+00	1.05E-09	6.96E-10	2.77E-10	-3.13E-05
ADPF	[MJ]	1.35E+02	0.00E+00	2.02E-01	1.29E-01	6.66E-02	-2.76E+01
WDP	[m^3 world-Eq deprived]	3.76E+00	0.00E+00	7.19E-05	4.05E-02	4.76E-04	-4.39E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-2" A4 (4.01 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.38E+01	0.00E+00	5.68E-03	1.22E-02	4.06E-03	-1.03E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.50E+01	0.00E+00	5.68E-03	1.22E-02	4.06E-03	-1.03E+00
PENRE	[MJ]	4.59E+01	0.00E+00	7.54E-02	4.06E+00	2.49E-02	-2.34E+01
PENRM	[MJ]	2.40E+00	0.00E+00	0.00E+00	-4.01E+00	0.00E+00	0.00E+00
PENRT	[MJ]	4.83E+01	0.00E+00	7.54E-02	4.82E-02	2.49E-02	-2.34E+01
SM	[kg]	1.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.96E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.91E-02	0.00E+00	2.81E-06	3.58E-04	5.25E-06	-1.67E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-2" A4 (4.01 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.95E-08	0.00E+00	3.02E-12	2.45E-11	5.39E-12	-6.34E-05
NHWD	[kg]	7.72E-01	0.00E+00	1.05E-05	9.60E-03	7.18E-02	1.93E-01
RWD	[kg]	1.52E-03	0.00E+00	1.42E-07	1.92E-06	3.46E-07	-1.23E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.33E+00	0.00E+00	0.00E+00	1.36E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.81E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.04E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-2" A4 (4.01 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.97 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-1" A4 (5.08 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.39E+01	0.00E+00	1.98E-02	4.63E-01	5.26E-03	-3.01E+00
GWP-fossil	[kg CO_2-Eq.]	1.37E+01	0.00E+00	1.95E-02	4.62E-01	5.21E-03	-3.02E+00
GWP-biogenic	[kg CO_2-Eq.]	1.97E-01	0.00E+00	3.65E-05	1.65E-05	3.95E-05	1.51E-02
GWP-luluc	[kg CO_2-Eq.]	4.04E-02	0.00E+00	2.05E-04	1.97E-05	1.64E-05	-2.79E-03
ODP	[kg CFC11-Eq.]	2.03E-10	0.00E+00	3.31E-15	5.84E-14	1.69E-14	1.17E-12
AP	[mol H^+-Eq.]	4.56E-02	0.00E+00	7.13E-05	5.09E-05	3.25E-05	-1.04E-02
EP-freshwater	[kg P-Eq.]	8.62E-05	0.00E+00	5.37E-08	1.13E-08	7.36E-09	-1.86E-06
EP-marine	[kg N-Eq.]	1.15E-02	0.00E+00	3.39E-05	1.38E-05	7.92E-06	-1.60E-03
EP-terrestrial	[mol N-Eq.]	1.27E-01	0.00E+00	3.66E-04	2.38E-04	8.63E-05	-1.59E-02
POCP	[kg NMVOC-Eq.]	2.98E-02	0.00E+00	6.52E-05	3.92E-05	2.46E-05	-5.67E-03
ADPE	[kg Sb-Eq.]	4.44E-05	0.00E+00	1.32E-09	6.63E-10	3.53E-10	-3.63E-05
ADPF	[MJ]	1.67E+02	0.00E+00	2.55E-01	1.22E-01	8.52E-02	-3.34E+01
WDP	[m^3 world-Eq deprived]	3.81E+00	0.00E+00	9.11E-05	4.12E-02	6.08E-04	-5.04E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-1" A4 (5.08 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.96E+01	0.00E+00	4.17E-03	6.72E-03	3.01E-03	-4.05E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.08E+01	0.00E+00	4.17E-03	6.72E-03	3.01E-03	-4.05E-01
PENRE	[MJ]	3.37E+01	0.00E+00	5.53E-02	1.48E+00	1.84E-02	-1.83E+01
PENRM	[MJ]	1.96E+00	0.00E+00	0.00E+00	-1.45E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.57E+01	0.00E+00	5.53E-02	2.64E-02	1.84E-02	-1.83E+01
SM	[kg]	8.31E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.52E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.32E-02	0.00E+00	2.06E-06	2.11E-04	3.88E-06	-1.45E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-1" A4 (5.08 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.39E-08	0.00E+00	2.22E-12	1.35E-11	3.98E-12	-3.65E-05
NHWD	[kg]	5.66E-01	0.00E+00	7.72E-06	5.23E-03	5.31E-02	1.69E-01
RWD	[kg]	1.13E-03	0.00E+00	1.04E-07	1.09E-06	2.56E-07	-7.11E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.77E-01	0.00E+00	0.00E+00	1.01E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.65E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.95E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-1" A4 (5.08 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.98 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-5/4" A4 (5.40 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.47E+01	0.00E+00	2.10E-02	4.68E-01	5.60E-03	-3.18E+00
GWP-fossil	[kg CO_2-Eq.]	1.45E+01	0.00E+00	2.08E-02	4.68E-01	5.55E-03	-3.19E+00
GWP-biogenic	[kg CO_2-Eq.]	2.10E-01	0.00E+00	3.88E-05	1.67E-05	4.20E-05	1.60E-02
GWP-luluc	[kg CO_2-Eq.]	4.30E-02	0.00E+00	2.18E-04	1.99E-05	1.74E-05	-2.87E-03
ODP	[kg CFC11-Eq.]	2.16E-10	0.00E+00	3.51E-15	5.90E-14	1.80E-14	1.35E-12
AP	[mol H^+-Eq.]	4.80E-02	0.00E+00	7.58E-05	5.15E-05	3.46E-05	-1.09E-02
EP-freshwater	[kg P-Eq.]	9.06E-05	0.00E+00	5.71E-08	1.15E-08	7.84E-09	-1.93E-06
EP-marine	[kg N-Eq.]	1.23E-02	0.00E+00	3.60E-05	1.39E-05	8.43E-06	-1.68E-03
EP-terrestrial	[mol N-Eq.]	1.35E-01	0.00E+00	3.89E-04	2.41E-04	9.20E-05	-1.66E-02
POCP	[kg NMVOC-Eq.]	3.17E-02	0.00E+00	6.93E-05	3.97E-05	2.62E-05	-5.96E-03
ADPE	[kg Sb-Eq.]	4.48E-05	0.00E+00	1.41E-09	6.70E-10	3.77E-10	-3.78E-05
ADPF	[MJ]	1.76E+02	0.00E+00	2.71E-01	1.23E-01	9.07E-02	-3.51E+01
WDP	[m^3 world-Eq deprived]	3.92E+00	0.00E+00	9.69E-05	4.17E-02	6.48E-04	-5.23E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-5/4" A4 (5.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.54E+01	0.00E+00	2.61E-03	4.01E-03	1.89E-03	-1.83E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.65E+01	0.00E+00	2.61E-03	4.01E-03	1.89E-03	-1.83E-01
PENRE	[MJ]	2.17E+01	0.00E+00	3.47E-02	5.42E+00	1.16E-02	-1.20E+01
PENRM	[MJ]	1.36E+00	0.00E+00	0.00E+00	-5.40E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.30E+01	0.00E+00	3.47E-02	1.57E-02	1.16E-02	-1.20E+01
SM	[kg]	5.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.74E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.05E-02	0.00E+00	1.29E-06	1.26E-04	2.44E-06	-9.83E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-5/4" A4 (5.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.84E-08	0.00E+00	1.39E-12	8.04E-12	2.50E-12	-2.11E-05
NHWD	[kg]	3.63E-01	0.00E+00	4.84E-06	3.12E-03	3.34E-02	1.15E-01
RWD	[kg]	7.36E-04	0.00E+00	6.55E-08	6.49E-07	1.61E-07	-4.18E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.27E-01	0.00E+00	0.00E+00	6.33E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.85E-02	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.76E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-5/4" A4 (5.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.99 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-6/4" A4 (5.40 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.47E+01	0.00E+00	2.10E-02	4.91E-01	5.60E-03	-3.18E+00
GWP-fossil	[kg CO_2-Eq.]	1.45E+01	0.00E+00	2.08E-02	4.91E-01	5.54E-03	-3.20E+00
GWP-biogenic	[kg CO_2-Eq.]	2.10E-01	0.00E+00	3.88E-05	1.74E-05	4.20E-05	1.60E-02
GWP-luluc	[kg CO_2-Eq.]	4.30E-02	0.00E+00	2.18E-04	2.18E-05	1.74E-05	-2.88E-03
ODP	[kg CFC11-Eq.]	2.16E-10	0.00E+00	3.51E-15	6.49E-14	1.79E-14	1.26E-12
AP	[mol H^+-Eq.]	4.80E-02	0.00E+00	7.58E-05	5.46E-05	3.45E-05	-1.09E-02
EP-freshwater	[kg P-Eq.]	9.39E-05	0.00E+00	5.71E-08	1.22E-08	7.83E-09	-1.93E-06
EP-marine	[kg N-Eq.]	1.22E-02	0.00E+00	3.60E-05	1.48E-05	8.42E-06	-1.68E-03
EP-terrestrial	[mol N-Eq.]	1.35E-01	0.00E+00	3.89E-04	2.55E-04	9.18E-05	-1.67E-02
POCP	[kg NMVOC-Eq.]	3.17E-02	0.00E+00	6.93E-05	4.22E-05	2.61E-05	-5.96E-03
ADPE	[kg Sb-Eq.]	4.48E-05	0.00E+00	1.41E-09	7.33E-10	3.76E-10	-3.78E-05
ADPF	[MJ]	1.77E+02	0.00E+00	2.71E-01	1.35E-01	9.06E-02	-3.53E+01
WDP	[m^3 world-Eq deprived]	4.26E+00	0.00E+00	9.69E-05	4.39E-02	6.47E-04	-5.24E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-6/4" A4 (5.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.23E+01	0.00E+00	2.33E-03	3.90E-03	1.68E-03	-1.63E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.35E+01	0.00E+00	2.33E-03	3.90E-03	1.68E-03	-1.63E-01
PENRE	[MJ]	1.92E+01	0.00E+00	3.09E-02	8.13E-01	1.03E-02	-1.08E+01
PENRM	[MJ]	1.31E+00	0.00E+00	0.00E+00	-7.98E-01	0.00E+00	0.00E+00
PENRT	[MJ]	2.05E+01	0.00E+00	3.09E-02	1.54E-02	1.03E-02	-1.08E+01
SM	[kg]	4.65E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.17E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.88E-02	0.00E+00	1.15E-06	1.18E-04	2.17E-06	-8.85E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-6/4" A4 (5.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.49E-08	0.00E+00	1.24E-12	7.83E-12	2.22E-12	-1.87E-05
NHWD	[kg]	3.16E-01	0.00E+00	4.31E-06	3.06E-03	2.97E-02	1.04E-01
RWD	[kg]	6.48E-04	0.00E+00	5.82E-08	6.22E-07	1.43E-07	-3.85E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.46E-01	0.00E+00	0.00E+00	5.63E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.26E-02	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.66E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-6/4" A4 (5.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.100 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-2" A4 (5.63 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.53E+01	0.00E+00	2.19E-02	5.03E-01	5.84E-03	-3.30E+00
GWP-fossil	[kg CO_2-Eq.]	1.51E+01	0.00E+00	2.16E-02	5.03E-01	5.77E-03	-3.32E+00
GWP-biogenic	[kg CO_2-Eq.]	2.19E-01	0.00E+00	4.04E-05	1.78E-05	4.38E-05	1.66E-02
GWP-luluc	[kg CO_2-Eq.]	4.48E-02	0.00E+00	2.27E-04	2.22E-05	1.82E-05	-2.94E-03
ODP	[kg CFC11-Eq.]	2.25E-10	0.00E+00	3.66E-15	6.58E-14	1.87E-14	1.36E-12
AP	[mol H^+-Eq.]	4.98E-02	0.00E+00	7.90E-05	5.58E-05	3.60E-05	-1.12E-02
EP-freshwater	[kg P-Eq.]	9.70E-05	0.00E+00	5.95E-08	1.25E-08	8.16E-09	-1.98E-06
EP-marine	[kg N-Eq.]	1.28E-02	0.00E+00	3.75E-05	1.52E-05	8.78E-06	-1.74E-03
EP-terrestrial	[mol N-Eq.]	1.40E-01	0.00E+00	4.06E-04	2.61E-04	9.58E-05	-1.72E-02
POCP	[kg NMVOC-Eq.]	3.30E-02	0.00E+00	7.23E-05	4.31E-05	2.72E-05	-6.17E-03
ADPE	[kg Sb-Eq.]	4.51E-05	0.00E+00	1.47E-09	7.44E-10	3.92E-10	-3.88E-05
ADPF	[MJ]	1.84E+02	0.00E+00	2.83E-01	1.37E-01	9.45E-02	-3.66E+01
WDP	[m^3 world-Eq deprived]	4.34E+00	0.00E+00	1.01E-04	4.50E-02	6.75E-04	-5.38E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-2" A4 (5.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.35E+01	0.00E+00	2.46E-03	4.02E-03	1.78E-03	-1.54E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.47E+01	0.00E+00	2.46E-03	4.02E-03	1.78E-03	-1.54E-01
PENRE	[MJ]	2.03E+01	0.00E+00	3.27E-02	8.73E-01	1.09E-02	-1.14E+01
PENRM	[MJ]	1.37E+00	0.00E+00	0.00E+00	-8.57E-01	0.00E+00	0.00E+00
PENRT	[MJ]	2.16E+01	0.00E+00	3.27E-02	1.58E-02	1.09E-02	-1.14E+01
SM	[kg]	4.92E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.47E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.01E-02	0.00E+00	1.22E-06	1.23E-04	2.30E-06	-9.37E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-2" A4 (5.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.63E-08	0.00E+00	1.31E-12	8.07E-12	2.36E-12	-1.91E-05
NHWD	[kg]	3.35E-01	0.00E+00	4.56E-06	3.15E-03	3.14E-02	1.10E-01
RWD	[kg]	6.83E-04	0.00E+00	6.17E-08	6.43E-07	1.51E-07	-3.98E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.77E-01	0.00E+00	0.00E+00	5.96E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.62E-02	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.72E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-2" A4 (5.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.101 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-1" A4 (2.53 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.28E+00	0.00E+00	9.85E-03	3.16E-01	2.58E-03	-1.61E+00
GWP-fossil	[kg CO_2-Eq.]	7.16E+00	0.00E+00	9.73E-03	3.16E-01	2.56E-03	-1.61E+00
GWP-biogenic	[kg CO_2-Eq.]	9.56E-02	0.00E+00	1.82E-05	1.10E-05	1.94E-05	7.54E-03
GWP-luluc	[kg CO_2-Eq.]	2.02E-02	0.00E+00	1.02E-04	1.58E-05	8.04E-06	-2.02E-03
ODP	[kg CFC11-Eq.]	1.01E-10	0.00E+00	1.65E-15	4.70E-14	8.28E-15	7.23E-14
AP	[mol H^+-Eq.]	2.61E-02	0.00E+00	3.55E-05	3.63E-05	1.60E-05	-6.24E-03
EP-freshwater	[kg P-Eq.]	5.18E-05	0.00E+00	2.68E-08	8.21E-09	3.61E-09	-1.25E-06
EP-marine	[kg N-Eq.]	5.89E-03	0.00E+00	1.69E-05	9.91E-06	3.89E-06	-9.52E-04
EP-terrestrial	[mol N-Eq.]	6.47E-02	0.00E+00	1.82E-04	1.69E-04	4.24E-05	-9.70E-03
POCP	[kg NMVOC-Eq.]	1.56E-02	0.00E+00	3.25E-05	2.82E-05	1.21E-05	-3.22E-03
ADPE	[kg Sb-Eq.]	4.09E-05	0.00E+00	6.60E-10	5.27E-10	1.74E-10	-2.38E-05
ADPF	[MJ]	8.97E+01	0.00E+00	1.27E-01	9.79E-02	4.18E-02	-1.85E+01
WDP	[m^3 world-Eq deprived]	2.90E+00	0.00E+00	4.54E-05	2.86E-02	2.99E-04	-3.37E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-1" A4 (2.53 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.10E+01	0.00E+00	2.17E-03	5.56E-03	1.55E-03	-6.33E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.22E+01	0.00E+00	2.17E-03	5.56E-03	1.55E-03	-6.33E-01
PENRE	[MJ]	1.76E+01	0.00E+00	2.88E-02	6.08E-01	9.49E-03	-1.09E+01
PENRM	[MJ]	1.10E+00	0.00E+00	0.00E+00	-5.86E-01	0.00E+00	0.00E+00
PENRT	[MJ]	1.87E+01	0.00E+00	2.88E-02	2.22E-02	9.49E-03	-1.09E+01
SM	[kg]	4.42E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.32E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.42E-02	0.00E+00	1.07E-06	1.54E-04	2.00E-06	-7.13E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-1" A4 (2.53 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.36E-08	0.00E+00	1.16E-12	1.12E-11	2.05E-12	-3.62E-05
NHWD	[kg]	3.00E-01	0.00E+00	4.03E-06	4.45E-03	2.73E-02	8.16E-02
RWD	[kg]	6.14E-04	0.00E+00	5.45E-08	8.55E-07	1.32E-07	-5.93E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.18E-01	0.00E+00	0.00E+00	5.18E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.21E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.17E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-1" A4 (2.53 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.102 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-5/4" A4 (2.50 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.12E+00	0.00E+00	9.73E-03	3.26E-01	2.55E-03	-1.65E+00
GWP-fossil	[kg CO_2-Eq.]	7.00E+00	0.00E+00	9.61E-03	3.26E-01	2.52E-03	-1.65E+00
GWP-biogenic	[kg CO_2-Eq.]	9.30E-02	0.00E+00	1.80E-05	1.13E-05	1.91E-05	7.71E-03
GWP-luluc	[kg CO_2-Eq.]	1.98E-02	0.00E+00	1.01E-04	1.62E-05	7.92E-06	-2.07E-03
ODP	[kg CFC11-Eq.]	9.87E-11	0.00E+00	1.63E-15	4.81E-14	8.16E-15	6.72E-14
AP	[mol H^+-Eq.]	2.56E-02	0.00E+00	3.51E-05	3.74E-05	1.57E-05	-6.40E-03
EP-freshwater	[kg P-Eq.]	5.09E-05	0.00E+00	2.64E-08	8.44E-09	3.56E-09	-1.28E-06
EP-marine	[kg N-Eq.]	5.75E-03	0.00E+00	1.67E-05	1.02E-05	3.83E-06	-9.75E-04
EP-terrestrial	[mol N-Eq.]	6.32E-02	0.00E+00	1.80E-04	1.74E-04	4.18E-05	-9.94E-03
POCP	[kg NMVOC-Eq.]	1.52E-02	0.00E+00	3.21E-05	2.90E-05	1.19E-05	-3.30E-03
ADPE	[kg Sb-Eq.]	4.08E-05	0.00E+00	6.52E-10	5.39E-10	1.71E-10	-2.44E-05
ADPF	[MJ]	8.79E+01	0.00E+00	1.26E-01	1.00E-01	4.12E-02	-1.90E+01
WDP	[m^3 world-Eq deprived]	2.88E+00	0.00E+00	4.48E-05	2.95E-02	2.95E-04	-3.45E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-5/4" A4 (2.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.53E+01	0.00E+00	1.58E-03	4.19E-03	1.12E-03	-4.63E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.65E+01	0.00E+00	1.58E-03	4.19E-03	1.12E-03	-4.63E-01
PENRE	[MJ]	1.31E+01	0.00E+00	2.10E-02	5.08E-01	6.88E-03	-8.23E+00
PENRM	[MJ]	1.00E+00	0.00E+00	0.00E+00	-4.91E-01	0.00E+00	0.00E+00
PENRT	[MJ]	1.41E+01	0.00E+00	2.10E-02	1.67E-02	6.88E-03	-8.23E+00
SM	[kg]	3.19E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.30E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.11E-02	0.00E+00	7.81E-07	1.16E-04	1.45E-06	-5.46E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-5/4" A4 (2.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.73E-08	0.00E+00	8.41E-13	8.44E-12	1.49E-12	-2.68E-05
NHWD	[kg]	2.17E-01	0.00E+00	2.93E-06	3.34E-03	1.98E-02	6.26E-02
RWD	[kg]	4.56E-04	0.00E+00	3.96E-08	6.45E-07	9.54E-08	-4.44E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.74E-01	0.00E+00	0.00E+00	3.76E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.18E-02	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.64E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2- optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-5/4" A4 (2.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.103 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-1" A4 (3.12 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.74E+00	0.00E+00	1.21E-02	3.59E-01	3.20E-03	-1.97E+00
GWP-fossil	[kg CO_2-Eq.]	8.60E+00	0.00E+00	1.20E-02	3.58E-01	3.17E-03	-1.98E+00
GWP-biogenic	[kg CO_2-Eq.]	1.18E-01	0.00E+00	2.24E-05	1.26E-05	2.40E-05	9.49E-03
GWP-luluc	[kg CO_2-Eq.]	2.48E-02	0.00E+00	1.26E-04	1.70E-05	9.95E-06	-2.24E-03
ODP	[kg CFC11-Eq.]	1.24E-10	0.00E+00	2.03E-15	5.06E-14	1.03E-14	3.35E-13
AP	[mol H^+-Eq.]	3.04E-02	0.00E+00	4.38E-05	4.06E-05	1.98E-05	-7.35E-03
EP-freshwater	[kg P-Eq.]	5.94E-05	0.00E+00	3.30E-08	9.13E-09	4.48E-09	-1.42E-06
EP-marine	[kg N-Eq.]	7.13E-03	0.00E+00	2.08E-05	1.10E-05	4.81E-06	-1.13E-03
EP-terrestrial	[mol N-Eq.]	7.85E-02	0.00E+00	2.25E-04	1.89E-04	5.25E-05	-1.14E-02
POCP	[kg NMVOC-Eq.]	1.87E-02	0.00E+00	4.01E-05	3.14E-05	1.49E-05	-3.87E-03
ADPE	[kg Sb-Eq.]	4.16E-05	0.00E+00	8.14E-10	5.69E-10	2.15E-10	-2.72E-05
ADPF	[MJ]	1.07E+02	0.00E+00	1.57E-01	1.05E-01	5.18E-02	-2.24E+01
WDP	[m^3 world-Eq deprived]	3.10E+00	0.00E+00	5.60E-05	3.23E-02	3.70E-04	-3.83E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-1" A4 (3.12 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.03E+02	0.00E+00	1.05E-02	2.35E-02	7.47E-03	-3.50E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.04E+02	0.00E+00	1.05E-02	2.35E-02	7.47E-03	-3.50E+00
PENRE	[MJ]	8.67E+01	0.00E+00	1.39E-01	3.55E+00	4.58E-02	-2.90E+01
PENRM	[MJ]	3.97E+00	0.00E+00	0.00E+00	-3.46E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.06E+01	0.00E+00	1.39E-01	9.33E-02	4.58E-02	-2.90E+01
SM	[kg]	2.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.18E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.90E-02	0.00E+00	5.17E-06	6.75E-04	9.65E-06	-1.24E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-1" A4 (3.12 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.14E-07	0.00E+00	5.56E-12	4.72E-11	9.90E-12	-1.58E-04
NHWD	[kg]	1.49E+00	0.00E+00	1.94E-05	1.86E-02	1.32E-01	1.33E-01
RWD	[kg]	2.91E-03	0.00E+00	2.62E-07	3.67E-06	6.35E-07	-2.62E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.59E+00	0.00E+00	0.00E+00	2.50E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.31E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.51E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-1" A4 (3.12 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.104 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-5/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-5/4" A4 (2.81 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.31E+00	0.00E+00	1.09E-02	8.29E-01	2.67E-03	-1.90E+00
GWP-fossil	[kg CO_2-Eq.]	8.18E+00	0.00E+00	1.08E-02	8.29E-01	2.65E-03	-1.90E+00
GWP-biogenic	[kg CO_2-Eq.]	1.01E-01	0.00E+00	2.02E-05	3.02E-05	2.00E-05	7.32E-03
GWP-luluc	[kg CO_2-Eq.]	2.16E-02	0.00E+00	1.13E-04	2.90E-05	8.32E-06	-2.37E-03
ODP	[kg CFC11-Eq.]	1.07E-10	0.00E+00	1.83E-15	8.61E-14	8.57E-15	-1.41E-12
AP	[mol H^+-Eq.]	2.78E-02	0.00E+00	3.94E-05	8.71E-05	1.65E-05	-6.88E-03
EP-freshwater	[kg P-Eq.]	5.38E-05	0.00E+00	2.97E-08	1.92E-08	3.74E-09	-1.48E-06
EP-marine	[kg N-Eq.]	6.33E-03	0.00E+00	1.87E-05	2.34E-05	4.02E-06	-1.08E-03
EP-terrestrial	[mol N-Eq.]	6.95E-02	0.00E+00	2.03E-04	4.10E-04	4.39E-05	-1.10E-02
POCP	[kg NMVOC-Eq.]	1.72E-02	0.00E+00	3.61E-05	6.66E-05	1.25E-05	-3.61E-03
ADPE	[kg Sb-Eq.]	4.11E-05	0.00E+00	7.33E-10	9.95E-10	1.80E-10	-2.54E-05
ADPF	[MJ]	1.12E+02	0.00E+00	1.41E-01	1.80E-01	4.33E-02	-2.28E+01
WDP	[m^3 world-Eq deprived]	2.98E+00	0.00E+00	5.04E-05	7.26E-02	3.09E-04	-3.76E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-5/4" A4 (2.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.52E+01	0.00E+00	5.68E-03	2.51E-02	3.77E-03	-2.32E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.64E+01	0.00E+00	5.68E-03	2.51E-02	3.77E-03	-2.32E+00
PENRE	[MJ]	4.74E+01	0.00E+00	7.54E-02	2.12E+00	2.31E-02	-2.25E+01
PENRM	[MJ]	2.53E+00	0.00E+00	0.00E+00	-2.02E+00	0.00E+00	0.00E+00
PENRT	[MJ]	4.99E+01	0.00E+00	7.54E-02	9.59E-02	2.31E-02	-2.25E+01
SM	[kg]	1.17E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.20E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.79E-02	0.00E+00	2.81E-06	9.13E-04	4.86E-06	-1.15E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-5/4" A4 (2.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	6.14E-08	0.00E+00	3.02E-12	4.99E-11	4.99E-12	-9.02E-05
NHWD	[kg]	7.99E-01	0.00E+00	1.05E-05	1.88E-02	6.65E-02	1.28E-01
RWD	[kg]	1.57E-03	0.00E+00	1.42E-07	4.34E-06	3.20E-07	-2.64E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.38E+00	0.00E+00	0.00E+00	1.26E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.10E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.27E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-5/4" A4 (2.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.105 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-6/4" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-6/4" A4 (2.97 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.37E+00	0.00E+00	1.16E-02	3.85E-01	3.03E-03	-1.90E+00
GWP-fossil	[kg CO_2-Eq.]	8.23E+00	0.00E+00	1.14E-02	3.85E-01	3.00E-03	-1.91E+00
GWP-biogenic	[kg CO_2-Eq.]	1.12E-01	0.00E+00	2.13E-05	1.34E-05	2.27E-05	8.97E-03
GWP-luluc	[kg CO_2-Eq.]	2.35E-02	0.00E+00	1.20E-04	1.91E-05	9.42E-06	-2.22E-03
ODP	[kg CFC11-Eq.]	1.17E-10	0.00E+00	1.93E-15	5.68E-14	9.70E-15	1.40E-13
AP	[mol H^+-Eq.]	2.93E-02	0.00E+00	4.17E-05	4.41E-05	1.87E-05	-7.13E-03
EP-freshwater	[kg P-Eq.]	6.06E-05	0.00E+00	3.14E-08	9.97E-09	4.24E-09	-1.40E-06
EP-marine	[kg N-Eq.]	6.79E-03	0.00E+00	1.98E-05	1.20E-05	4.55E-06	-1.09E-03
EP-terrestrial	[mol N-Eq.]	7.46E-02	0.00E+00	2.14E-04	2.06E-04	4.97E-05	-1.11E-02
POCP	[kg NMVOC-Eq.]	1.79E-02	0.00E+00	3.81E-05	3.42E-05	1.41E-05	-3.74E-03
ADPE	[kg Sb-Eq.]	4.14E-05	0.00E+00	7.75E-10	6.36E-10	2.03E-10	-2.66E-05
ADPF	[MJ]	1.03E+02	0.00E+00	1.49E-01	1.18E-01	4.90E-02	-2.18E+01
WDP	[m^3 world-Eq deprived]	3.38E+00	0.00E+00	5.33E-05	3.48E-02	3.50E-04	-3.76E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-6/4" A4 (2.97 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.06E+01	0.00E+00	4.17E-03	1.10E-02	2.96E-03	-1.13E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.18E+01	0.00E+00	4.17E-03	1.10E-02	2.96E-03	-1.13E+00
PENRE	[MJ]	3.56E+01	0.00E+00	5.53E-02	1.83E+00	1.81E-02	-1.83E+01
PENRM	[MJ]	2.29E+00	0.00E+00	0.00E+00	-1.78E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.79E+01	0.00E+00	5.53E-02	4.38E-02	1.81E-02	-1.83E+01
SM	[kg]	8.61E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.16E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.94E-02	0.00E+00	2.06E-06	3.05E-04	3.82E-06	-1.18E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-6/4" A4 (2.97 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.53E-08	0.00E+00	2.22E-12	2.21E-11	3.92E-12	-3.23E-05
NHWD	[kg]	5.86E-01	0.00E+00	7.72E-06	8.76E-03	5.23E-02	9.58E-02
RWD	[kg]	1.17E-03	0.00E+00	1.04E-07	1.69E-06	2.52E-07	-5.62E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.01E+00	0.00E+00	0.00E+00	9.92E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.41E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.31E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-6/4" A4 (2.97 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.106 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-2" A4 (3.10 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.71E+00	0.00E+00	1.21E-02	3.98E-01	3.16E-03	-1.97E+00
GWP-fossil	[kg CO_2-Eq.]	8.57E+00	0.00E+00	1.19E-02	3.98E-01	3.13E-03	-1.98E+00
GWP-biogenic	[kg CO_2-Eq.]	1.17E-01	0.00E+00	2.23E-05	1.39E-05	2.37E-05	9.32E-03
GWP-luluc	[kg CO_2-Eq.]	2.45E-02	0.00E+00	1.25E-04	1.94E-05	9.84E-06	-2.26E-03
ODP	[kg CFC11-Eq.]	1.23E-10	0.00E+00	2.02E-15	5.78E-14	1.01E-14	1.75E-13
AP	[mol H^+-Eq.]	3.03E-02	0.00E+00	4.35E-05	4.54E-05	1.95E-05	-7.33E-03
EP-freshwater	[kg P-Eq.]	6.23E-05	0.00E+00	3.28E-08	1.03E-08	4.42E-09	-1.43E-06
EP-marine	[kg N-Eq.]	7.08E-03	0.00E+00	2.07E-05	1.24E-05	4.76E-06	-1.12E-03
EP-terrestrial	[mol N-Eq.]	7.78E-02	0.00E+00	2.24E-04	2.12E-04	5.19E-05	-1.14E-02
POCP	[kg NMVOC-Eq.]	1.86E-02	0.00E+00	3.98E-05	3.52E-05	1.48E-05	-3.86E-03
ADPE	[kg Sb-Eq.]	4.16E-05	0.00E+00	8.09E-10	6.48E-10	2.12E-10	-2.71E-05
ADPF	[MJ]	1.07E+02	0.00E+00	1.56E-01	1.20E-01	5.12E-02	-2.25E+01
WDP	[m^3 world-Eq deprived]	3.43E+00	0.00E+00	5.56E-05	3.60E-02	3.66E-04	-3.84E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-2" A4 (3.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.05E+01	0.00E+00	6.33E-03	1.63E-02	4.49E-03	-1.80E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.17E+01	0.00E+00	6.33E-03	1.63E-02	4.49E-03	-1.80E+00
PENRE	[MJ]	5.21E+01	0.00E+00	8.39E-02	2.48E+00	2.76E-02	-2.46E+01
PENRM	[MJ]	2.93E+00	0.00E+00	0.00E+00	-2.42E+00	0.00E+00	0.00E+00
PENRT	[MJ]	5.50E+01	0.00E+00	8.39E-02	6.48E-02	2.76E-02	-2.46E+01
SM	[kg]	1.28E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.10E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.67E-02	0.00E+00	3.13E-06	4.58E-04	5.81E-06	-1.48E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-2" A4 (3.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	6.71E-08	0.00E+00	3.37E-12	3.28E-11	5.96E-12	-9.18E-05
NHWD	[kg]	8.71E-01	0.00E+00	1.17E-05	1.30E-02	7.94E-02	1.68E-01
RWD	[kg]	1.71E-03	0.00E+00	1.58E-07	2.52E-06	3.82E-07	-1.66E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.50E+00	0.00E+00	0.00E+00	1.51E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.61E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.47E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 75-2" A4 (3.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.107 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 100-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 100-5/4" (3.83 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.49E-02	1.03E+00	3.69E-03	-2.42E+00
GWP-fossil	[kg CO_2-Eq.]	1.10E+01	0.00E+00	1.47E-02	1.03E+00	3.65E-03	-2.43E+00
GWP-biogenic	[kg CO_2-Eq.]	1.42E-01	0.00E+00	2.75E-05	3.76E-05	2.76E-05	9.60E-03
GWP-luluc	[kg CO_2-Eq.]	2.98E-02	0.00E+00	1.55E-04	3.43E-05	1.15E-05	-2.71E-03
ODP	[kg CFC11-Eq.]	1.48E-10	0.00E+00	2.49E-15	1.02E-13	1.18E-14	-1.51E-12
AP	[mol H^+-Eq.]	3.60E-02	0.00E+00	5.37E-05	1.07E-04	2.28E-05	-8.36E-03
EP-freshwater	[kg P-Eq.]	6.83E-05	0.00E+00	4.05E-08	2.34E-08	5.16E-09	-1.74E-06
EP-marine	[kg N-Eq.]	8.66E-03	0.00E+00	2.55E-05	2.87E-05	5.54E-06	-1.32E-03
EP-terrestrial	[mol N-Eq.]	9.52E-02	0.00E+00	2.76E-04	5.04E-04	6.05E-05	-1.33E-02
POCP	[kg NMVOC-Eq.]	2.32E-02	0.00E+00	4.91E-05	8.16E-05	1.72E-05	-4.49E-03
ADPE	[kg Sb-Eq.]	4.35E-05	0.00E+00	9.99E-10	1.18E-09	2.48E-10	-2.98E-05
ADPF	[MJ]	1.48E+02	0.00E+00	1.92E-01	2.12E-01	5.97E-02	-2.87E+01
WDP	[m^3 world-Eq deprived]	3.42E+00	0.00E+00	6.87E-05	8.96E-02	4.26E-04	-4.40E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 100-5/4" (3.83 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.46E+01	0.00E+00	4.55E-03	1.75E-02	3.05E-03	-1.26E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.58E+01	0.00E+00	4.55E-03	1.75E-02	3.05E-03	-1.26E+00
PENRE	[MJ]	3.86E+01	0.00E+00	6.03E-02	1.95E+00	1.87E-02	-1.95E+01
PENRM	[MJ]	2.39E+00	0.00E+00	0.00E+00	-1.88E+00	0.00E+00	0.00E+00
PENRT	[MJ]	4.10E+01	0.00E+00	6.03E-02	6.66E-02	1.87E-02	-1.95E+01
SM	[kg]	9.47E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.65E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.88E-02	0.00E+00	2.25E-06	6.61E-04	3.94E-06	-1.28E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 100-5/4" (3.83 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.98E-08	0.00E+00	2.42E-12	3.48E-11	4.04E-12	-5.35E-05
NHWD	[kg]	6.45E-01	0.00E+00	8.42E-06	1.30E-02	5.39E-02	1.46E-01
RWD	[kg]	1.28E-03	0.00E+00	1.14E-07	3.09E-06	2.59E-07	-1.82E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.11E+00	0.00E+00	0.00E+00	1.02E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.13E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.20E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 100-5/4" (3.83 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.108 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-2" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-2" A4 (7.47 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.08E+01	0.00E+00	2.91E-02	6.79E-01	7.74E-03	-4.19E+00
GWP-fossil	[kg CO_2-Eq.]	2.04E+01	0.00E+00	2.87E-02	6.79E-01	7.66E-03	-4.21E+00
GWP-biogenic	[kg CO_2-Eq.]	2.96E-01	0.00E+00	5.37E-05	2.44E-05	5.80E-05	2.09E-02
GWP-luluc	[kg CO_2-Eq.]	6.01E-02	0.00E+00	3.02E-04	2.65E-05	2.41E-05	-3.84E-03
ODP	[kg CFC11-Eq.]	3.04E-10	0.00E+00	4.86E-15	7.86E-14	2.48E-14	1.56E-12
AP	[mol H^+-Eq.]	6.74E-02	0.00E+00	1.05E-04	7.31E-05	4.78E-05	-1.44E-02
EP-freshwater	[kg P-Eq.]	1.23E-04	0.00E+00	7.90E-08	1.62E-08	1.08E-08	-2.57E-06
EP-marine	[kg N-Eq.]	1.72E-02	0.00E+00	4.98E-05	1.97E-05	1.16E-05	-2.22E-03
EP-terrestrial	[mol N-Eq.]	1.90E-01	0.00E+00	5.39E-04	3.43E-04	1.27E-04	-2.21E-02
POCP	[kg NMVOC-Eq.]	4.45E-02	0.00E+00	9.59E-05	5.61E-05	3.61E-05	-7.87E-03
ADPE	[kg Sb-Eq.]	6.19E-05	0.00E+00	1.95E-09	8.98E-10	5.20E-10	-5.01E-05
ADPF	[MJ]	2.49E+02	0.00E+00	3.75E-01	1.64E-01	1.25E-01	-4.65E+01
WDP	[m^3 world-Eq deprived]	5.09E+00	0.00E+00	1.34E-04	6.00E-02	8.95E-04	-6.95E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-2" A4 (7.47 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.45E+01	0.00E+00	3.64E-03	5.43E-03	2.62E-03	-2.45E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.57E+01	0.00E+00	3.64E-03	5.43E-03	2.62E-03	-2.45E-01
PENRE	[MJ]	2.96E+01	0.00E+00	4.82E-02	1.49E+00	1.61E-02	-1.67E+01
PENRM	[MJ]	1.98E+00	0.00E+00	0.00E+00	-1.46E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.16E+01	0.00E+00	4.82E-02	2.11E-02	1.61E-02	-1.67E+01
SM	[kg]	7.22E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.01E-02	0.00E+00	1.80E-06	1.82E-04	3.39E-06	-1.37E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-2" A4 (7.47 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.83E-08	0.00E+00	1.94E-12	1.08E-11	3.48E-12	-2.87E-05
NHWD	[kg]	4.91E-01	0.00E+00	6.74E-06	4.15E-03	4.64E-02	1.60E-01
RWD	[kg]	9.86E-04	0.00E+00	9.11E-08	9.05E-07	2.23E-07	-5.91E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	8.48E-01	0.00E+00	0.00E+00	8.80E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.42E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.54E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-2" A4 (7.47 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.109 HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 98-1" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 98-1" A4 (3.80 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.14E+01	0.00E+00	1.48E-02	1.09E+00	3.63E-03	-2.26E+00
GWP-fossil	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.46E-02	1.09E+00	3.59E-03	-2.27E+00
GWP-biogenic	[kg CO_2-Eq.]	1.45E-01	0.00E+00	2.73E-05	4.00E-05	2.72E-05	8.53E-03
GWP-luluc	[kg CO_2-Eq.]	3.00E-02	0.00E+00	1.53E-04	3.51E-05	1.13E-05	-2.53E-03
ODP	[kg CFC11-Eq.]	1.50E-10	0.00E+00	2.47E-15	1.04E-13	1.16E-14	-1.84E-12
AP	[mol H^+-Eq.]	3.60E-02	0.00E+00	5.33E-05	1.12E-04	2.24E-05	-7.68E-03
EP-freshwater	[kg P-Eq.]	6.76E-05	0.00E+00	4.02E-08	2.46E-08	5.08E-09	-1.63E-06
EP-marine	[kg N-Eq.]	8.77E-03	0.00E+00	2.53E-05	3.02E-05	5.46E-06	-1.22E-03
EP-terrestrial	[mol N-Eq.]	9.65E-02	0.00E+00	2.74E-04	5.31E-04	5.96E-05	-1.23E-02
POCP	[kg NMVOC-Eq.]	2.35E-02	0.00E+00	4.88E-05	8.57E-05	1.69E-05	-4.15E-03
ADPE	[kg Sb-Eq.]	4.09E-05	0.00E+00	9.91E-10	1.21E-09	2.44E-10	-2.71E-05
ADPF	[MJ]	1.52E+02	0.00E+00	1.91E-01	2.17E-01	5.87E-02	-2.71E+01
WDP	[m^3 world-Eq deprived]	3.31E+00	0.00E+00	6.82E-05	9.47E-02	4.20E-04	-4.05E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 98-1" A4 (3.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.26E+01	0.00E+00	2.37E-03	9.48E-03	1.58E-03	-5.70E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.38E+01	0.00E+00	2.37E-03	9.48E-03	1.58E-03	-5.70E-01
PENRE	[MJ]	1.96E+01	0.00E+00	3.15E-02	1.06E+00	9.68E-03	-1.11E+01
PENRM	[MJ]	1.53E+00	0.00E+00	0.00E+00	-1.02E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.11E+01	0.00E+00	3.15E-02	3.58E-02	9.68E-03	-1.11E+01
SM	[kg]	4.71E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.62E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.90E-02	0.00E+00	1.17E-06	3.67E-04	2.04E-06	-7.82E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 98-1" A4 (3.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.53E-08	0.00E+00	1.26E-12	1.88E-11	2.09E-12	-2.49E-05
NHWD	[kg]	3.20E-01	0.00E+00	4.39E-06	6.95E-03	2.79E-02	9.02E-02
RWD	[kg]	6.57E-04	0.00E+00	5.94E-08	1.69E-06	1.34E-07	-9.75E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.52E-01	0.00E+00	0.00E+00	5.29E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.85E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.10E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 98-1" A4 (3.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.110 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-ZAK34 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-ZAK34 A4 (2.98 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.33E+00	0.00E+00	1.16E-02	3.18E-01	3.07E-03	-1.91E+00
GWP-fossil	[kg CO_2-Eq.]	8.20E+00	0.00E+00	1.15E-02	3.18E-01	3.03E-03	-1.92E+00
GWP-biogenic	[kg CO_2-Eq.]	1.12E-01	0.00E+00	2.14E-05	1.10E-05	2.30E-05	9.27E-03
GWP-luluc	[kg CO_2-Eq.]	2.36E-02	0.00E+00	1.20E-04	1.60E-05	9.54E-06	-2.20E-03
ODP	[kg CFC11-Eq.]	1.18E-10	0.00E+00	1.94E-15	4.76E-14	9.83E-15	4.01E-13
AP	[mol H^+-Eq.]	2.93E-02	0.00E+00	4.18E-05	3.66E-05	1.89E-05	-7.20E-03
EP-freshwater	[kg P-Eq.]	5.75E-05	0.00E+00	3.15E-08	8.28E-09	4.29E-09	-1.39E-06
EP-marine	[kg N-Eq.]	6.81E-03	0.00E+00	1.99E-05	9.98E-06	4.61E-06	-1.10E-03
EP-terrestrial	[mol N-Eq.]	7.48E-02	0.00E+00	2.15E-04	1.71E-04	5.03E-05	-1.11E-02
POCP	[kg NMVOC-Eq.]	1.79E-02	0.00E+00	3.83E-05	2.84E-05	1.43E-05	-3.78E-03
ADPE	[kg Sb-Eq.]	4.14E-05	0.00E+00	7.77E-10	5.33E-10	2.06E-10	-2.69E-05
ADPF	[MJ]	1.01E+02	0.00E+00	1.50E-01	9.92E-02	4.96E-02	-2.17E+01
WDP	[m^3 world-Eq deprived]	3.05E+00	0.00E+00	5.34E-05	2.88E-02	3.55E-04	-3.77E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-ZAK34 A4 (2.98 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.89E+01	0.00E+00	3.07E-03	6.75E-03	2.20E-03	-7.34E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.01E+01	0.00E+00	3.07E-03	6.75E-03	2.20E-03	-7.34E-01
PENRE	[MJ]	2.55E+01	0.00E+00	4.07E-02	1.37E+00	1.35E-02	-1.45E+01
PENRM	[MJ]	1.85E+00	0.00E+00	0.00E+00	-1.34E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.73E+01	0.00E+00	4.07E-02	2.70E-02	1.35E-02	-1.45E+01
SM	[kg]	6.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.96E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.01E-02	0.00E+00	1.52E-06	1.85E-04	2.84E-06	-9.90E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-ZAK34 A4 (2.98 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.22E-08	0.00E+00	1.63E-12	1.36E-11	2.91E-12	-4.47E-05
NHWD	[kg]	4.11E-01	0.00E+00	5.68E-06	5.40E-03	3.89E-02	1.14E-01
RWD	[kg]	8.31E-04	0.00E+00	7.68E-08	1.03E-06	1.87E-07	-7.21E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	7.09E-01	0.00E+00	0.00E+00	7.37E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.46E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.62E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 63-ZAK34 A4 (2.98 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.111 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK34 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK34 A4 (3.40 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.46E+00	0.00E+00	1.32E-02	3.78E-01	3.49E-03	-2.17E+00
GWP-fossil	[kg CO_2-Eq.]	9.30E+00	0.00E+00	1.31E-02	3.78E-01	3.46E-03	-2.18E+00
GWP-biogenic	[kg CO_2-Eq.]	1.28E-01	0.00E+00	2.44E-05	1.32E-05	2.62E-05	1.05E-02
GWP-luluc	[kg CO_2-Eq.]	2.69E-02	0.00E+00	1.37E-04	1.81E-05	1.09E-05	-2.43E-03
ODP	[kg CFC11-Eq.]	1.34E-10	0.00E+00	2.21E-15	5.38E-14	1.12E-14	4.40E-13
AP	[mol H^+-Eq.]	3.29E-02	0.00E+00	4.77E-05	4.29E-05	2.16E-05	-8.06E-03
EP-freshwater	[kg P-Eq.]	6.42E-05	0.00E+00	3.59E-08	9.66E-09	4.89E-09	-1.54E-06
EP-marine	[kg N-Eq.]	7.73E-03	0.00E+00	2.27E-05	1.17E-05	5.25E-06	-1.23E-03
EP-terrestrial	[mol N-Eq.]	8.50E-02	0.00E+00	2.45E-04	2.00E-04	5.73E-05	-1.24E-02
POCP	[kg NMVOC-Eq.]	2.03E-02	0.00E+00	4.37E-05	3.32E-05	1.63E-05	-4.25E-03
ADPE	[kg Sb-Eq.]	4.44E-05	0.00E+00	8.87E-10	6.04E-10	2.35E-10	-2.98E-05
ADPF	[MJ]	1.15E+02	0.00E+00	1.71E-01	1.12E-01	5.65E-02	-2.46E+01
WDP	[m^3 world-Eq deprived]	3.33E+00	0.00E+00	6.10E-05	3.41E-02	4.04E-04	-4.18E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK34 A4 (3.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.13E+01	0.00E+00	2.16E-03	4.72E-03	1.55E-03	-4.47E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.25E+01	0.00E+00	2.16E-03	4.72E-03	1.55E-03	-4.47E-01
PENRE	[MJ]	1.89E+01	0.00E+00	2.86E-02	9.76E-01	9.48E-03	-1.06E+01
PENRM	[MJ]	1.47E+00	0.00E+00	0.00E+00	-9.57E-01	0.00E+00	0.00E+00
PENRT	[MJ]	2.04E+01	0.00E+00	2.86E-02	1.88E-02	9.48E-03	-1.06E+01
SM	[kg]	4.49E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.53E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.08E-02	0.00E+00	1.07E-06	1.35E-04	2.00E-06	-7.59E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK34 A4 (3.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.39E-08	0.00E+00	1.15E-12	9.51E-12	2.05E-12	-2.91E-05
NHWD	[kg]	3.05E-01	0.00E+00	4.00E-06	3.75E-03	2.73E-02	8.77E-02
RWD	[kg]	6.27E-04	0.00E+00	5.41E-08	7.36E-07	1.31E-07	-5.00E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.26E-01	0.00E+00	0.00E+00	5.18E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.06E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.90E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK34 A4 (3.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.112 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK46 A4 (3.57 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.02E+01	0.00E+00	1.39E-02	3.61E-01	3.68E-03	-2.05E+00
GWP-fossil	[kg CO_2-Eq.]	1.00E+01	0.00E+00	1.37E-02	3.61E-01	3.64E-03	-2.05E+00
GWP-biogenic	[kg CO_2-Eq.]	1.41E-01	0.00E+00	2.56E-05	1.25E-05	2.76E-05	9.91E-03
GWP-luluc	[kg CO_2-Eq.]	2.89E-02	0.00E+00	1.44E-04	1.82E-05	1.15E-05	-2.22E-03
ODP	[kg CFC11-Eq.]	1.45E-10	0.00E+00	2.32E-15	5.41E-14	1.18E-14	4.25E-13
AP	[mol H^+-Eq.]	3.48E-02	0.00E+00	5.01E-05	4.15E-05	2.27E-05	-7.49E-03
EP-freshwater	[kg P-Eq.]	7.02E-05	0.00E+00	3.77E-08	9.39E-09	5.15E-09	-1.42E-06
EP-marine	[kg N-Eq.]	8.39E-03	0.00E+00	2.38E-05	1.13E-05	5.54E-06	-1.15E-03
EP-terrestrial	[mol N-Eq.]	9.23E-02	0.00E+00	2.57E-04	1.94E-04	6.04E-05	-1.16E-02
POCP	[kg NMVOC-Eq.]	2.19E-02	0.00E+00	4.58E-05	3.22E-05	1.72E-05	-3.97E-03
ADPE	[kg Sb-Eq.]	4.23E-05	0.00E+00	9.31E-10	6.05E-10	2.47E-10	-2.74E-05
ADPF	[MJ]	1.24E+02	0.00E+00	1.79E-01	1.13E-01	5.96E-02	-2.32E+01
WDP	[m^3 world-Eq deprived]	3.64E+00	0.00E+00	6.40E-05	3.27E-02	4.26E-04	-3.85E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK46 A4 (3.57 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.72E+01	0.00E+00	7.20E-03	1.50E-02	5.17E-03	-1.57E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.84E+01	0.00E+00	7.20E-03	1.50E-02	5.17E-03	-1.57E+00
PENRE	[MJ]	5.94E+01	0.00E+00	9.55E-02	3.21E+00	3.17E-02	-2.72E+01
PENRM	[MJ]	3.66E+00	0.00E+00	0.00E+00	-3.15E+00	0.00E+00	0.00E+00
PENRT	[MJ]	6.31E+01	0.00E+00	9.55E-02	5.99E-02	3.17E-02	-2.72E+01
SM	[kg]	1.41E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.63E-02	0.00E+00	3.56E-06	4.12E-04	6.68E-06	-1.80E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK46 A4 (3.57 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.41E-08	0.00E+00	3.83E-12	3.02E-11	6.85E-12	-8.91E-05
NHWD	[kg]	9.60E-01	0.00E+00	1.33E-05	1.20E-02	9.13E-02	2.06E-01
RWD	[kg]	1.89E-03	0.00E+00	1.80E-07	2.30E-06	4.40E-07	-1.53E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.66E+00	0.00E+00	0.00E+00	1.73E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.25E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.82E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 90-ZAK46 A4 (3.57 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.113 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK34 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK34 A4 (3.75 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.04E+01	0.00E+00	1.46E-02	4.27E-01	3.85E-03	-2.35E+00
GWP-fossil	[kg CO_2-Eq.]	1.02E+01	0.00E+00	1.44E-02	4.27E-01	3.81E-03	-2.36E+00
GWP-biogenic	[kg CO_2-Eq.]	1.42E-01	0.00E+00	2.69E-05	1.51E-05	2.89E-05	1.14E-02
GWP-luluc	[kg CO_2-Eq.]	2.97E-02	0.00E+00	1.51E-04	1.92E-05	1.20E-05	-2.52E-03
ODP	[kg CFC11-Eq.]	1.48E-10	0.00E+00	2.44E-15	5.70E-14	1.23E-14	4.97E-13
AP	[mol H^+-Eq.]	3.54E-02	0.00E+00	5.26E-05	4.76E-05	2.38E-05	-8.54E-03
EP-freshwater	[kg P-Eq.]	6.86E-05	0.00E+00	3.96E-08	1.07E-08	5.38E-09	-1.62E-06
EP-marine	[kg N-Eq.]	8.50E-03	0.00E+00	2.50E-05	1.29E-05	5.79E-06	-1.31E-03
EP-terrestrial	[mol N-Eq.]	9.35E-02	0.00E+00	2.70E-04	2.23E-04	6.31E-05	-1.32E-02
POCP	[kg NMVOC-Eq.]	2.23E-02	0.00E+00	4.81E-05	3.68E-05	1.80E-05	-4.55E-03
ADPE	[kg Sb-Eq.]	4.42E-05	0.00E+00	9.78E-10	6.44E-10	2.59E-10	-3.11E-05
ADPF	[MJ]	1.27E+02	0.00E+00	1.88E-01	1.19E-01	6.23E-02	-2.66E+01
WDP	[m^3 world-Eq deprived]	3.42E+00	0.00E+00	6.73E-05	3.82E-02	4.45E-04	-4.36E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK34 A4 (3.75 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.19E+02	0.00E+00	1.27E-02	2.69E-02	9.07E-03	-3.72E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.20E+02	0.00E+00	1.27E-02	2.69E-02	9.07E-03	-3.72E+00
PENRE	[MJ]	1.02E+02	0.00E+00	1.68E-01	5.06E+00	5.56E-02	-3.55E+01
PENRM	[MJ]	5.47E+00	0.00E+00	0.00E+00	-4.96E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.08E+02	0.00E+00	1.68E-01	1.06E-01	5.56E-02	-3.55E+01
SM	[kg]	2.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.11E-01	0.00E+00	6.27E-06	8.07E-04	1.17E-05	-1.72E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK34 A4 (3.75 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.31E-07	0.00E+00	6.75E-12	5.40E-11	1.20E-11	-1.71E-04
NHWD	[kg]	1.71E+00	0.00E+00	2.35E-05	2.11E-02	1.60E-01	1.90E-01
RWD	[kg]	3.33E-03	0.00E+00	3.18E-07	4.27E-06	7.72E-07	-3.00E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.95E+00	0.00E+00	0.00E+00	3.04E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.34E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.13E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK34 A4 (3.75 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.114 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK34 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK34 A4 (5.64 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.53E+01	0.00E+00	2.19E-02	4.60E-01	5.87E-03	-3.33E+00
GWP-fossil	[kg CO_2-Eq.]	1.50E+01	0.00E+00	2.17E-02	4.60E-01	5.80E-03	-3.35E+00
GWP-biogenic	[kg CO_2-Eq.]	2.19E-01	0.00E+00	4.05E-05	1.64E-05	4.40E-05	1.70E-02
GWP-luluc	[kg CO_2-Eq.]	4.48E-02	0.00E+00	2.28E-04	1.97E-05	1.82E-05	-2.94E-03
ODP	[kg CFC11-Eq.]	2.25E-10	0.00E+00	3.67E-15	5.85E-14	1.88E-14	1.56E-12
AP	[mol H^+-Eq.]	4.97E-02	0.00E+00	7.91E-05	5.07E-05	3.62E-05	-1.14E-02
EP-freshwater	[kg P-Eq.]	9.37E-05	0.00E+00	5.96E-08	1.13E-08	8.20E-09	-1.99E-06
EP-marine	[kg N-Eq.]	1.27E-02	0.00E+00	3.76E-05	1.37E-05	8.82E-06	-1.75E-03
EP-terrestrial	[mol N-Eq.]	1.40E-01	0.00E+00	4.07E-04	2.37E-04	9.62E-05	-1.73E-02
POCP	[kg NMVOC-Eq.]	3.29E-02	0.00E+00	7.24E-05	3.91E-05	2.74E-05	-6.24E-03
ADPE	[kg Sb-Eq.]	4.51E-05	0.00E+00	1.47E-09	6.63E-10	3.94E-10	-3.92E-05
ADPF	[MJ]	1.82E+02	0.00E+00	2.83E-01	1.22E-01	9.49E-02	-3.67E+01
WDP	[m^3 world-Eq deprived]	4.00E+00	0.00E+00	1.01E-04	4.10E-02	6.78E-04	-5.41E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK34 A4 (5.64 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.49E+01	0.00E+00	2.65E-03	3.85E-03	1.92E-03	-1.57E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.61E+01	0.00E+00	2.65E-03	3.85E-03	1.92E-03	-1.57E-01
PENRE	[MJ]	2.25E+01	0.00E+00	3.52E-02	1.38E+00	1.18E-02	-1.22E+01
PENRM	[MJ]	1.88E+00	0.00E+00	0.00E+00	-1.36E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.44E+01	0.00E+00	3.52E-02	1.51E-02	1.18E-02	-1.22E+01
SM	[kg]	5.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.89E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.80E-02	0.00E+00	1.31E-06	1.20E-04	2.48E-06	-1.01E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK34 A4 (5.64 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.77E-08	0.00E+00	1.41E-12	7.73E-12	2.55E-12	-2.06E-05
NHWD	[kg]	3.50E-01	0.00E+00	4.91E-06	3.00E-03	3.39E-02	1.18E-01
RWD	[kg]	7.21E-04	0.00E+00	6.64E-08	6.22E-07	1.63E-07	-4.02E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.02E-01	0.00E+00	0.00E+00	6.44E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.41E-02	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.69E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK34 A4 (5.64 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.115 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK34 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK34 A4 (7.45 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.07E+01	0.00E+00	2.90E-02	6.33E-01	7.74E-03	-4.14E+00
GWP-fossil	[kg CO_2-Eq.]	2.04E+01	0.00E+00	2.86E-02	6.33E-01	7.66E-03	-4.16E+00
GWP-biogenic	[kg CO_2-Eq.]	2.96E-01	0.00E+00	5.35E-05	2.29E-05	5.80E-05	2.08E-02
GWP-luluc	[kg CO_2-Eq.]	6.01E-02	0.00E+00	3.01E-04	2.39E-05	2.41E-05	-3.80E-03
ODP	[kg CFC11-Eq.]	3.04E-10	0.00E+00	4.85E-15	7.09E-14	2.48E-14	1.68E-12
AP	[mol H^+-Eq.]	6.74E-02	0.00E+00	1.05E-04	6.77E-05	4.78E-05	-1.43E-02
EP-freshwater	[kg P-Eq.]	1.20E-04	0.00E+00	7.88E-08	1.50E-08	1.08E-08	-2.54E-06
EP-marine	[kg N-Eq.]	1.72E-02	0.00E+00	4.97E-05	1.83E-05	1.16E-05	-2.20E-03
EP-terrestrial	[mol N-Eq.]	1.90E-01	0.00E+00	5.37E-04	3.18E-04	1.27E-04	-2.18E-02
POCP	[kg NMVOC-Eq.]	4.45E-02	0.00E+00	9.56E-05	5.19E-05	3.61E-05	-7.79E-03
ADPE	[kg Sb-Eq.]	6.19E-05	0.00E+00	1.94E-09	8.13E-10	5.20E-10	-4.97E-05
ADPF	[MJ]	2.48E+02	0.00E+00	3.74E-01	1.48E-01	1.25E-01	-4.59E+01
WDP	[m^3 world-Eq deprived]	4.75E+00	0.00E+00	1.34E-04	5.58E-02	8.95E-04	-6.89E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK34 A4 (7.45 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.10E+01	0.00E+00	4.39E-03	5.96E-03	3.18E-03	-2.98E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.22E+01	0.00E+00	4.39E-03	5.96E-03	3.18E-03	-2.98E-01
PENRE	[MJ]	3.68E+01	0.00E+00	5.83E-02	2.30E+00	1.95E-02	-1.99E+01
PENRM	[MJ]	2.79E+00	0.00E+00	0.00E+00	-2.28E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.96E+01	0.00E+00	5.83E-02	2.30E-02	1.95E-02	-1.99E+01
SM	[kg]	8.49E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.52E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.52E-02	0.00E+00	2.17E-06	2.05E-04	4.11E-06	-1.63E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK34 A4 (7.45 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.53E-08	0.00E+00	2.34E-12	1.19E-11	4.21E-12	-3.49E-05
NHWD	[kg]	5.80E-01	0.00E+00	8.14E-06	4.53E-03	5.62E-02	1.90E-01
RWD	[kg]	1.17E-03	0.00E+00	1.10E-07	1.01E-06	2.70E-07	-6.83E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.98E-01	0.00E+00	0.00E+00	1.07E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.60E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.86E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2- optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK34 A4 (7.45 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.116 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK46 A4 (4.00 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.10E+01	0.00E+00	1.56E-02	4.27E-01	4.12E-03	-2.47E+00
GWP-fossil	[kg CO_2-Eq.]	1.08E+01	0.00E+00	1.54E-02	4.27E-01	4.07E-03	-2.48E+00
GWP-biogenic	[kg CO_2-Eq.]	1.53E-01	0.00E+00	2.87E-05	1.50E-05	3.09E-05	1.21E-02
GWP-luluc	[kg CO_2-Eq.]	3.17E-02	0.00E+00	1.61E-04	2.02E-05	1.28E-05	-2.51E-03
ODP	[kg CFC11-Eq.]	1.58E-10	0.00E+00	2.60E-15	6.01E-14	1.32E-14	6.53E-13
AP	[mol H^+-Eq.]	3.71E-02	0.00E+00	5.61E-05	4.83E-05	2.54E-05	-8.80E-03
EP-freshwater	[kg P-Eq.]	7.45E-05	0.00E+00	4.23E-08	1.09E-08	5.76E-09	-1.64E-06
EP-marine	[kg N-Eq.]	9.06E-03	0.00E+00	2.67E-05	1.31E-05	6.19E-06	-1.36E-03
EP-terrestrial	[mol N-Eq.]	9.96E-02	0.00E+00	2.88E-04	2.25E-04	6.75E-05	-1.36E-02
POCP	[kg NMVOC-Eq.]	2.36E-02	0.00E+00	5.14E-05	3.74E-05	1.92E-05	-4.73E-03
ADPE	[kg Sb-Eq.]	4.27E-05	0.00E+00	1.04E-09	6.75E-10	2.77E-10	-3.16E-05
ADPF	[MJ]	1.34E+02	0.00E+00	2.01E-01	1.25E-01	6.66E-02	-2.78E+01
WDP	[m^3 world-Eq deprived]	3.75E+00	0.00E+00	7.17E-05	3.84E-02	4.76E-04	-4.42E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK46 A4 (4.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.01E+01	0.00E+00	4.17E-03	8.67E-03	2.99E-03	-6.84E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.13E+01	0.00E+00	4.17E-03	8.67E-03	2.99E-03	-6.84E-01
PENRE	[MJ]	3.42E+01	0.00E+00	5.53E-02	1.43E+00	1.83E-02	-1.83E+01
PENRM	[MJ]	1.91E+00	0.00E+00	0.00E+00	-1.39E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.61E+01	0.00E+00	5.53E-02	3.44E-02	1.83E-02	-1.83E+01
SM	[kg]	8.48E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.25E-02	0.00E+00	2.06E-06	2.50E-04	3.86E-06	-1.35E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK46 A4 (4.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.47E-08	0.00E+00	2.22E-12	1.74E-11	3.96E-12	-4.59E-05
NHWD	[kg]	5.77E-01	0.00E+00	7.72E-06	6.87E-03	5.28E-02	1.56E-01
RWD	[kg]	1.15E-03	0.00E+00	1.04E-07	1.35E-06	2.54E-07	-8.69E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.97E-01	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.97E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.52E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 110-ZAK46 A4 (4.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.117 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 125-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 125-ZAK46 A4 (5.00 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.39E+01	0.00E+00	1.95E-02	4.29E-01	5.19E-03	-2.87E+00
GWP-fossil	[kg CO_2-Eq.]	1.36E+01	0.00E+00	1.92E-02	4.29E-01	5.14E-03	-2.88E+00
GWP-biogenic	[kg CO_2-Eq.]	1.97E-01	0.00E+00	3.59E-05	1.51E-05	3.89E-05	1.44E-02
GWP-luluc	[kg CO_2-Eq.]	4.01E-02	0.00E+00	2.02E-04	2.01E-05	1.61E-05	-2.69E-03
ODP	[kg CFC11-Eq.]	2.02E-10	0.00E+00	3.25E-15	5.97E-14	1.66E-14	1.12E-12
AP	[mol H^+-Eq.]	4.55E-02	0.00E+00	7.02E-05	4.84E-05	3.20E-05	-9.97E-03
EP-freshwater	[kg P-Eq.]	8.93E-05	0.00E+00	5.29E-08	1.09E-08	7.26E-09	-1.79E-06
EP-marine	[kg N-Eq.]	1.15E-02	0.00E+00	3.33E-05	1.32E-05	7.81E-06	-1.54E-03
EP-terrestrial	[mol N-Eq.]	1.27E-01	0.00E+00	3.61E-04	2.26E-04	8.52E-05	-1.53E-02
POCP	[kg NMVOC-Eq.]	2.98E-02	0.00E+00	6.42E-05	3.74E-05	2.42E-05	-5.43E-03
ADPE	[kg Sb-Eq.]	4.44E-05	0.00E+00	1.30E-09	6.72E-10	3.49E-10	-3.50E-05
ADPF	[MJ]	1.66E+02	0.00E+00	2.51E-01	1.24E-01	8.40E-02	-3.19E+01
WDP	[m^3 world-Eq deprived]	4.14E+00	0.00E+00	8.97E-05	3.86E-02	6.00E-04	-4.86E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 125-ZAK46 A4 (5.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.08E+01	0.00E+00	3.22E-03	5.33E-03	2.33E-03	-2.83E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.20E+01	0.00E+00	3.22E-03	5.33E-03	2.33E-03	-2.83E-01
PENRE	[MJ]	2.60E+01	0.00E+00	4.27E-02	9.65E-01	1.43E-02	-1.46E+01
PENRM	[MJ]	1.46E+00	0.00E+00	0.00E+00	-9.44E-01	0.00E+00	0.00E+00
PENRT	[MJ]	2.74E+01	0.00E+00	4.27E-02	2.11E-02	1.43E-02	-1.46E+01
SM	[kg]	6.49E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.85E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.36E-02	0.00E+00	1.59E-06	1.55E-04	3.01E-06	-1.17E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 125-ZAK46 A4 (5.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.43E-08	0.00E+00	1.71E-12	1.07E-11	3.09E-12	-2.79E-05
NHWD	[kg]	4.41E-01	0.00E+00	5.96E-06	4.22E-03	4.11E-02	1.36E-01
RWD	[kg]	8.85E-04	0.00E+00	8.06E-08	8.36E-07	1.98E-07	-5.31E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	7.62E-01	0.00E+00	0.00E+00	7.80E-01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.22E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.18E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 125-ZAK46 A4 (5.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.118 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK34 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK34 A4 (4.75 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.31E+01	0.00E+00	1.85E-02	5.63E-01	4.87E-03	-2.88E+00
GWP-fossil	[kg CO_2-Eq.]	1.29E+01	0.00E+00	1.83E-02	5.63E-01	4.82E-03	-2.89E+00
GWP-biogenic	[kg CO_2-Eq.]	1.82E-01	0.00E+00	3.41E-05	2.02E-05	3.65E-05	1.40E-02
GWP-luluc	[kg CO_2-Eq.]	3.76E-02	0.00E+00	1.92E-04	2.23E-05	1.51E-05	-2.76E-03
ODP	[kg CFC11-Eq.]	1.88E-10	0.00E+00	3.09E-15	6.62E-14	1.56E-14	6.61E-13
AP	[mol H^+-Eq.]	4.29E-02	0.00E+00	6.66E-05	6.09E-05	3.01E-05	-9.95E-03
EP-freshwater	[kg P-Eq.]	8.12E-05	0.00E+00	5.02E-08	1.35E-08	6.81E-09	-1.83E-06
EP-marine	[kg N-Eq.]	1.07E-02	0.00E+00	3.17E-05	1.65E-05	7.32E-06	-1.54E-03
EP-terrestrial	[mol N-Eq.]	1.18E-01	0.00E+00	3.43E-04	2.86E-04	7.99E-05	-1.53E-02
POCP	[kg NMVOC-Eq.]	2.79E-02	0.00E+00	6.10E-05	4.68E-05	2.27E-05	-5.41E-03
ADPE	[kg Sb-Eq.]	4.40E-05	0.00E+00	1.24E-09	7.55E-10	3.27E-10	-3.49E-05
ADPF	[MJ]	1.60E+02	0.00E+00	2.39E-01	1.38E-01	7.88E-02	-3.23E+01
WDP	[m^3 world-Eq deprived]	3.68E+00	0.00E+00	8.52E-05	4.98E-02	5.63E-04	-4.90E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK34 A4 (4.75 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.70E+01	0.00E+00	8.18E-03	1.61E-02	5.84E-03	-1.34E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.82E+01	0.00E+00	8.18E-03	1.61E-02	5.84E-03	-1.34E+00
PENRE	[MJ]	6.59E+01	0.00E+00	1.09E-01	3.25E+00	3.58E-02	-3.09E+01
PENRM	[MJ]	3.70E+00	0.00E+00	0.00E+00	-3.19E+00	0.00E+00	0.00E+00
PENRT	[MJ]	6.96E+01	0.00E+00	1.09E-01	6.28E-02	3.58E-02	-3.09E+01
SM	[kg]	1.62E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.94E-02	0.00E+00	4.04E-06	5.34E-04	7.54E-06	-2.22E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK34 A4 (4.75 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.51E-08	0.00E+00	4.36E-12	3.23E-11	7.74E-12	-8.05E-05
NHWD	[kg]	1.10E+00	0.00E+00	1.52E-05	1.24E-02	1.03E-01	2.56E-01
RWD	[kg]	2.17E-03	0.00E+00	2.05E-07	2.68E-06	4.97E-07	-1.73E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.91E+00	0.00E+00	0.00E+00	1.96E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.18E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.48E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK34 A4 (4.75 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.119 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK46 A4 (5.17 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.46E+01	0.00E+00	2.01E-02	5.64E-01	5.32E-03	-2.87E+00
GWP-fossil	[kg CO_2-Eq.]	1.44E+01	0.00E+00	1.99E-02	5.64E-01	5.26E-03	-2.88E+00
GWP-biogenic	[kg CO_2-Eq.]	2.06E-01	0.00E+00	3.71E-05	2.01E-05	3.99E-05	1.39E-02
GWP-luluc	[kg CO_2-Eq.]	4.17E-02	0.00E+00	2.09E-04	2.34E-05	1.65E-05	-2.72E-03
ODP	[kg CFC11-Eq.]	2.10E-10	0.00E+00	3.37E-15	6.96E-14	1.70E-14	6.58E-13
AP	[mol H^+-Eq.]	4.73E-02	0.00E+00	7.25E-05	6.17E-05	3.28E-05	-9.88E-03
EP-freshwater	[kg P-Eq.]	9.22E-05	0.00E+00	5.47E-08	1.37E-08	7.44E-09	-1.81E-06
EP-marine	[kg N-Eq.]	1.20E-02	0.00E+00	3.45E-05	1.67E-05	8.00E-06	-1.53E-03
EP-terrestrial	[mol N-Eq.]	1.32E-01	0.00E+00	3.73E-04	2.89E-04	8.72E-05	-1.52E-02
POCP	[kg NMVOC-Eq.]	3.12E-02	0.00E+00	6.64E-05	4.75E-05	2.48E-05	-5.39E-03
ADPE	[kg Sb-Eq.]	4.47E-05	0.00E+00	1.35E-09	7.91E-10	3.57E-10	-3.45E-05
ADPF	[MJ]	1.77E+02	0.00E+00	2.60E-01	1.45E-01	8.61E-02	-3.22E+01
WDP	[m^3 world-Eq deprived]	4.23E+00	0.00E+00	9.27E-05	5.01E-02	6.15E-04	-4.84E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK46 A4 (5.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.90E+01	0.00E+00	1.02E-02	1.94E-02	7.33E-03	-1.55E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.00E+02	0.00E+00	1.02E-02	1.94E-02	7.33E-03	-1.55E+00
PENRE	[MJ]	8.38E+01	0.00E+00	1.36E-01	3.61E+00	4.49E-02	-3.52E+01
PENRM	[MJ]	4.04E+00	0.00E+00	0.00E+00	-3.53E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.79E+01	0.00E+00	1.36E-01	7.58E-02	4.49E-02	-3.52E+01
SM	[kg]	2.11E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.10E-02	0.00E+00	5.06E-06	6.18E-04	9.47E-06	-2.52E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK46 A4 (5.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.10E-07	0.00E+00	5.44E-12	3.88E-11	9.71E-12	-9.19E-05
NHWD	[kg]	1.44E+00	0.00E+00	1.89E-05	1.50E-02	1.29E-01	2.91E-01
RWD	[kg]	2.80E-03	0.00E+00	2.56E-07	3.16E-06	6.23E-07	-2.00E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.48E+00	0.00E+00	0.00E+00	2.46E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.84E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.66E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 140-ZAK46 A4 (5.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.120 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK46 A4 (5.90 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.60E+01	0.00E+00	2.30E-02	4.91E-01	6.13E-03	-3.47E+00
GWP-fossil	[kg CO_2-Eq.]	1.57E+01	0.00E+00	2.27E-02	4.91E-01	6.07E-03	-3.49E+00
GWP-biogenic	[kg CO_2-Eq.]	2.30E-01	0.00E+00	4.24E-05	1.73E-05	4.60E-05	1.76E-02
GWP-luluc	[kg CO_2-Eq.]	4.69E-02	0.00E+00	2.38E-04	2.21E-05	1.91E-05	-3.05E-03
ODP	[kg CFC11-Eq.]	2.36E-10	0.00E+00	3.84E-15	6.56E-14	1.96E-14	1.58E-12
AP	[mol H^+-Eq.]	5.20E-02	0.00E+00	8.28E-05	5.48E-05	3.79E-05	-1.18E-02
EP-freshwater	[kg P-Eq.]	1.01E-04	0.00E+00	6.24E-08	1.23E-08	8.58E-09	-2.07E-06
EP-marine	[kg N-Eq.]	1.33E-02	0.00E+00	3.93E-05	1.49E-05	9.22E-06	-1.82E-03
EP-terrestrial	[mol N-Eq.]	1.47E-01	0.00E+00	4.25E-04	2.56E-04	1.01E-04	-1.80E-02
POCP	[kg NMVOC-Eq.]	3.44E-02	0.00E+00	7.57E-05	4.23E-05	2.86E-05	-6.49E-03
ADPE	[kg Sb-Eq.]	4.65E-05	0.00E+00	1.54E-09	7.40E-10	4.12E-10	-4.06E-05
ADPF	[MJ]	1.91E+02	0.00E+00	2.97E-01	1.37E-01	9.92E-02	-3.83E+01
WDP	[m^3 world-Eq deprived]	4.50E+00	0.00E+00	1.06E-04	4.39E-02	7.09E-04	-5.62E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK46 A4 (5.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.74E+01	0.00E+00	7.08E-03	1.10E-02	5.13E-03	-6.33E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.86E+01	0.00E+00	7.08E-03	1.10E-02	5.13E-03	-6.33E-01
PENRE	[MJ]	5.63E+01	0.00E+00	9.40E-02	2.28E+00	3.14E-02	-2.85E+01
PENRM	[MJ]	2.75E+00	0.00E+00	0.00E+00	-2.24E+00	0.00E+00	0.00E+00
PENRT	[MJ]	5.91E+01	0.00E+00	9.40E-02	4.33E-02	3.14E-02	-2.85E+01
SM	[kg]	1.43E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.13E-02	0.00E+00	3.50E-06	3.29E-04	6.62E-06	-2.26E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK46 A4 (5.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.47E-08	0.00E+00	3.77E-12	2.20E-11	6.79E-12	-5.68E-05
NHWD	[kg]	9.72E-01	0.00E+00	1.31E-05	8.62E-03	9.06E-02	2.64E-01
RWD	[kg]	1.90E-03	0.00E+00	1.77E-07	1.74E-06	4.36E-07	-1.11E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.68E+00	0.00E+00	0.00E+00	1.72E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.58E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.63E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 160-ZAK46 A4 (5.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.121 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 180-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 180-ZAK46 A4 (6.55 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.80E+01	0.00E+00	2.55E-02	5.53E-01	6.80E-03	-3.87E+00
GWP-fossil	[kg CO_2-Eq.]	1.77E+01	0.00E+00	2.52E-02	5.53E-01	6.73E-03	-3.89E+00
GWP-biogenic	[kg CO_2-Eq.]	2.54E-01	0.00E+00	4.70E-05	1.97E-05	5.10E-05	1.95E-02
GWP-luluc	[kg CO_2-Eq.]	5.22E-02	0.00E+00	2.64E-04	2.33E-05	2.12E-05	-3.67E-03
ODP	[kg CFC11-Eq.]	2.63E-10	0.00E+00	4.26E-15	6.93E-14	2.18E-14	1.61E-12
AP	[mol H^+-Eq.]	5.94E-02	0.00E+00	9.19E-05	6.07E-05	4.20E-05	-1.35E-02
EP-freshwater	[kg P-Eq.]	1.09E-04	0.00E+00	6.93E-08	1.35E-08	9.52E-09	-2.43E-06
EP-marine	[kg N-Eq.]	1.49E-02	0.00E+00	4.37E-05	1.64E-05	1.02E-05	-2.08E-03
EP-terrestrial	[mol N-Eq.]	1.64E-01	0.00E+00	4.72E-04	2.84E-04	1.12E-04	-2.07E-02
POCP	[kg NMVOC-Eq.]	3.86E-02	0.00E+00	8.41E-05	4.68E-05	3.18E-05	-7.35E-03
ADPE	[kg Sb-Eq.]	6.07E-05	0.00E+00	1.71E-09	7.87E-10	4.57E-10	-4.78E-05
ADPF	[MJ]	2.15E+02	0.00E+00	3.29E-01	1.45E-01	1.10E-01	-4.29E+01
WDP	[m^3 world-Eq deprived]	4.71E+00	0.00E+00	1.17E-04	4.92E-02	7.87E-04	-6.62E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 180-ZAK46 A4 (6.55 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.43E+01	0.00E+00	8.60E-03	1.28E-02	6.22E-03	-1.10E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.55E+01	0.00E+00	8.60E-03	1.28E-02	6.22E-03	-1.10E+00
PENRE	[MJ]	7.15E+01	0.00E+00	1.14E-01	2.86E+00	3.82E-02	-3.45E+01
PENRM	[MJ]	3.32E+00	0.00E+00	0.00E+00	-2.81E+00	0.00E+00	0.00E+00
PENRT	[MJ]	7.48E+01	0.00E+00	1.14E-01	5.01E-02	3.82E-02	-3.45E+01
SM	[kg]	1.81E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.96E-02	0.00E+00	4.25E-06	4.03E-04	8.04E-06	-2.61E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 180-ZAK46 A4 (6.55 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.38E-08	0.00E+00	4.58E-12	2.56E-11	8.24E-12	-8.21E-05
NHWD	[kg]	1.23E+00	0.00E+00	1.59E-05	9.92E-03	1.10E-01	3.03E-01
RWD	[kg]	2.39E-03	0.00E+00	2.15E-07	2.07E-06	5.29E-07	-1.45E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.13E+00	0.00E+00	0.00E+00	2.09E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.15E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.65E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 180-ZAK46 A4 (6.55 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.122 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 200-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 200-ZAK46 A4 (6.90 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.90E+01	0.00E+00	2.69E-02	5.78E-01	7.14E-03	-4.01E+00
GWP-fossil	[kg CO_2-Eq.]	1.87E+01	0.00E+00	2.65E-02	5.78E-01	7.09E-03	-4.03E+00
GWP-biogenic	[kg CO_2-Eq.]	2.70E-01	0.00E+00	4.96E-05	2.06E-05	2.19E-05	2.02E-02
GWP-luluc	[kg CO_2-Eq.]	5.52E-02	0.00E+00	2.79E-04	2.40E-05	2.23E-05	-3.74E-03
ODP	[kg CFC11-Eq.]	2.78E-10	0.00E+00	4.49E-15	7.12E-14	2.30E-14	1.70E-12
AP	[mol H^+-Eq.]	6.24E-02	0.00E+00	9.68E-05	6.31E-05	4.43E-05	-1.39E-02
EP-freshwater	[kg P-Eq.]	1.14E-04	0.00E+00	7.30E-08	1.41E-08	1.00E-08	-2.49E-06
EP-marine	[kg N-Eq.]	1.58E-02	0.00E+00	4.60E-05	1.71E-05	1.08E-05	-2.15E-03
EP-terrestrial	[mol N-Eq.]	1.74E-01	0.00E+00	4.98E-04	2.96E-04	1.18E-04	-2.13E-02
POCP	[kg NMVOC-Eq.]	4.08E-02	0.00E+00	8.86E-05	4.86E-05	3.35E-05	-7.58E-03
ADPE	[kg Sb-Eq.]	6.11E-05	0.00E+00	1.80E-09	8.10E-10	4.82E-10	-4.88E-05
ADPF	[MJ]	2.27E+02	0.00E+00	3.47E-01	1.48E-01	1.16E-01	-4.44E+01
WDP	[m^3 world-Eq deprived]	4.85E+00	0.00E+00	1.24E-04	5.13E-02	8.29E-04	-6.76E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 200-ZAK46 A4 (6.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.32E+01	0.00E+00	6.67E-03	9.68E-03	4.83E-03	-6.67E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.44E+01	0.00E+00	6.67E-03	9.68E-03	4.83E-03	-6.67E-01
PENRE	[MJ]	5.32E+01	0.00E+00	8.85E-02	2.18E+00	2.96E-02	-2.86E+01
PENRM	[MJ]	2.66E+00	0.00E+00	0.00E+00	-2.15E+00	0.00E+00	0.00E+00
PENRT	[MJ]	5.58E+01	0.00E+00	8.85E-02	3.79E-02	2.96E-02	-2.86E+01
SM	[kg]	1.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.19E-02	0.00E+00	3.30E-06	3.09E-04	6.23E-06	-2.25E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 200-ZAK46 A4 (6.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.00E-08	0.00E+00	3.55E-12	1.94E-11	6.39E-12	-5.92E-05
NHWD	[kg]	9.10E-01	0.00E+00	1.23E-05	7.50E-03	8.52E-02	2.62E-01
RWD	[kg]	1.78E-03	0.00E+00	1.67E-07	1.58E-06	4.10E-07	-1.08E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.57E+00	0.00E+00	0.00E+00	1.62E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.42E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.33E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 200-ZAK46 A4 (6.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.123 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK46 A4 (7.80 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.17E+01	0.00E+00	3.04E-02	6.50E-01	8.07E-03	-4.30E+00
GWP-fossil	[kg CO_2-Eq.]	2.13E+01	0.00E+00	3.00E-02	6.50E-01	8.02E-03	-4.32E+00
GWP-biogenic	[kg CO_2-Eq.]	3.11E-01	0.00E+00	5.60E-05	2.34E-05	2.47E-05	2.17E-02
GWP-luluc	[kg CO_2-Eq.]	6.30E-02	0.00E+00	3.15E-04	2.57E-05	2.52E-05	-3.88E-03
ODP	[kg CFC11-Eq.]	3.19E-10	0.00E+00	5.08E-15	7.63E-14	2.60E-14	1.79E-12
AP	[mol H^+-Eq.]	7.03E-02	0.00E+00	1.09E-04	7.02E-05	5.01E-05	-1.47E-02
EP-freshwater	[kg P-Eq.]	1.28E-04	0.00E+00	8.25E-08	1.56E-08	1.13E-08	-2.61E-06
EP-marine	[kg N-Eq.]	1.81E-02	0.00E+00	5.20E-05	1.90E-05	1.22E-05	-2.27E-03
EP-terrestrial	[mol N-Eq.]	1.99E-01	0.00E+00	5.62E-04	3.30E-04	1.33E-04	-2.25E-02
POCP	[kg NMVOC-Eq.]	4.66E-02	0.00E+00	1.00E-04	5.40E-05	3.78E-05	-8.06E-03
ADPE	[kg Sb-Eq.]	6.24E-05	0.00E+00	2.03E-09	8.70E-10	5.45E-10	-5.11E-05
ADPF	[MJ]	2.59E+02	0.00E+00	3.92E-01	1.59E-01	1.31E-01	-4.76E+01
WDP	[m^3 world-Eq deprived]	5.22E+00	0.00E+00	1.40E-04	5.75E-02	9.37E-04	-7.08E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK46 A4 (7.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.17E+01	0.00E+00	6.44E-03	8.92E-03	4.66E-03	-4.56E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.29E+01	0.00E+00	6.44E-03	8.92E-03	4.66E-03	-4.56E-01
PENRE	[MJ]	5.10E+01	0.00E+00	8.54E-02	1.76E+00	2.86E-02	-2.76E+01
PENRM	[MJ]	2.24E+00	0.00E+00	0.00E+00	-1.73E+00	0.00E+00	0.00E+00
PENRT	[MJ]	5.32E+01	0.00E+00	8.54E-02	3.47E-02	2.86E-02	-2.76E+01
SM	[kg]	1.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.41E-02	0.00E+00	3.18E-06	2.96E-04	6.02E-06	-2.25E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK46 A4 (7.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	6.85E-08	0.00E+00	3.43E-12	1.78E-11	6.18E-12	-4.98E-05
NHWD	[kg]	8.93E-01	0.00E+00	1.19E-05	6.84E-03	8.23E-02	2.63E-01
RWD	[kg]	1.74E-03	0.00E+00	1.61E-07	1.48E-06	3.97E-07	-9.83E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.54E+00	0.00E+00	0.00E+00	1.56E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.31E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.13E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 225-ZAK46 A4 (7.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.124 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 250-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 250-ZAK46 A4 (13.3 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.62E+01	0.00E+00	5.16E-02	1.41E+00	1.36E-02	-8.10E+00
GWP-fossil	[kg CO_2-Eq.]	3.56E+01	0.00E+00	5.10E-02	1.41E+00	1.35E-02	-8.13E+00
GWP-biogenic	[kg CO_2-Eq.]	5.06E-01	0.00E+00	9.52E-05	5.19E-05	4.16E-05	4.00E-02
GWP-luluc	[kg CO_2-Eq.]	1.05E-01	0.00E+00	5.35E-04	4.54E-05	4.25E-05	-8.05E-03
ODP	[kg CFC11-Eq.]	5.28E-10	0.00E+00	8.63E-15	1.35E-13	4.38E-14	2.46E-12
AP	[mol H^+-Eq.]	1.21E-01	0.00E+00	1.86E-04	1.46E-04	8.43E-05	-2.87E-02
EP-freshwater	[kg P-Eq.]	1.96E-04	0.00E+00	1.40E-07	3.19E-08	1.91E-08	-5.27E-06
EP-marine	[kg N-Eq.]	2.99E-02	0.00E+00	8.84E-05	3.91E-05	2.05E-05	-4.41E-03
EP-terrestrial	[mol N-Eq.]	3.29E-01	0.00E+00	9.56E-04	6.88E-04	2.24E-04	-4.41E-02
POCP	[kg NMVOC-Eq.]	7.77E-02	0.00E+00	1.70E-04	1.11E-04	6.37E-05	-1.55E-02
ADPE	[kg Sb-Eq.]	1.34E-04	0.00E+00	3.46E-09	1.57E-09	9.18E-10	-1.02E-04
ADPF	[MJ]	4.40E+02	0.00E+00	6.66E-01	2.82E-01	2.21E-01	-9.07E+01
WDP	[m^3 world-Eq deprived]	7.25E+00	0.00E+00	2.38E-04	1.23E-01	1.58E-03	-1.43E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 250-ZAK46 A4 (13.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.43E+01	0.00E+00	5.68E-03	8.43E-03	4.08E-03	-6.95E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.55E+01	0.00E+00	5.68E-03	8.43E-03	4.08E-03	-6.95E-01
PENRE	[MJ]	4.54E+01	0.00E+00	7.54E-02	1.71E+00	2.50E-02	-2.73E+01
PENRM	[MJ]	2.19E+00	0.00E+00	0.00E+00	-1.68E+00	0.00E+00	0.00E+00
PENRT	[MJ]	4.76E+01	0.00E+00	7.54E-02	3.19E-02	2.50E-02	-2.73E+01
SM	[kg]	1.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.27E-02	0.00E+00	2.81E-06	3.27E-04	5.27E-06	-2.13E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 250-ZAK46 A4 (13.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	6.02E-08	0.00E+00	3.02E-12	1.67E-11	5.40E-12	-5.76E-05
NHWD	[kg]	7.82E-01	0.00E+00	1.05E-05	6.18E-03	7.20E-02	2.48E-01
RWD	[kg]	1.53E-03	0.00E+00	1.42E-07	1.51E-06	3.47E-07	-1.10E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.35E+00	0.00E+00	0.00E+00	1.37E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.54E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.54E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 250-ZAK46 A4 (13.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.125 ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 280-ZAK46 A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 280-ZAK46 A4 (13.5 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.74E+01	0.00E+00	5.24E-02	1.49E+00	1.38E-02	-7.88E+00
GWP-fossil	[kg CO_2-Eq.]	3.68E+01	0.00E+00	5.18E-02	1.49E+00	1.37E-02	-7.91E+00
GWP-biogenic	[kg CO_2-Eq.]	5.23E-01	0.00E+00	9.67E-05	5.50E-05	4.22E-05	3.84E-02
GWP-luluc	[kg CO_2-Eq.]	1.08E-01	0.00E+00	5.44E-04	4.72E-05	4.31E-05	-7.84E-03
ODP	[kg CFC11-Eq.]	5.44E-10	0.00E+00	8.77E-15	1.40E-13	4.44E-14	1.98E-12
AP	[mol H^+-Eq.]	1.24E-01	0.00E+00	1.89E-04	1.54E-04	8.55E-05	-2.78E-02
EP-freshwater	[kg P-Eq.]	2.01E-04	0.00E+00	1.42E-07	3.36E-08	1.94E-08	-5.13E-06
EP-marine	[kg N-Eq.]	3.08E-02	0.00E+00	8.98E-05	4.12E-05	2.08E-05	-4.28E-03
EP-terrestrial	[mol N-Eq.]	3.39E-01	0.00E+00	9.71E-04	7.26E-04	2.27E-04	-4.28E-02
POCP	[kg NMVOC-Eq.]	8.01E-02	0.00E+00	1.73E-04	1.17E-04	6.46E-05	-1.50E-02
ADPE	[kg Sb-Eq.]	1.33E-04	0.00E+00	3.51E-09	1.64E-09	9.30E-10	-9.87E-05
ADPF	[MJ]	4.55E+02	0.00E+00	6.77E-01	2.93E-01	2.24E-01	-8.84E+01
WDP	[m^3 world-Eq deprived]	7.38E+00	0.00E+00	2.42E-04	1.30E-01	1.60E-03	-1.38E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 280-ZAK46 A4 (13.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.14E+01	0.00E+00	5.30E-03	8.07E-03	3.80E-03	-6.03E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.26E+01	0.00E+00	5.30E-03	8.07E-03	3.80E-03	-6.03E-01
PENRE	[MJ]	4.25E+01	0.00E+00	7.04E-02	1.51E+00	2.33E-02	-2.54E+01
PENRM	[MJ]	1.99E+00	0.00E+00	0.00E+00	-1.48E+00	0.00E+00	0.00E+00
PENRT	[MJ]	4.45E+01	0.00E+00	7.04E-02	3.04E-02	2.33E-02	-2.54E+01
SM	[kg]	1.09E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.17E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.46E-02	0.00E+00	2.62E-06	3.17E-04	4.91E-06	-2.00E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 280-ZAK46 A4 (13.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.72E-08	0.00E+00	2.82E-12	1.60E-11	5.03E-12	-5.13E-05
NHWD	[kg]	7.45E-01	0.00E+00	9.82E-06	5.90E-03	6.71E-02	2.33E-01
RWD	[kg]	1.46E-03	0.00E+00	1.33E-07	1.45E-06	3.23E-07	-1.04E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.29E+00	0.00E+00	0.00E+00	1.27E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.46E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.41E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-HAKU SHUT-OFF SADDLE PN16 WATER, A4: HAKU SPER 280-ZAK46 A4 (13.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.126 UNIVERSAL PIPE SADDLE WITH INT THREAD, STRAP L 1055 MM: UNI ABS 300-3"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE WITH INT THREAD, STRAP L 1055 MM: UNI ABS 300-3" (7.19 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.03E+01	0.00E+00	2.80E-02	1.41E+00	7.11E-03	-6.01E+00
GWP-fossil	[kg CO_2-Eq.]	2.01E+01	0.00E+00	2.76E-02	1.41E+00	7.07E-03	-6.03E+00
GWP-biogenic	[kg CO_2-Eq.]	1.97E-01	0.00E+00	5.16E-05	5.29E-05	2.18E-05	2.81E-02
GWP-luluc	[kg CO_2-Eq.]	5.16E-02	0.00E+00	2.90E-04	3.60E-05	2.22E-05	-6.68E-03
ODP	[kg CFC11-Eq.]	2.48E-10	0.00E+00	4.68E-15	1.07E-13	2.29E-14	3.30E-13
AP	[mol H^+-Eq.]	7.45E-02	0.00E+00	1.01E-04	1.39E-04	4.41E-05	-2.19E-02
EP-freshwater	[kg P-Eq.]	7.79E-05	0.00E+00	7.60E-08	3.00E-08	9.99E-09	-4.26E-06
EP-marine	[kg N-Eq.]	1.52E-02	0.00E+00	4.79E-05	3.72E-05	1.07E-05	-3.38E-03
EP-terrestrial	[mol N-Eq.]	1.66E-01	0.00E+00	5.18E-04	6.62E-04	1.17E-04	-3.41E-02
POCP	[kg NMVOC-Eq.]	4.28E-02	0.00E+00	9.23E-05	1.06E-04	3.33E-05	-1.16E-02
ADPE	[kg Sb-Eq.]	1.34E-04	0.00E+00	1.88E-09	1.28E-09	4.80E-10	-8.04E-05
ADPF	[MJ]	2.61E+02	0.00E+00	3.61E-01	2.23E-01	1.16E-01	-6.87E+01
WDP	[m^3 world-Eq deprived]	2.74E+00	0.00E+00	1.29E-04	1.21E-01	8.26E-04	-1.14E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE WITH INT THREAD, STRAP L 1055 MM: UNI ABS 300-3" (7.19 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.11E+02	0.00E+00	2.72E-02	6.14E-02	1.88E-02	-6.10E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.13E+02	0.00E+00	2.72E-02	6.14E-02	1.88E-02	-6.10E+00
PENRE	[MJ]	2.42E+02	0.00E+00	3.61E-01	1.86E+01	1.16E-01	-6.87E+01
PENRM	[MJ]	1.89E+01	0.00E+00	0.00E+00	-1.84E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.61E+02	0.00E+00	3.61E-01	2.23E-01	1.16E-01	-6.87E+01
SM	[kg]	4.48E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.35E-01	0.00E+00	1.35E-05	2.84E-03	2.43E-05	-3.91E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE WITH INT THREAD, STRAP L 1055 MM: UNI ABS 300-3" (7.19 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.22E-07	0.00E+00	1.45E-11	1.20E-10	2.50E-11	-2.35E-04
NHWD	[kg]	2.94E+00	0.00E+00	5.05E-05	4.23E-02	3.33E-01	4.41E-01
RWD	[kg]	6.36E-03	0.00E+00	6.82E-07	1.20E-05	1.60E-06	-7.81E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.26E+00	0.00E+00	0.00E+00	6.32E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE WITH INT THREAD, STRAP L 1055 MM: UNI ABS 300-3" (7.19 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.127 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1155 MM: UNI ABS 350-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1155 MM: UNI ABS 350-2" (7.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.14E+01	0.00E+00	3.00E-02	1.75E+00	7.52E-03	-6.96E+00
GWP-fossil	[kg CO_2-Eq.]	2.12E+01	0.00E+00	2.96E-02	1.75E+00	7.47E-03	-6.99E+00
GWP-biogenic	[kg CO_2-Eq.]	1.91E-01	0.00E+00	5.53E-05	6.56E-05	2.30E-05	3.22E-02
GWP-luluc	[kg CO_2-Eq.]	5.34E-02	0.00E+00	3.11E-04	4.46E-05	2.35E-05	-7.75E-03
ODP	[kg CFC11-Eq.]	2.53E-10	0.00E+00	5.01E-15	1.32E-13	2.42E-14	-7.05E-15
AP	[mol H^+-Eq.]	7.93E-02	0.00E+00	1.08E-04	1.73E-04	4.66E-05	-2.53E-02
EP-freshwater	[kg P-Eq.]	7.86E-05	0.00E+00	8.14E-08	3.73E-08	1.06E-08	-4.94E-06
EP-marine	[kg N-Eq.]	1.57E-02	0.00E+00	5.13E-05	4.61E-05	1.14E-05	-3.90E-03
EP-terrestrial	[mol N-Eq.]	1.71E-01	0.00E+00	5.55E-04	8.21E-04	1.24E-04	-3.94E-02
POCP	[kg NMVOC-Eq.]	4.49E-02	0.00E+00	9.89E-05	1.31E-04	3.52E-05	-1.34E-02
ADPE	[kg Sb-Eq.]	1.49E-04	0.00E+00	2.01E-09	1.58E-09	5.07E-10	-9.25E-05
ADPF	[MJ]	2.80E+02	0.00E+00	3.87E-01	2.77E-01	1.22E-01	-7.98E+01
WDP	[m^3 world-Eq deprived]	2.87E+00	0.00E+00	1.38E-04	1.50E-01	8.73E-04	-1.31E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1155 MM: UNI ABS 350-2" (7.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.15E+02	0.00E+00	2.92E-02	7.61E-02	1.99E-02	-7.26E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.16E+02	0.00E+00	2.92E-02	7.61E-02	1.99E-02	-7.26E+00
PENRE	[MJ]	2.57E+02	0.00E+00	3.87E-01	2.51E+01	1.22E-01	-7.98E+01
PENRM	[MJ]	2.22E+01	0.00E+00	0.00E+00	-2.48E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.80E+02	0.00E+00	3.87E-01	2.77E-01	1.22E-01	-7.98E+01
SM	[kg]	4.48E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.75E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.91E-01	0.00E+00	1.44E-05	3.52E-03	2.57E-05	-4.51E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1155 MM: UNI ABS 350-2" (7.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.22E-07	0.00E+00	1.55E-11	1.49E-10	2.64E-11	-2.70E-04
NHWD	[kg]	2.92E+00	0.00E+00	5.40E-05	5.25E-02	3.52E-01	5.07E-01
RWD	[kg]	6.45E-03	0.00E+00	7.30E-07	1.49E-05	1.69E-06	-9.54E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.12E+00	0.00E+00	0.00E+00	6.68E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1155 MM: UNI ABS 350-2" (7.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.128 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1325 MM: UNI ABS 400-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1325 MM: UNI ABS 400-2" (8.05 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.24E+01	0.00E+00	3.13E-02	2.03E+00	7.77E-03	-7.45E+00
GWP-fossil	[kg CO_2-Eq.]	2.22E+01	0.00E+00	3.09E-02	2.03E+00	7.73E-03	-7.47E+00
GWP-biogenic	[kg CO_2-Eq.]	1.89E-01	0.00E+00	5.78E-05	7.63E-05	2.38E-05	3.40E-02
GWP-luluc	[kg CO_2-Eq.]	5.47E-02	0.00E+00	3.25E-04	5.19E-05	2.43E-05	-7.96E-03
ODP	[kg CFC11-Eq.]	2.57E-10	0.00E+00	5.24E-15	1.54E-13	2.50E-14	-3.81E-13
AP	[mol H^+-Eq.]	8.14E-02	0.00E+00	1.13E-04	2.01E-04	4.82E-05	-2.64E-02
EP-freshwater	[kg P-Eq.]	7.98E-05	0.00E+00	8.51E-08	4.33E-08	1.09E-08	-5.13E-06
EP-marine	[kg N-Eq.]	1.61E-02	0.00E+00	5.37E-05	5.36E-05	1.17E-05	-4.10E-03
EP-terrestrial	[mol N-Eq.]	1.76E-01	0.00E+00	5.81E-04	9.54E-04	1.28E-04	-4.12E-02
POCP	[kg NMVOC-Eq.]	4.66E-02	0.00E+00	1.03E-04	1.52E-04	3.64E-05	-1.42E-02
ADPE	[kg Sb-Eq.]	1.49E-04	0.00E+00	2.10E-09	1.84E-09	5.25E-10	-9.51E-05
ADPF	[MJ]	2.96E+02	0.00E+00	4.05E-01	3.22E-01	1.26E-01	-8.54E+01
WDP	[m^3 world-Eq deprived]	2.97E+00	0.00E+00	1.44E-04	1.74E-01	9.03E-04	-1.36E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1325 MM: UNI ABS 400-2" (8.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.19E+02	0.00E+00	3.05E-02	8.85E-02	2.06E-02	-7.68E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.20E+02	0.00E+00	3.05E-02	8.85E-02	2.06E-02	-7.68E+00
PENRE	[MJ]	2.70E+02	0.00E+00	4.05E-01	2.51E+01	1.26E-01	-8.54E+01
PENRM	[MJ]	2.53E+01	0.00E+00	0.00E+00	-2.48E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.96E+02	0.00E+00	4.05E-01	3.22E-01	1.26E-01	-8.54E+01
SM	[kg]	4.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.97E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.38E-01	0.00E+00	1.51E-05	4.09E-03	2.66E-05	-4.90E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1325 MM: UNI ABS 400-2" (8.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.23E-07	0.00E+00	1.62E-11	1.74E-10	2.73E-11	-2.72E-04
NHWD	[kg]	2.92E+00	0.00E+00	5.65E-05	6.11E-02	3.64E-01	5.52E-01
RWD	[kg]	6.51E-03	0.00E+00	7.64E-07	1.73E-05	1.75E-06	-1.08E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.09E+00	0.00E+00	0.00E+00	6.91E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.15E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.64E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2- optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1325 MM: UNI ABS 400-2" (8.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.129 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1480 MM: UNI ABS 450-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1480 MM: UNI ABS 450-2" (8.20 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.28E+01	0.00E+00	3.19E-02	2.24E+00	7.85E-03	-7.73E+00
GWP-fossil	[kg CO_2-Eq.]	2.26E+01	0.00E+00	3.15E-02	2.24E+00	7.80E-03	-7.76E+00
GWP-biogenic	[kg CO_2-Eq.]	1.83E-01	0.00E+00	5.89E-05	8.43E-05	2.40E-05	3.49E-02
GWP-luluc	[kg CO_2-Eq.]	5.49E-02	0.00E+00	3.31E-04	5.73E-05	2.45E-05	-7.99E-03
ODP	[kg CFC11-Eq.]	2.56E-10	0.00E+00	5.34E-15	1.70E-13	2.53E-14	-7.02E-13
AP	[mol H^+-Eq.]	8.16E-02	0.00E+00	1.15E-04	2.22E-04	4.87E-05	-2.69E-02
EP-freshwater	[kg P-Eq.]	7.94E-05	0.00E+00	8.67E-08	4.78E-08	1.10E-08	-5.20E-06
EP-marine	[kg N-Eq.]	1.62E-02	0.00E+00	5.47E-05	5.92E-05	1.19E-05	-4.18E-03
EP-terrestrial	[mol N-Eq.]	1.77E-01	0.00E+00	5.91E-04	1.05E-03	1.29E-04	-4.20E-02
POCP	[kg NMVOC-Eq.]	4.72E-02	0.00E+00	1.05E-04	1.68E-04	3.68E-05	-1.45E-02
ADPE	[kg Sb-Eq.]	1.46E-04	0.00E+00	2.14E-09	2.03E-09	5.30E-10	-9.54E-05
ADPF	[MJ]	3.04E+02	0.00E+00	4.12E-01	3.55E-01	1.28E-01	-8.86E+01
WDP	[m^3 world-Eq deprived]	2.99E+00	0.00E+00	1.47E-04	1.92E-01	9.11E-04	-1.36E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1480 MM: UNI ABS 450-2" (8.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.18E+02	0.00E+00	3.11E-02	9.77E-02	2.08E-02	-7.90E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.20E+02	0.00E+00	3.11E-02	9.77E-02	2.08E-02	-7.90E+00
PENRE	[MJ]	2.77E+02	0.00E+00	4.12E-01	2.74E+01	1.28E-01	-8.86E+01
PENRM	[MJ]	2.75E+01	0.00E+00	0.00E+00	-2.70E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.04E+02	0.00E+00	4.12E-01	3.55E-01	1.28E-01	-8.86E+01
SM	[kg]	4.42E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.11E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.72E-01	0.00E+00	1.54E-05	4.52E-03	2.69E-05	-5.15E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1480 MM: UNI ABS 450-2" (8.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.20E-07	0.00E+00	1.65E-11	1.92E-10	2.76E-11	-2.67E-04
NHWD	[kg]	2.85E+00	0.00E+00	5.75E-05	6.74E-02	3.67E-01	5.81E-01
RWD	[kg]	6.43E-03	0.00E+00	7.78E-07	1.91E-05	1.77E-06	-1.17E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.99E+00	0.00E+00	0.00E+00	6.97E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.48E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.23E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1480 MM: UNI ABS 450-2" (8.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.130 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1630 MM: UNI ABS 500-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1630 MM: UNI ABS 500-2" (8.54 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.37E+01	0.00E+00	3.32E-02	2.50E+00	8.11E-03	-8.18E+00
GWP-fossil	[kg CO_2-Eq.]	2.35E+01	0.00E+00	3.28E-02	2.50E+00	8.06E-03	-8.21E+00
GWP-biogenic	[kg CO_2-Eq.]	1.83E-01	0.00E+00	6.13E-05	9.38E-05	2.48E-05	3.67E-02
GWP-luluc	[kg CO_2-Eq.]	5.64E-02	0.00E+00	3.45E-04	6.37E-05	2.53E-05	-8.21E-03
ODP	[kg CFC11-Eq.]	2.61E-10	0.00E+00	5.56E-15	1.89E-13	2.61E-14	-1.02E-12
AP	[mol H^+-Eq.]	8.39E-02	0.00E+00	1.20E-04	2.47E-04	5.03E-05	-2.80E-02
EP-freshwater	[kg P-Eq.]	8.09E-05	0.00E+00	9.03E-08	5.32E-08	1.14E-08	-5.39E-06
EP-marine	[kg N-Eq.]	1.67E-02	0.00E+00	5.69E-05	6.59E-05	1.23E-05	-4.37E-03
EP-terrestrial	[mol N-Eq.]	1.81E-01	0.00E+00	6.16E-04	1.17E-03	1.34E-04	-4.37E-02
POCP	[kg NMVOC-Eq.]	4.88E-02	0.00E+00	1.10E-04	1.87E-04	3.80E-05	-1.52E-02
ADPE	[kg Sb-Eq.]	1.46E-04	0.00E+00	2.23E-09	2.26E-09	5.47E-10	-9.80E-05
ADPF	[MJ]	3.19E+02	0.00E+00	4.29E-01	3.95E-01	1.32E-01	-9.39E+01
WDP	[m^3 world-Eq deprived]	3.09E+00	0.00E+00	1.53E-04	2.14E-01	9.42E-04	-1.41E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1630 MM: UNI ABS 500-2" (8.54 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.23E+02	0.00E+00	3.24E-02	1.09E-01	2.15E-02	-8.30E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.24E+02	0.00E+00	3.24E-02	1.09E-01	2.15E-02	-8.30E+00
PENRE	[MJ]	2.89E+02	0.00E+00	4.29E-01	3.02E+01	1.32E-01	-9.39E+01
PENRM	[MJ]	3.03E+01	0.00E+00	0.00E+00	-2.98E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.19E+02	0.00E+00	4.29E-01	3.95E-01	1.32E-01	-9.39E+01
SM	[kg]	4.46E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.31E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.15E-01	0.00E+00	1.60E-05	5.02E-03	2.78E-05	-5.51E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1630 MM: UNI ABS 500-2" (8.54 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.22E-07	0.00E+00	1.72E-11	2.13E-10	2.85E-11	-2.70E-04
NHWD	[kg]	2.86E+00	0.00E+00	5.99E-05	7.50E-02	3.80E-01	6.22E-01
RWD	[kg]	6.52E-03	0.00E+00	8.10E-07	2.12E-05	1.83E-06	-1.28E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.99E+00	0.00E+00	0.00E+00	7.20E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.87E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.93E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1630 MM: UNI ABS 500-2" (8.54 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.131 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1945 MM: UNI ABS 600-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1945 MM: UNI ABS 600-2" (9.14 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.54E+01	0.00E+00	3.56E-02	2.99E+00	8.55E-03	-9.02E+00
GWP-fossil	[kg CO_2-Eq.]	2.51E+01	0.00E+00	3.51E-02	2.99E+00	8.50E-03	-9.05E+00
GWP-biogenic	[kg CO_2-Eq.]	1.79E-01	0.00E+00	6.56E-05	1.12E-04	2.62E-05	3.98E-02
GWP-luluc	[kg CO_2-Eq.]	5.87E-02	0.00E+00	3.69E-04	7.63E-05	2.67E-05	-8.57E-03
ODP	[kg CFC11-Eq.]	2.69E-10	0.00E+00	5.95E-15	2.26E-13	2.75E-14	-1.67E-12
AP	[mol H^+-Eq.]	8.74E-02	0.00E+00	1.28E-04	2.96E-04	5.30E-05	-2.99E-02
EP-freshwater	[kg P-Eq.]	8.30E-05	0.00E+00	9.66E-08	6.37E-08	1.20E-08	-5.72E-06
EP-marine	[kg N-Eq.]	1.74E-02	0.00E+00	6.09E-05	7.89E-05	1.29E-05	-4.70E-03
EP-terrestrial	[mol N-Eq.]	1.89E-01	0.00E+00	6.59E-04	1.40E-03	1.41E-04	-4.69E-02
POCP	[kg NMVOC-Eq.]	5.17E-02	0.00E+00	1.17E-04	2.24E-04	4.01E-05	-1.65E-02
ADPE	[kg Sb-Eq.]	1.46E-04	0.00E+00	2.38E-09	2.71E-09	5.77E-10	-1.02E-04
ADPF	[MJ]	3.47E+02	0.00E+00	4.59E-01	4.73E-01	1.39E-01	-1.04E+02
WDP	[m^3 world-Eq deprived]	3.26E+00	0.00E+00	1.64E-04	2.56E-01	9.93E-04	-1.47E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1945 MM: UNI ABS 600-2" (9.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.30E+02	0.00E+00	3.46E-02	1.30E-01	2.27E-02	-9.02E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.31E+02	0.00E+00	3.46E-02	1.30E-01	2.27E-02	-9.02E+00
PENRE	[MJ]	3.11E+02	0.00E+00	4.59E-01	3.56E+01	1.39E-01	-1.04E+02
PENRM	[MJ]	3.57E+01	0.00E+00	0.00E+00	-3.52E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.47E+02	0.00E+00	4.59E-01	4.73E-01	1.39E-01	-1.04E+02
SM	[kg]	4.48E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.70E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.98E-01	0.00E+00	1.71E-05	6.02E-03	2.93E-05	-6.19E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1945 MM: UNI ABS 600-2" (9.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.24E-07	0.00E+00	1.84E-11	2.55E-10	3.00E-11	-2.72E-04
NHWD	[kg]	2.85E+00	0.00E+00	6.41E-05	8.98E-02	4.00E-01	7.00E-01
RWD	[kg]	6.61E-03	0.00E+00	8.67E-07	2.54E-05	1.93E-06	-1.50E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.93E+00	0.00E+00	0.00E+00	7.59E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.63E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.30E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1945 MM: UNI ABS 600-2" (9.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.132 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-3" A4

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-3" A4 (4.90 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.39E+01	0.00E+00	1.91E-02	7.28E-01	4.94E-03	-4.28E+00
GWP-fossil	[kg CO_2-Eq.]	1.37E+01	0.00E+00	1.88E-02	7.28E-01	4.91E-03	-4.30E+00
GWP-biogenic	[kg CO_2-Eq.]	1.38E-01	0.00E+00	3.52E-05	2.73E-05	1.51E-05	2.05E-02
GWP-luluc	[kg CO_2-Eq.]	3.61E-02	0.00E+00	1.98E-04	1.86E-05	1.54E-05	-6.07E-03
ODP	[kg CFC11-Eq.]	1.75E-10	0.00E+00	3.19E-15	5.51E-14	1.59E-14	4.71E-13
AP	[mol H^+-Eq.]	5.73E-02	0.00E+00	6.88E-05	7.20E-05	3.06E-05	-1.78E-02
EP-freshwater	[kg P-Eq.]	5.36E-05	0.00E+00	5.18E-08	1.55E-08	6.94E-09	-3.65E-06
EP-marine	[kg N-Eq.]	1.06E-02	0.00E+00	3.27E-05	1.92E-05	7.47E-06	-2.69E-03
EP-terrestrial	[mol N-Eq.]	1.16E-01	0.00E+00	3.53E-04	3.42E-04	8.14E-05	-2.77E-02
POCP	[kg NMVOC-Eq.]	2.98E-02	0.00E+00	6.29E-05	5.45E-05	2.32E-05	-8.97E-03
ADPE	[kg Sb-Eq.]	1.33E-04	0.00E+00	1.28E-09	6.60E-10	3.33E-10	-7.09E-05
ADPF	[MJ]	1.76E+02	0.00E+00	2.46E-01	1.15E-01	8.03E-02	-4.96E+01
WDP	[m^3 world-Eq deprived]	1.94E+00	0.00E+00	8.79E-05	6.24E-02	5.74E-04	-1.00E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-3" A4 (4.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.46E+02	0.00E+00	1.86E-02	3.17E-02	1.31E-02	-5.29E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.47E+02	0.00E+00	1.86E-02	3.17E-02	1.31E-02	-5.29E+00
PENRE	[MJ]	1.65E+02	0.00E+00	2.46E-01	1.04E+01	8.03E-02	-4.96E+01
PENRM	[MJ]	1.03E+01	0.00E+00	0.00E+00	-1.03E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.76E+02	0.00E+00	2.46E-01	1.15E-01	8.03E-02	-4.96E+01
SM	[kg]	3.23E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.87E-01	0.00E+00	9.17E-06	1.46E-03	1.69E-05	-2.41E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-3" A4 (4.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.57E-07	0.00E+00	9.88E-12	6.22E-11	1.74E-11	-2.30E-04
NHWD	[kg]	2.14E+00	0.00E+00	3.44E-05	2.19E-02	2.31E-01	2.65E-01
RWD	[kg]	4.65E-03	0.00E+00	4.65E-07	6.19E-06	1.11E-06	-4.81E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.90E+00	0.00E+00	0.00E+00	4.39E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.13E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.02E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-3" A4 (4.90 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.133 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2_1/2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2_1/2" (15.1 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.09E+01	0.00E+00	5.86E-02	3.28E+00	1.48E-02	-1.48E+01
GWP-fossil	[kg CO_2-Eq.]	4.05E+01	0.00E+00	5.79E-02	3.28E+00	1.47E-02	-1.49E+01
GWP-biogenic	[kg CO_2-Eq.]	2.71E-01	0.00E+00	1.08E-04	1.23E-04	4.52E-05	7.27E-02
GWP-luluc	[kg CO_2-Eq.]	9.39E-02	0.00E+00	6.08E-04	8.36E-05	4.61E-05	-1.02E-02
ODP	[kg CFC11-Eq.]	4.19E-10	0.00E+00	9.80E-15	2.48E-13	4.75E-14	4.73E-12
AP	[mol H^+-Eq.]	1.30E-01	0.00E+00	2.11E-04	3.24E-04	9.15E-05	-4.51E-02
EP-freshwater	[kg P-Eq.]	1.34E-04	0.00E+00	1.59E-07	6.99E-08	2.07E-08	-7.50E-06
EP-marine	[kg N-Eq.]	2.80E-02	0.00E+00	1.00E-04	8.65E-05	2.23E-05	-7.13E-03
EP-terrestrial	[mol N-Eq.]	3.04E-01	0.00E+00	1.09E-03	1.54E-03	2.43E-04	-6.92E-02
POCP	[kg NMVOC-Eq.]	8.30E-02	0.00E+00	1.93E-04	2.45E-04	6.92E-05	-2.60E-02
ADPE	[kg Sb-Eq.]	1.49E-04	0.00E+00	3.93E-09	2.97E-09	9.96E-10	-1.42E-04
ADPF	[MJ]	5.28E+02	0.00E+00	7.57E-01	5.19E-01	2.40E-01	-1.63E+02
WDP	[m^3 world-Eq deprived]	5.12E+00	0.00E+00	2.70E-04	2.81E-01	1.71E-03	-1.97E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2_1/2" (15.1 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.71E+02	0.00E+00	5.71E-02	1.43E-01	3.91E-02	-8.12E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.72E+02	0.00E+00	5.71E-02	1.43E-01	3.91E-02	-8.12E+00
PENRE	[MJ]	4.87E+02	0.00E+00	7.57E-01	1.56E+01	2.40E-01	-1.63E+02
PENRM	[MJ]	4.06E+01	0.00E+00	0.00E+00	-1.51E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.28E+02	0.00E+00	7.57E-01	5.19E-01	2.40E-01	-1.63E+02
SM	[kg]	7.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.87E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.15E+00	0.00E+00	2.82E-05	6.59E-03	5.05E-05	-1.17E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2_1/2" (15.1 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.49E-07	0.00E+00	3.04E-11	2.80E-10	5.18E-11	-3.06E-04
NHWD	[kg]	4.49E+00	0.00E+00	1.06E-04	9.84E-02	6.91E-01	1.36E+00
RWD	[kg]	9.65E-03	0.00E+00	1.43E-06	2.79E-05	3.33E-06	-1.64E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.67E+00	0.00E+00	0.00E+00	1.31E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.08E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.10E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2_1/2" (15.1 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.134 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2" (15.1 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.16E+01	0.00E+00	5.86E-02	3.17E+00	1.48E-02	-1.38E+01
GWP-fossil	[kg CO_2-Eq.]	4.12E+01	0.00E+00	5.79E-02	3.17E+00	1.47E-02	-1.38E+01
GWP-biogenic	[kg CO_2-Eq.]	2.85E-01	0.00E+00	1.08E-04	1.19E-04	4.53E-05	6.73E-02
GWP-luluc	[kg CO_2-Eq.]	9.58E-02	0.00E+00	6.08E-04	8.08E-05	4.63E-05	-9.65E-03
ODP	[kg CFC11-Eq.]	4.29E-10	0.00E+00	9.80E-15	2.40E-13	4.76E-14	3.95E-12
AP	[mol H^+-Eq.]	1.31E-01	0.00E+00	2.11E-04	3.13E-04	9.18E-05	-4.21E-02
EP-freshwater	[kg P-Eq.]	1.36E-04	0.00E+00	1.59E-07	6.75E-08	2.08E-08	-7.05E-06
EP-marine	[kg N-Eq.]	2.83E-02	0.00E+00	1.00E-04	8.36E-05	2.24E-05	-6.65E-03
EP-terrestrial	[mol N-Eq.]	3.07E-01	0.00E+00	1.09E-03	1.49E-03	2.44E-04	-6.46E-02
POCP	[kg NMVOC-Eq.]	8.37E-02	0.00E+00	1.93E-04	2.37E-04	6.94E-05	-2.42E-02
ADPE	[kg Sb-Eq.]	1.53E-04	0.00E+00	3.93E-09	2.87E-09	9.99E-10	-1.32E-04
ADPF	[MJ]	5.37E+02	0.00E+00	7.57E-01	5.01E-01	2.41E-01	-1.52E+02
WDP	[m^3 world-Eq deprived]	5.14E+00	0.00E+00	2.70E-04	2.71E-01	1.72E-03	-1.85E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2" (15.1 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.79E+02	0.00E+00	5.71E-02	1.38E-01	3.92E-02	-7.88E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.80E+02	0.00E+00	5.71E-02	1.38E-01	3.92E-02	-7.88E+00
PENRE	[MJ]	4.97E+02	0.00E+00	7.57E-01	4.06E+01	2.41E-01	-1.52E+02
PENRM	[MJ]	4.06E+01	0.00E+00	0.00E+00	-4.01E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.37E+02	0.00E+00	7.57E-01	5.01E-01	2.41E-01	-1.52E+02
SM	[kg]	7.75E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.37E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.15E+00	0.00E+00	2.82E-05	6.37E-03	5.07E-05	-1.09E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2" (15.1 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.58E-07	0.00E+00	3.04E-11	2.71E-10	5.20E-11	-2.89E-04
NHWD	[kg]	4.50E+00	0.00E+00	1.06E-04	9.51E-02	6.93E-01	1.25E+00
RWD	[kg]	1.01E-02	0.00E+00	1.43E-06	2.69E-05	3.34E-06	-1.58E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.67E+00	0.00E+00	0.00E+00	1.32E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.91E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.79E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 2240 MM: UNI ABS 700-2" (15.1 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.135 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-1" (2.14 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.08E+00	0.00E+00	8.15E-03	2.36E-01	2.14E-03	-1.76E+00
GWP-fossil	[kg CO_2-Eq.]	6.00E+00	0.00E+00	8.05E-03	2.36E-01	2.13E-03	-1.76E+00
GWP-biogenic	[kg CO_2-Eq.]	6.45E-02	0.00E+00	1.50E-05	8.86E-06	6.56E-06	8.49E-03
GWP-luluc	[kg CO_2-Eq.]	1.61E-02	0.00E+00	8.46E-05	6.02E-06	6.70E-06	-2.79E-03
ODP	[kg CFC11-Eq.]	7.87E-11	0.00E+00	1.36E-15	1.78E-14	6.90E-15	2.48E-13
AP	[mol H^+-Eq.]	2.62E-02	0.00E+00	2.94E-05	2.33E-05	1.33E-05	-7.82E-03
EP-freshwater	[kg P-Eq.]	2.40E-05	0.00E+00	2.22E-08	5.03E-09	3.01E-09	-1.64E-06
EP-marine	[kg N-Eq.]	4.75E-03	0.00E+00	1.40E-05	6.22E-06	3.24E-06	-1.17E-03
EP-terrestrial	[mol N-Eq.]	5.21E-02	0.00E+00	1.51E-04	1.11E-04	3.53E-05	-1.21E-02
POCP	[kg NMVOC-Eq.]	1.32E-02	0.00E+00	2.69E-05	1.77E-05	1.00E-05	-3.83E-03
ADPE	[kg Sb-Eq.]	6.48E-05	0.00E+00	5.46E-10	2.14E-10	1.45E-10	-3.22E-05
ADPF	[MJ]	7.59E+01	0.00E+00	1.05E-01	3.73E-02	3.48E-02	-2.05E+01
WDP	[m^3 world-Eq deprived]	8.62E-01	0.00E+00	3.76E-05	2.02E-02	2.49E-04	-4.53E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-1" (2.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.53E+01	0.00E+00	7.94E-03	1.03E-02	5.68E-03	-2.38E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.65E+01	0.00E+00	7.94E-03	1.03E-02	5.68E-03	-2.38E+00
PENRE	[MJ]	7.20E+01	0.00E+00	1.05E-01	2.13E+00	3.48E-02	-2.05E+01
PENRM	[MJ]	3.94E+00	0.00E+00	0.00E+00	-2.10E+00	0.00E+00	0.00E+00
PENRT	[MJ]	7.59E+01	0.00E+00	1.05E-01	3.73E-02	3.48E-02	-2.05E+01
SM	[kg]	1.48E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.93E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.53E-02	0.00E+00	3.92E-06	4.75E-04	7.34E-06	-9.04E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-1" (2.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.19E-08	0.00E+00	4.22E-12	2.01E-11	7.53E-12	-1.09E-04
NHWD	[kg]	9.86E-01	0.00E+00	1.47E-05	7.08E-03	1.00E-01	9.79E-02
RWD	[kg]	2.16E-03	0.00E+00	1.99E-07	2.00E-06	4.83E-07	-1.80E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.32E+00	0.00E+00	0.00E+00	1.90E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.66E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.55E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-1" (2.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.136 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-5/4" (2.14 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.23E+00	0.00E+00	8.32E-03	2.39E-01	2.19E-03	-1.75E+00
GWP-fossil	[kg CO_2-Eq.]	6.15E+00	0.00E+00	8.21E-03	2.39E-01	2.17E-03	-1.76E+00
GWP-biogenic	[kg CO_2-Eq.]	6.67E-02	0.00E+00	1.53E-05	8.99E-06	6.69E-06	8.45E-03
GWP-luluc	[kg CO_2-Eq.]	1.65E-02	0.00E+00	8.63E-05	6.11E-06	6.83E-06	-2.75E-03
ODP	[kg CFC11-Eq.]	8.08E-11	0.00E+00	1.39E-15	1.81E-14	7.04E-15	2.45E-13
AP	[mol H^+-Eq.]	2.66E-02	0.00E+00	3.00E-05	2.37E-05	1.36E-05	-7.76E-03
EP-freshwater	[kg P-Eq.]	2.48E-05	0.00E+00	2.26E-08	5.11E-09	3.07E-09	-1.62E-06
EP-marine	[kg N-Eq.]	4.87E-03	0.00E+00	1.42E-05	6.32E-06	3.30E-06	-1.16E-03
EP-terrestrial	[mol N-Eq.]	5.35E-02	0.00E+00	1.54E-04	1.12E-04	3.60E-05	-1.20E-02
POCP	[kg NMVOC-Eq.]	1.35E-02	0.00E+00	2.74E-05	1.79E-05	1.03E-05	-3.81E-03
ADPE	[kg Sb-Eq.]	6.49E-05	0.00E+00	5.57E-10	2.17E-10	1.48E-10	-3.18E-05
ADPF	[MJ]	7.77E+01	0.00E+00	1.07E-01	3.79E-02	3.56E-02	-2.04E+01
WDP	[m^3 world-Eq deprived]	8.83E-01	0.00E+00	3.83E-05	2.05E-02	2.54E-04	-4.48E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-5/4" (2.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.72E+01	0.00E+00	8.10E-03	1.04E-02	5.80E-03	-2.36E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.84E+01	0.00E+00	8.10E-03	1.04E-02	5.80E-03	-2.36E+00
PENRE	[MJ]	7.37E+01	0.00E+00	1.07E-01	3.55E+00	3.56E-02	-2.04E+01
PENRM	[MJ]	4.03E+00	0.00E+00	0.00E+00	-3.52E+00	0.00E+00	0.00E+00
PENRT	[MJ]	7.77E+01	0.00E+00	1.07E-01	3.79E-02	3.56E-02	-2.04E+01
SM	[kg]	1.52E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.94E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.63E-02	0.00E+00	4.00E-06	4.82E-04	7.49E-06	-9.08E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-5/4" (2.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.41E-08	0.00E+00	4.31E-12	2.05E-11	7.68E-12	-1.07E-04
NHWD	[kg]	1.01E+00	0.00E+00	1.50E-05	7.19E-03	1.02E-01	9.84E-02
RWD	[kg]	2.21E-03	0.00E+00	2.03E-07	2.04E-06	4.93E-07	-1.80E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.37E+00	0.00E+00	0.00E+00	1.94E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.71E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.65E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-5/4" (2.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.137 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-6/4" (2.34 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.76E+00	0.00E+00	9.11E-03	2.43E-01	2.40E-03	-1.86E+00
GWP-fossil	[kg CO_2-Eq.]	6.67E+00	0.00E+00	8.99E-03	2.43E-01	2.39E-03	-1.87E+00
GWP-biogenic	[kg CO_2-Eq.]	7.50E-02	0.00E+00	1.68E-05	9.11E-06	7.36E-06	9.06E-03
GWP-luluc	[kg CO_2-Eq.]	1.81E-02	0.00E+00	9.45E-05	6.19E-06	7.51E-06	-2.81E-03
ODP	[kg CFC11-Eq.]	8.91E-11	0.00E+00	1.52E-15	1.84E-14	7.73E-15	3.56E-13
AP	[mol H^+-Eq.]	2.82E-02	0.00E+00	3.28E-05	2.40E-05	1.49E-05	-8.08E-03
EP-freshwater	[kg P-Eq.]	2.76E-05	0.00E+00	2.47E-08	5.17E-09	3.38E-09	-1.67E-06
EP-marine	[kg N-Eq.]	5.33E-03	0.00E+00	1.56E-05	6.40E-06	3.63E-06	-1.21E-03
EP-terrestrial	[mol N-Eq.]	5.85E-02	0.00E+00	1.69E-04	1.14E-04	3.96E-05	-1.25E-02
POCP	[kg NMVOC-Eq.]	1.47E-02	0.00E+00	3.00E-05	1.82E-05	1.13E-05	-4.00E-03
ADPE	[kg Sb-Eq.]	6.51E-05	0.00E+00	6.10E-10	2.20E-10	1.62E-10	-3.28E-05
ADPF	[MJ]	8.37E+01	0.00E+00	1.18E-01	3.84E-02	3.91E-02	-2.15E+01
WDP	[m^3 world-Eq deprived]	9.56E-01	0.00E+00	4.20E-05	2.08E-02	2.79E-04	-4.61E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-6/4" (2.34 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.46E+01	0.00E+00	8.86E-03	1.06E-02	6.37E-03	-2.37E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.58E+01	0.00E+00	8.86E-03	1.06E-02	6.37E-03	-2.37E+00
PENRE	[MJ]	7.95E+01	0.00E+00	1.18E-01	3.70E+00	3.91E-02	-2.15E+01
PENRM	[MJ]	4.17E+00	0.00E+00	0.00E+00	-3.66E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.37E+01	0.00E+00	1.18E-01	3.84E-02	3.91E-02	-2.15E+01
SM	[kg]	1.68E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.49E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.03E-02	0.00E+00	4.38E-06	4.88E-04	8.23E-06	-1.00E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-6/4" (2.34 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.22E-08	0.00E+00	4.72E-12	2.07E-11	8.44E-12	-1.09E-04
NHWD	[kg]	1.12E+00	0.00E+00	1.64E-05	7.29E-03	1.12E-01	1.09E-01
RWD	[kg]	2.42E-03	0.00E+00	2.22E-07	2.06E-06	5.42E-07	-1.83E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.56E+00	0.00E+00	0.00E+00	2.13E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.76E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.74E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-6/4" (2.34 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.138 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-2" (2.28 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.62E+00	0.00E+00	8.89E-03	2.55E-01	2.34E-03	-1.83E+00
GWP-fossil	[kg CO_2-Eq.]	6.53E+00	0.00E+00	8.78E-03	2.55E-01	2.32E-03	-1.84E+00
GWP-biogenic	[kg CO_2-Eq.]	7.26E-02	0.00E+00	1.64E-05	9.59E-06	7.16E-06	8.86E-03
GWP-luluc	[kg CO_2-Eq.]	1.76E-02	0.00E+00	9.22E-05	6.52E-06	7.30E-06	-2.80E-03
ODP	[kg CFC11-Eq.]	8.68E-11	0.00E+00	1.49E-15	1.93E-14	7.52E-15	2.80E-13
AP	[mol H^+-Eq.]	2.77E-02	0.00E+00	3.20E-05	2.53E-05	1.45E-05	-7.99E-03
EP-freshwater	[kg P-Eq.]	2.68E-05	0.00E+00	2.41E-08	5.44E-09	3.28E-09	-1.66E-06
EP-marine	[kg N-Eq.]	5.20E-03	0.00E+00	1.52E-05	6.74E-06	3.53E-06	-1.20E-03
EP-terrestrial	[mol N-Eq.]	5.71E-02	0.00E+00	1.65E-04	1.20E-04	3.85E-05	-1.24E-02
POCP	[kg NMVOC-Eq.]	1.44E-02	0.00E+00	2.93E-05	1.91E-05	1.10E-05	-3.95E-03
ADPE	[kg Sb-Eq.]	6.51E-05	0.00E+00	5.96E-10	2.32E-10	1.58E-10	-3.25E-05
ADPF	[MJ]	8.23E+01	0.00E+00	1.15E-01	4.04E-02	3.80E-02	-2.13E+01
WDP	[m^3 world-Eq deprived]	9.36E-01	0.00E+00	4.10E-05	2.19E-02	2.71E-04	-4.58E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-2" (2.28 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.25E+01	0.00E+00	8.65E-03	1.11E-02	6.20E-03	-2.39E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.37E+01	0.00E+00	8.65E-03	1.11E-02	6.20E-03	-2.39E+00
PENRE	[MJ]	7.81E+01	0.00E+00	1.15E-01	3.81E+00	3.80E-02	-2.13E+01
PENRM	[MJ]	4.28E+00	0.00E+00	0.00E+00	-3.77E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.23E+01	0.00E+00	1.15E-01	4.04E-02	3.80E-02	-2.13E+01
SM	[kg]	1.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.32E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.92E-02	0.00E+00	4.28E-06	5.14E-04	8.00E-06	-9.74E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-2" (2.28 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.99E-08	0.00E+00	4.61E-12	2.18E-11	8.21E-12	-1.09E-04
NHWD	[kg]	1.09E+00	0.00E+00	1.60E-05	7.67E-03	1.09E-01	1.06E-01
RWD	[kg]	2.36E-03	0.00E+00	2.17E-07	2.17E-06	5.27E-07	-1.88E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.50E+00	0.00E+00	0.00E+00	2.08E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.96E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.09E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 410 MM: UNI ABS 80-2" (2.28 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.139 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-1" (2.17 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.33E+00	0.00E+00	8.43E-03	2.69E-01	2.21E-03	-1.79E+00
GWP-fossil	[kg CO_2-Eq.]	6.24E+00	0.00E+00	8.32E-03	2.69E-01	2.19E-03	-1.80E+00
GWP-biogenic	[kg CO_2-Eq.]	6.62E-02	0.00E+00	1.55E-05	1.01E-05	6.75E-06	8.58E-03
GWP-luluc	[kg CO_2-Eq.]	1.66E-02	0.00E+00	8.74E-05	6.85E-06	6.89E-06	-2.76E-03
ODP	[kg CFC11-Eq.]	8.10E-11	0.00E+00	1.41E-15	2.03E-14	7.10E-15	2.00E-13
AP	[mol H^+-Eq.]	2.68E-02	0.00E+00	3.04E-05	2.66E-05	1.37E-05	-7.82E-03
EP-freshwater	[kg P-Eq.]	2.48E-05	0.00E+00	2.29E-08	5.73E-09	3.10E-09	-1.63E-06
EP-marine	[kg N-Eq.]	4.91E-03	0.00E+00	1.44E-05	7.08E-06	3.33E-06	-1.17E-03
EP-terrestrial	[mol N-Eq.]	5.39E-02	0.00E+00	1.56E-04	1.26E-04	3.63E-05	-1.21E-02
POCP	[kg NMVOC-Eq.]	1.37E-02	0.00E+00	2.78E-05	2.01E-05	1.03E-05	-3.86E-03
ADPE	[kg Sb-Eq.]	6.50E-05	0.00E+00	5.65E-10	2.44E-10	1.49E-10	-3.19E-05
ADPF	[MJ]	7.94E+01	0.00E+00	1.09E-01	4.25E-02	3.58E-02	-2.09E+01
WDP	[m^3 world-Eq deprived]	8.92E-01	0.00E+00	3.88E-05	2.30E-02	2.56E-04	-4.49E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-1" (2.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.74E+01	0.00E+00	8.20E-03	1.17E-02	5.84E-03	-2.39E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.86E+01	0.00E+00	8.20E-03	1.17E-02	5.84E-03	-2.39E+00
PENRE	[MJ]	7.50E+01	0.00E+00	1.09E-01	3.88E+00	3.58E-02	-2.09E+01
PENRM	[MJ]	4.35E+00	0.00E+00	0.00E+00	-3.84E+00	0.00E+00	0.00E+00
PENRT	[MJ]	7.94E+01	0.00E+00	1.09E-01	4.25E-02	3.58E-02	-2.09E+01
SM	[kg]	1.52E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.13E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.20E-02	0.00E+00	4.05E-06	5.40E-04	7.55E-06	-9.42E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-1" (2.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.39E-08	0.00E+00	4.37E-12	2.29E-11	7.74E-12	-1.07E-04
NHWD	[kg]	1.01E+00	0.00E+00	1.52E-05	8.07E-03	1.03E-01	1.02E-01
RWD	[kg]	2.21E-03	0.00E+00	2.05E-07	2.28E-06	4.97E-07	-1.93E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.36E+00	0.00E+00	0.00E+00	1.96E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.16E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.46E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-1" (2.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.140 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-5/4" (2.09 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.23E+00	0.00E+00	8.13E-03	2.68E-01	2.13E-03	-1.68E+00
GWP-fossil	[kg CO_2-Eq.]	6.15E+00	0.00E+00	8.03E-03	2.68E-01	2.11E-03	-1.68E+00
GWP-biogenic	[kg CO_2-Eq.]	6.46E-02	0.00E+00	1.50E-05	1.01E-05	6.50E-06	7.96E-03
GWP-luluc	[kg CO_2-Eq.]	1.62E-02	0.00E+00	8.44E-05	6.84E-06	6.64E-06	-2.62E-03
ODP	[kg CFC11-Eq.]	7.92E-11	0.00E+00	1.36E-15	2.03E-14	6.84E-15	1.12E-13
AP	[mol H^+-Eq.]	2.66E-02	0.00E+00	2.93E-05	2.65E-05	1.32E-05	-7.36E-03
EP-freshwater	[kg P-Eq.]	2.42E-05	0.00E+00	2.21E-08	5.71E-09	2.99E-09	-1.55E-06
EP-marine	[kg N-Eq.]	4.83E-03	0.00E+00	1.39E-05	7.07E-06	3.21E-06	-1.10E-03
EP-terrestrial	[mol N-Eq.]	5.29E-02	0.00E+00	1.51E-04	1.26E-04	3.50E-05	-1.14E-02
POCP	[kg NMVOC-Eq.]	1.35E-02	0.00E+00	2.68E-05	2.01E-05	9.96E-06	-3.62E-03
ADPE	[kg Sb-Eq.]	6.49E-05	0.00E+00	5.45E-10	2.43E-10	1.43E-10	-3.01E-05
ADPF	[MJ]	7.84E+01	0.00E+00	1.05E-01	4.24E-02	3.45E-02	-1.96E+01
WDP	[m^3 world-Eq deprived]	8.80E-01	0.00E+00	3.75E-05	2.30E-02	2.47E-04	-4.25E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-5/4" (2.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.57E+01	0.00E+00	7.92E-03	1.17E-02	5.63E-03	-2.30E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.69E+01	0.00E+00	7.92E-03	1.17E-02	5.63E-03	-2.30E+00
PENRE	[MJ]	7.40E+01	0.00E+00	1.05E-01	3.92E+00	3.45E-02	-1.96E+01
PENRM	[MJ]	4.39E+00	0.00E+00	0.00E+00	-3.87E+00	0.00E+00	0.00E+00
PENRT	[MJ]	7.84E+01	0.00E+00	1.05E-01	4.24E-02	3.45E-02	-1.96E+01
SM	[kg]	1.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.66E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.11E-02	0.00E+00	3.91E-06	5.39E-04	7.28E-06	-8.66E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-5/4" (2.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.23E-08	0.00E+00	4.21E-12	2.29E-11	7.46E-12	-1.01E-04
NHWD	[kg]	9.91E-01	0.00E+00	1.47E-05	8.05E-03	9.95E-02	9.38E-02
RWD	[kg]	2.18E-03	0.00E+00	1.98E-07	2.28E-06	4.79E-07	-1.89E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.33E+00	0.00E+00	0.00E+00	1.89E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.15E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.44E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-5/4" (2.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.141 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-6/4" (2.38 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.89E+00	0.00E+00	9.26E-03	2.77E-01	2.43E-03	-1.90E+00
GWP-fossil	[kg CO_2-Eq.]	6.80E+00	0.00E+00	9.15E-03	2.77E-01	2.42E-03	-1.91E+00
GWP-biogenic	[kg CO_2-Eq.]	7.49E-02	0.00E+00	1.71E-05	1.04E-05	7.44E-06	9.21E-03
GWP-luluc	[kg CO_2-Eq.]	1.83E-02	0.00E+00	9.61E-05	7.06E-06	7.60E-06	-2.82E-03
ODP	[kg CFC11-Eq.]	8.98E-11	0.00E+00	1.55E-15	2.09E-14	7.83E-15	3.02E-13
AP	[mol H^+-Eq.]	2.85E-02	0.00E+00	3.34E-05	2.74E-05	1.51E-05	-8.16E-03
EP-freshwater	[kg P-Eq.]	2.78E-05	0.00E+00	2.52E-08	5.90E-09	3.42E-09	-1.68E-06
EP-marine	[kg N-Eq.]	5.40E-03	0.00E+00	1.59E-05	7.30E-06	3.67E-06	-1.22E-03
EP-terrestrial	[mol N-Eq.]	5.92E-02	0.00E+00	1.72E-04	1.30E-04	4.01E-05	-1.26E-02
POCP	[kg NMVOC-Eq.]	1.49E-02	0.00E+00	3.06E-05	2.07E-05	1.14E-05	-4.06E-03
ADPE	[kg Sb-Eq.]	6.52E-05	0.00E+00	6.21E-10	2.51E-10	1.64E-10	-3.29E-05
ADPF	[MJ]	8.58E+01	0.00E+00	1.20E-01	4.38E-02	3.95E-02	-2.21E+01
WDP	[m^3 world-Eq deprived]	9.70E-01	0.00E+00	4.27E-05	2.37E-02	2.82E-04	-4.63E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-6/4" (2.38 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.52E+01	0.00E+00	9.02E-03	1.20E-02	6.44E-03	-2.41E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.64E+01	0.00E+00	9.02E-03	1.20E-02	6.44E-03	-2.41E+00
PENRE	[MJ]	8.13E+01	0.00E+00	1.20E-01	4.09E+00	3.95E-02	-2.21E+01
PENRM	[MJ]	4.56E+00	0.00E+00	0.00E+00	-4.04E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.58E+01	0.00E+00	1.20E-01	4.38E-02	3.95E-02	-2.21E+01
SM	[kg]	1.69E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.70E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.62E-02	0.00E+00	4.46E-06	5.57E-04	8.33E-06	-1.04E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-6/4" (2.38 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.25E-08	0.00E+00	4.80E-12	2.36E-11	8.54E-12	-1.09E-04
NHWD	[kg]	1.12E+00	0.00E+00	1.67E-05	8.31E-03	1.14E-01	1.14E-01
RWD	[kg]	2.43E-03	0.00E+00	2.26E-07	2.35E-06	5.48E-07	-1.98E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.56E+00	0.00E+00	0.00E+00	2.16E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.29E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.68E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2- optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-6/4" (2.38 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.142 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-2" (2.43 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.02E+00	0.00E+00	9.46E-03	2.89E-01	2.48E-03	-1.93E+00
GWP-fossil	[kg CO_2-Eq.]	6.93E+00	0.00E+00	9.34E-03	2.89E-01	2.46E-03	-1.94E+00
GWP-biogenic	[kg CO_2-Eq.]	7.68E-02	0.00E+00	1.75E-05	1.09E-05	7.59E-06	9.33E-03
GWP-luluc	[kg CO_2-Eq.]	1.87E-02	0.00E+00	9.81E-05	7.39E-06	7.75E-06	-2.84E-03
ODP	[kg CFC11-Eq.]	9.17E-11	0.00E+00	1.58E-15	2.19E-14	7.98E-15	2.90E-13
AP	[mol H^+-Eq.]	2.89E-02	0.00E+00	3.41E-05	2.86E-05	1.54E-05	-8.25E-03
EP-freshwater	[kg P-Eq.]	2.84E-05	0.00E+00	2.57E-08	6.17E-09	3.48E-09	-1.70E-06
EP-marine	[kg N-Eq.]	5.50E-03	0.00E+00	1.62E-05	7.63E-06	3.75E-06	-1.24E-03
EP-terrestrial	[mol N-Eq.]	6.04E-02	0.00E+00	1.75E-04	1.36E-04	4.09E-05	-1.28E-02
POCP	[kg NMVOC-Eq.]	1.52E-02	0.00E+00	3.12E-05	2.17E-05	1.16E-05	-4.11E-03
ADPE	[kg Sb-Eq.]	6.53E-05	0.00E+00	6.34E-10	2.62E-10	1.67E-10	-3.32E-05
ADPF	[MJ]	8.75E+01	0.00E+00	1.22E-01	4.58E-02	4.03E-02	-2.24E+01
WDP	[m^3 world-Eq deprived]	9.88E-01	0.00E+00	4.36E-05	2.48E-02	2.88E-04	-4.67E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-2" (2.43 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.69E+01	0.00E+00	9.21E-03	1.26E-02	6.57E-03	-2.44E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.81E+01	0.00E+00	9.21E-03	1.26E-02	6.57E-03	-2.44E+00
PENRE	[MJ]	8.28E+01	0.00E+00	1.22E-01	4.26E+00	4.03E-02	-2.24E+01
PENRM	[MJ]	4.72E+00	0.00E+00	0.00E+00	-4.21E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.75E+01	0.00E+00	1.22E-01	4.58E-02	4.03E-02	-2.24E+01
SM	[kg]	1.72E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.72E-02	0.00E+00	4.55E-06	5.82E-04	8.49E-06	-1.06E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-2" (2.43 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.44E-08	0.00E+00	4.90E-12	2.47E-11	8.71E-12	-2.70E-04
NHWD	[kg]	1.15E+00	0.00E+00	1.71E-05	8.69E-03	1.16E-01	5.07E-01
RWD	[kg]	2.48E-03	0.00E+00	2.31E-07	2.46E-06	5.59E-07	-9.54E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.60E+00	0.00E+00	0.00E+00	2.20E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.49E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.04E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 455 MM: UNI ABS 100-2" (2.43 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.143 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-1" (1.80 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	5.38E+00	0.00E+00	7.00E-03	3.18E-01	1.79E-03	-1.66E+00
GWP-fossil	[kg CO_2-Eq.]	5.32E+00	0.00E+00	6.92E-03	3.18E-01	1.78E-03	-1.66E+00
GWP-biogenic	[kg CO_2-Eq.]	4.83E-02	0.00E+00	1.29E-05	1.19E-05	5.49E-06	7.63E-03
GWP-luluc	[kg CO_2-Eq.]	1.34E-02	0.00E+00	7.27E-05	8.11E-06	5.61E-06	-2.68E-03
ODP	[kg CFC11-Eq.]	6.43E-11	0.00E+00	1.17E-15	2.40E-14	5.78E-15	-1.15E-13
AP	[mol H^+-Eq.]	2.39E-02	0.00E+00	2.53E-05	3.14E-05	1.11E-05	-7.35E-03
EP-freshwater	[kg P-Eq.]	1.91E-05	0.00E+00	1.90E-08	6.77E-09	2.52E-09	-1.57E-06
EP-marine	[kg N-Eq.]	4.02E-03	0.00E+00	1.20E-05	8.38E-06	2.71E-06	-1.10E-03
EP-terrestrial	[mol N-Eq.]	4.40E-02	0.00E+00	1.30E-04	1.49E-04	2.96E-05	-1.15E-02
POCP	[kg NMVOC-Eq.]	1.16E-02	0.00E+00	2.31E-05	2.38E-05	8.41E-06	-3.60E-03
ADPE	[kg Sb-Eq.]	6.45E-05	0.00E+00	4.70E-10	2.88E-10	1.21E-10	-3.03E-05
ADPF	[MJ]	6.97E+01	0.00E+00	9.05E-02	5.03E-02	2.92E-02	-1.96E+01
WDP	[m^3 world-Eq deprived]	7.55E-01	0.00E+00	3.23E-05	2.72E-02	2.08E-04	-4.30E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-1" (1.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.25E+01	0.00E+00	6.82E-03	1.38E-02	4.76E-03	-2.46E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.37E+01	0.00E+00	6.82E-03	1.38E-02	4.76E-03	-2.46E+00
PENRE	[MJ]	6.50E+01	0.00E+00	9.05E-02	4.19E+00	2.92E-02	-1.96E+01
PENRM	[MJ]	4.66E+00	0.00E+00	0.00E+00	-4.14E+00	0.00E+00	0.00E+00
PENRT	[MJ]	6.97E+01	0.00E+00	9.05E-02	5.03E-02	2.92E-02	-1.96E+01
SM	[kg]	1.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.37E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.21E-02	0.00E+00	3.37E-06	6.39E-04	6.14E-06	-8.15E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-1" (1.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.70E-08	0.00E+00	3.63E-12	2.71E-11	6.30E-12	-1.03E-04
NHWD	[kg]	7.82E-01	0.00E+00	1.26E-05	9.54E-03	8.40E-02	8.73E-02
RWD	[kg]	1.79E-03	0.00E+00	1.71E-07	2.70E-06	4.05E-07	-2.12E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.63E-01	0.00E+00	0.00E+00	1.59E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.92E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.82E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-1" (1.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.144 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-5/4" (2.23 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.50E+00	0.00E+00	8.68E-03	3.24E-01	2.25E-03	-1.88E+00
GWP-fossil	[kg CO_2-Eq.]	6.42E+00	0.00E+00	8.57E-03	3.24E-01	2.24E-03	-1.89E+00
GWP-biogenic	[kg CO_2-Eq.]	6.58E-02	0.00E+00	1.60E-05	1.22E-05	6.89E-06	8.93E-03
GWP-luluc	[kg CO_2-Eq.]	1.68E-02	0.00E+00	9.00E-05	8.26E-06	7.04E-06	-2.81E-03
ODP	[kg CFC11-Eq.]	8.18E-11	0.00E+00	1.45E-15	2.45E-14	7.25E-15	1.21E-13
AP	[mol H^+-Eq.]	2.72E-02	0.00E+00	3.13E-05	3.20E-05	1.40E-05	-8.05E-03
EP-freshwater	[kg P-Eq.]	2.50E-05	0.00E+00	2.36E-08	6.90E-09	3.16E-09	-1.67E-06
EP-marine	[kg N-Eq.]	4.99E-03	0.00E+00	1.49E-05	8.54E-06	3.40E-06	-1.21E-03
EP-terrestrial	[mol N-Eq.]	5.47E-02	0.00E+00	1.61E-04	1.52E-04	3.71E-05	-1.25E-02
POCP	[kg NMVOC-Eq.]	1.40E-02	0.00E+00	2.86E-05	2.42E-05	1.06E-05	-4.01E-03
ADPE	[kg Sb-Eq.]	6.51E-05	0.00E+00	5.82E-10	2.94E-10	1.52E-10	-3.25E-05
ADPF	[MJ]	8.24E+01	0.00E+00	1.12E-01	5.13E-02	3.66E-02	-2.20E+01
WDP	[m^3 world-Eq deprived]	9.10E-01	0.00E+00	4.00E-05	2.77E-02	2.62E-04	-4.59E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-5/4" (2.23 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.81E+01	0.00E+00	8.45E-03	1.41E-02	5.97E-03	-2.48E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.93E+01	0.00E+00	8.45E-03	1.41E-02	5.97E-03	-2.48E+00
PENRE	[MJ]	7.74E+01	0.00E+00	1.12E-01	4.50E+00	3.66E-02	-2.20E+01
PENRM	[MJ]	4.96E+00	0.00E+00	0.00E+00	-4.45E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.24E+01	0.00E+00	1.12E-01	5.13E-02	3.66E-02	-2.20E+01
SM	[kg]	1.52E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.54E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.05E-02	0.00E+00	4.18E-06	6.51E-04	7.71E-06	-1.01E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-5/4" (2.23 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.42E-08	0.00E+00	4.50E-12	2.77E-11	7.91E-12	-1.07E-04
NHWD	[kg]	1.01E+00	0.00E+00	1.56E-05	9.72E-03	1.05E-01	1.11E-01
RWD	[kg]	2.22E-03	0.00E+00	2.12E-07	2.75E-06	5.08E-07	-2.17E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.36E+00	0.00E+00	0.00E+00	2.00E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.02E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.99E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-5/4" (2.23 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.145 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-6/4" (2.44 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.05E+00	0.00E+00	9.50E-03	3.27E-01	2.48E-03	-2.00E+00
GWP-fossil	[kg CO_2-Eq.]	6.96E+00	0.00E+00	9.38E-03	3.27E-01	2.46E-03	-2.00E+00
GWP-biogenic	[kg CO_2-Eq.]	7.44E-02	0.00E+00	1.75E-05	1.23E-05	7.58E-06	9.55E-03
GWP-luluc	[kg CO_2-Eq.]	1.85E-02	0.00E+00	9.85E-05	8.34E-06	7.73E-06	-2.87E-03
ODP	[kg CFC11-Eq.]	9.04E-11	0.00E+00	1.59E-15	2.47E-14	7.97E-15	2.37E-13
AP	[mol H^+-Eq.]	2.89E-02	0.00E+00	3.42E-05	3.23E-05	1.54E-05	-8.39E-03
EP-freshwater	[kg P-Eq.]	2.79E-05	0.00E+00	2.58E-08	6.97E-09	3.48E-09	-1.72E-06
EP-marine	[kg N-Eq.]	5.47E-03	0.00E+00	1.63E-05	8.62E-06	3.74E-06	-1.26E-03
EP-terrestrial	[mol N-Eq.]	5.99E-02	0.00E+00	1.76E-04	1.53E-04	4.08E-05	-1.30E-02
POCP	[kg NMVOC-Eq.]	1.52E-02	0.00E+00	3.13E-05	2.45E-05	1.16E-05	-4.20E-03
ADPE	[kg Sb-Eq.]	6.53E-05	0.00E+00	6.36E-10	2.96E-10	1.67E-10	-3.35E-05
ADPF	[MJ]	8.86E+01	0.00E+00	1.23E-01	5.17E-02	4.02E-02	-2.31E+01
WDP	[m^3 world-Eq deprived]	9.86E-01	0.00E+00	4.38E-05	2.80E-02	2.87E-04	-4.72E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-6/4" (2.44 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.57E+01	0.00E+00	9.24E-03	1.42E-02	6.56E-03	-2.49E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.69E+01	0.00E+00	9.24E-03	1.42E-02	6.56E-03	-2.49E+00
PENRE	[MJ]	8.35E+01	0.00E+00	1.23E-01	4.65E+00	4.02E-02	-2.31E+01
PENRM	[MJ]	5.11E+00	0.00E+00	0.00E+00	-4.60E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.86E+01	0.00E+00	1.23E-01	5.17E-02	4.02E-02	-2.31E+01
SM	[kg]	1.69E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.10E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.47E-02	0.00E+00	4.57E-06	6.58E-04	8.47E-06	-1.11E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-6/4" (2.44 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.26E-08	0.00E+00	4.92E-12	2.79E-11	8.69E-12	-1.09E-04
NHWD	[kg]	1.12E+00	0.00E+00	1.71E-05	9.82E-03	1.16E-01	1.22E-01
RWD	[kg]	2.44E-03	0.00E+00	2.31E-07	2.78E-06	5.58E-07	-2.20E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.55E+00	0.00E+00	0.00E+00	2.20E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.07E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.07E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-6/4" (2.44 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.146 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-2" (2.52 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.25E+00	0.00E+00	9.79E-03	3.40E-01	2.55E-03	-2.04E+00
GWP-fossil	[kg CO_2-Eq.]	7.15E+00	0.00E+00	9.67E-03	3.39E-01	2.53E-03	-2.04E+00
GWP-biogenic	[kg CO_2-Eq.]	7.73E-02	0.00E+00	1.81E-05	1.27E-05	7.81E-06	9.74E-03
GWP-luluc	[kg CO_2-Eq.]	1.91E-02	0.00E+00	1.02E-04	8.67E-06	7.97E-06	-2.90E-03
ODP	[kg CFC11-Eq.]	9.34E-11	0.00E+00	1.64E-15	2.57E-14	8.21E-15	2.40E-13
AP	[mol H^+-Eq.]	2.94E-02	0.00E+00	3.53E-05	3.36E-05	1.58E-05	-8.51E-03
EP-freshwater	[kg P-Eq.]	2.89E-05	0.00E+00	2.66E-08	7.24E-09	3.58E-09	-1.74E-06
EP-marine	[kg N-Eq.]	5.63E-03	0.00E+00	1.68E-05	8.96E-06	3.85E-06	-1.28E-03
EP-terrestrial	[mol N-Eq.]	6.17E-02	0.00E+00	1.81E-04	1.59E-04	4.20E-05	-1.32E-02
POCP	[kg NMVOC-Eq.]	1.56E-02	0.00E+00	3.23E-05	2.54E-05	1.20E-05	-4.27E-03
ADPE	[kg Sb-Eq.]	6.54E-05	0.00E+00	6.56E-10	3.08E-10	1.72E-10	-3.38E-05
ADPF	[MJ]	9.10E+01	0.00E+00	1.26E-01	5.38E-02	4.15E-02	-2.36E+01
WDP	[m^3 world-Eq deprived]	1.01E+00	0.00E+00	4.51E-05	2.91E-02	2.96E-04	-4.77E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-2" (2.52 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.84E+01	0.00E+00	9.53E-03	1.48E-02	6.76E-03	-2.52E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.96E+01	0.00E+00	9.53E-03	1.48E-02	6.76E-03	-2.52E+00
PENRE	[MJ]	8.58E+01	0.00E+00	1.26E-01	4.83E+00	4.15E-02	-2.36E+01
PENRM	[MJ]	5.29E+00	0.00E+00	0.00E+00	-4.78E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.10E+01	0.00E+00	1.26E-01	5.38E-02	4.15E-02	-2.36E+01
SM	[kg]	1.74E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.29E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.61E-02	0.00E+00	4.71E-06	6.83E-04	8.73E-06	-1.14E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-2" (2.52 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.55E-08	0.00E+00	5.07E-12	2.90E-11	8.96E-12	-1.10E-04
NHWD	[kg]	1.16E+00	0.00E+00	1.76E-05	1.02E-02	1.19E-01	1.26E-01
RWD	[kg]	2.51E-03	0.00E+00	2.39E-07	2.89E-06	5.75E-07	-2.26E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.61E+00	0.00E+00	0.00E+00	2.27E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.26E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.43E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 520 MM: UNI ABS 125-2" (2.52 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.147 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-1" (2.27 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.52E+00	0.00E+00	8.83E-03	3.83E-01	2.27E-03	-2.04E+00
GWP-fossil	[kg CO_2-Eq.]	6.44E+00	0.00E+00	8.73E-03	3.83E-01	2.26E-03	-2.05E+00
GWP-biogenic	[kg CO_2-Eq.]	6.26E-02	0.00E+00	1.63E-05	1.44E-05	6.95E-06	9.58E-03
GWP-luluc	[kg CO_2-Eq.]	1.67E-02	0.00E+00	9.16E-05	9.77E-06	7.09E-06	-2.96E-03
ODP	[kg CFC11-Eq.]	8.02E-11	0.00E+00	1.48E-15	2.90E-14	7.31E-15	6.56E-14
AP	[mol H^+-Eq.]	2.72E-02	0.00E+00	3.18E-05	3.79E-05	1.41E-05	-8.56E-03
EP-freshwater	[kg P-Eq.]	2.44E-05	0.00E+00	2.40E-08	8.16E-09	3.19E-09	-1.77E-06
EP-marine	[kg N-Eq.]	4.93E-03	0.00E+00	1.51E-05	1.01E-05	3.43E-06	-1.29E-03
EP-terrestrial	[mol N-Eq.]	5.40E-02	0.00E+00	1.64E-04	1.80E-04	3.74E-05	-1.33E-02
POCP	[kg NMVOC-Eq.]	1.40E-02	0.00E+00	2.91E-05	2.87E-05	1.06E-05	-4.29E-03
ADPE	[kg Sb-Eq.]	6.51E-05	0.00E+00	5.92E-10	3.47E-10	1.53E-10	-3.42E-05
ADPF	[MJ]	8.36E+01	0.00E+00	1.14E-01	6.06E-02	3.69E-02	-2.38E+01
WDP	[m^3 world-Eq deprived]	9.05E-01	0.00E+00	4.07E-05	3.28E-02	2.64E-04	-4.84E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-1" (2.27 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.68E+01	0.00E+00	8.60E-03	1.67E-02	6.02E-03	-2.66E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.80E+01	0.00E+00	8.60E-03	1.67E-02	6.02E-03	-2.66E+00
PENRE	[MJ]	7.81E+01	0.00E+00	1.14E-01	5.05E+00	3.69E-02	-2.38E+01
PENRM	[MJ]	5.50E+00	0.00E+00	0.00E+00	-4.99E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.36E+01	0.00E+00	1.14E-01	6.06E-02	3.69E-02	-2.38E+01
SM	[kg]	1.47E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.16E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.92E-02	0.00E+00	4.25E-06	7.70E-04	7.77E-06	-1.12E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-1" (2.27 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.18E-08	0.00E+00	4.58E-12	3.27E-11	7.97E-12	-1.12E-04
NHWD	[kg]	9.72E-01	0.00E+00	1.59E-05	1.15E-02	1.06E-01	1.22E-01
RWD	[kg]	2.17E-03	0.00E+00	2.15E-07	3.25E-06	5.12E-07	-2.47E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.29E+00	0.00E+00	0.00E+00	2.02E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.93E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.06E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-1" (2.27 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.148 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-5/4" (2.30 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.64E+00	0.00E+00	8.95E-03	3.85E-01	2.30E-03	-2.03E+00
GWP-fossil	[kg CO_2-Eq.]	6.56E+00	0.00E+00	8.84E-03	3.85E-01	2.29E-03	-2.03E+00
GWP-biogenic	[kg CO_2-Eq.]	6.44E-02	0.00E+00	1.65E-05	1.45E-05	7.05E-06	9.52E-03
GWP-luluc	[kg CO_2-Eq.]	1.70E-02	0.00E+00	9.29E-05	9.84E-06	7.19E-06	-2.93E-03
ODP	[kg CFC11-Eq.]	8.19E-11	0.00E+00	1.50E-15	2.92E-14	7.41E-15	5.77E-14
AP	[mol H^+-Eq.]	2.75E-02	0.00E+00	3.23E-05	3.81E-05	1.43E-05	-8.49E-03
EP-freshwater	[kg P-Eq.]	2.50E-05	0.00E+00	2.43E-08	8.22E-09	3.23E-09	-1.76E-06
EP-marine	[kg N-Eq.]	5.03E-03	0.00E+00	1.53E-05	1.02E-05	3.48E-06	-1.28E-03
EP-terrestrial	[mol N-Eq.]	5.51E-02	0.00E+00	1.66E-04	1.81E-04	3.79E-05	-1.32E-02
POCP	[kg NMVOC-Eq.]	1.42E-02	0.00E+00	2.95E-05	2.89E-05	1.08E-05	-4.25E-03
ADPE	[kg Sb-Eq.]	6.52E-05	0.00E+00	6.00E-10	3.49E-10	1.55E-10	-3.38E-05
ADPF	[MJ]	8.50E+01	0.00E+00	1.16E-01	6.10E-02	3.74E-02	-2.36E+01
WDP	[m^3 world-Eq deprived]	9.21E-01	0.00E+00	4.13E-05	3.30E-02	2.67E-04	-4.79E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-5/4" (2.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6.83E+01	0.00E+00	8.71E-03	1.68E-02	6.10E-03	-2.63E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.95E+01	0.00E+00	8.71E-03	1.68E-02	6.10E-03	-2.63E+00
PENRE	[MJ]	7.94E+01	0.00E+00	1.16E-01	5.13E+00	3.74E-02	-2.36E+01
PENRM	[MJ]	5.58E+00	0.00E+00	0.00E+00	-5.07E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.50E+01	0.00E+00	1.16E-01	6.10E-02	3.74E-02	-2.36E+01
SM	[kg]	1.51E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.14E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.00E-02	0.00E+00	4.31E-06	7.76E-04	7.88E-06	-1.12E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-5/4" (2.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	7.35E-08	0.00E+00	4.64E-12	3.29E-11	8.08E-12	-1.11E-04
NHWD	[kg]	9.95E-01	0.00E+00	1.61E-05	1.16E-02	1.08E-01	1.22E-01
RWD	[kg]	2.21E-03	0.00E+00	2.18E-07	3.28E-06	5.19E-07	-2.47E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.33E+00	0.00E+00	0.00E+00	2.04E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.97E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.07E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-5/4" (2.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.149 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-6/4" (2.51 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.27E+00	0.00E+00	9.77E-03	3.83E-01	2.53E-03	-2.08E+00
GWP-fossil	[kg CO_2-Eq.]	7.17E+00	0.00E+00	9.65E-03	3.83E-01	2.51E-03	-2.09E+00
GWP-biogenic	[kg CO_2-Eq.]	7.42E-02	0.00E+00	1.80E-05	1.44E-05	7.74E-06	9.85E-03
GWP-luluc	[kg CO_2-Eq.]	1.88E-02	0.00E+00	1.01E-04	9.78E-06	7.89E-06	-2.90E-03
ODP	[kg CFC11-Eq.]	9.15E-11	0.00E+00	1.63E-15	2.90E-14	8.13E-15	1.54E-13
AP	[mol H^+-Eq.]	2.94E-02	0.00E+00	3.52E-05	3.79E-05	1.57E-05	-8.57E-03
EP-freshwater	[kg P-Eq.]	2.83E-05	0.00E+00	2.65E-08	8.17E-09	3.55E-09	-1.75E-06
EP-marine	[kg N-Eq.]	5.57E-03	0.00E+00	1.67E-05	1.01E-05	3.82E-06	-1.29E-03
EP-terrestrial	[mol N-Eq.]	6.10E-02	0.00E+00	1.81E-04	1.80E-04	4.16E-05	-1.33E-02
POCP	[kg NMVOC-Eq.]	1.56E-02	0.00E+00	3.22E-05	2.87E-05	1.18E-05	-4.32E-03
ADPE	[kg Sb-Eq.]	6.55E-05	0.00E+00	6.55E-10	3.48E-10	1.71E-10	-3.38E-05
ADPF	[MJ]	9.21E+01	0.00E+00	1.26E-01	6.07E-02	4.11E-02	-2.41E+01
WDP	[m^3 world-Eq deprived]	1.01E+00	0.00E+00	4.50E-05	3.29E-02	2.93E-04	-4.78E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-6/4" (2.51 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.67E+01	0.00E+00	9.51E-03	1.67E-02	6.70E-03	-2.57E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.79E+01	0.00E+00	9.51E-03	1.67E-02	6.70E-03	-2.57E+00
PENRE	[MJ]	8.64E+01	0.00E+00	1.26E-01	5.30E+00	4.11E-02	-2.41E+01
PENRM	[MJ]	5.75E+00	0.00E+00	0.00E+00	-5.24E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.21E+01	0.00E+00	1.26E-01	6.07E-02	4.11E-02	-2.41E+01
SM	[kg]	1.69E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.50E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.46E-02	0.00E+00	4.70E-06	7.71E-04	8.65E-06	-1.18E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-6/4" (2.51 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.31E-08	0.00E+00	5.06E-12	3.27E-11	8.87E-12	-1.09E-04
NHWD	[kg]	1.12E+00	0.00E+00	1.76E-05	1.15E-02	1.18E-01	1.30E-01
RWD	[kg]	2.46E-03	0.00E+00	2.38E-07	3.26E-06	5.70E-07	-2.45E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.55E+00	0.00E+00	0.00E+00	2.24E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.94E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.06E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-6/4" (2.51 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.150 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-2" (2.50 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.34E+00	0.00E+00	9.73E-03	3.90E-01	2.51E-03	-2.01E+00
GWP-fossil	[kg CO_2-Eq.]	7.25E+00	0.00E+00	9.61E-03	3.90E-01	2.50E-03	-2.01E+00
GWP-biogenic	[kg CO_2-Eq.]	7.53E-02	0.00E+00	1.80E-05	1.47E-05	7.69E-06	9.43E-03
GWP-luluc	[kg CO_2-Eq.]	1.89E-02	0.00E+00	1.01E-04	9.96E-06	7.85E-06	-2.80E-03
ODP	[kg CFC11-Eq.]	9.23E-11	0.00E+00	1.63E-15	2.95E-14	8.09E-15	7.77E-14
AP	[mol H^+-Eq.]	2.96E-02	0.00E+00	3.51E-05	3.86E-05	1.56E-05	-8.25E-03
EP-freshwater	[kg P-Eq.]	2.86E-05	0.00E+00	2.64E-08	8.32E-09	3.53E-09	-1.69E-06
EP-marine	[kg N-Eq.]	5.63E-03	0.00E+00	1.67E-05	1.03E-05	3.80E-06	-1.25E-03
EP-terrestrial	[mol N-Eq.]	6.17E-02	0.00E+00	1.80E-04	1.83E-04	4.14E-05	-1.28E-02
POCP	[kg NMVOC-Eq.]	1.57E-02	0.00E+00	3.21E-05	2.92E-05	1.18E-05	-4.16E-03
ADPE	[kg Sb-Eq.]	6.55E-05	0.00E+00	6.52E-10	3.54E-10	1.70E-10	-3.25E-05
ADPF	[MJ]	9.32E+01	0.00E+00	1.26E-01	6.18E-02	4.09E-02	-2.33E+01
WDP	[m^3 world-Eq deprived]	1.02E+00	0.00E+00	4.48E-05	3.35E-02	2.92E-04	-4.60E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-2" (2.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.74E+01	0.00E+00	9.47E-03	1.70E-02	6.66E-03	-2.51E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.86E+01	0.00E+00	9.47E-03	1.70E-02	6.66E-03	-2.51E+00
PENRE	[MJ]	8.73E+01	0.00E+00	1.26E-01	5.45E+00	4.09E-02	-2.33E+01
PENRM	[MJ]	5.90E+00	0.00E+00	0.00E+00	-5.39E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.32E+01	0.00E+00	1.26E-01	6.18E-02	4.09E-02	-2.33E+01
SM	[kg]	1.71E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.20E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.49E-02	0.00E+00	4.68E-06	7.85E-04	8.61E-06	-1.13E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-2" (2.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.40E-08	0.00E+00	5.04E-12	3.33E-11	8.83E-12	-1.05E-04
NHWD	[kg]	1.14E+00	0.00E+00	1.75E-05	1.17E-02	1.18E-01	1.25E-01
RWD	[kg]	2.48E-03	0.00E+00	2.37E-07	3.32E-06	5.67E-07	-2.45E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.57E+00	0.00E+00	0.00E+00	2.23E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.05E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.08E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 595 MM: UNI ABS 150-2" (2.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.151 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-1" (2.95 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.51E+00	0.00E+00	1.15E-02	4.41E-01	2.97E-03	-2.33E+00
GWP-fossil	[kg CO_2-Eq.]	8.40E+00	0.00E+00	1.13E-02	4.40E-01	2.96E-03	-2.34E+00
GWP-biogenic	[kg CO_2-Eq.]	8.96E-02	0.00E+00	2.12E-05	1.65E-05	9.10E-06	1.11E-02
GWP-luluc	[kg CO_2-Eq.]	2.22E-02	0.00E+00	1.19E-04	1.12E-05	9.29E-06	-2.98E-03
ODP	[kg CFC11-Eq.]	1.08E-10	0.00E+00	1.92E-15	3.33E-14	9.57E-15	2.73E-13
AP	[mol H^+-Eq.]	3.29E-02	0.00E+00	4.14E-05	4.36E-05	1.84E-05	-9.19E-03
EP-freshwater	[kg P-Eq.]	3.39E-05	0.00E+00	3.12E-08	9.39E-09	4.18E-09	-1.84E-06
EP-marine	[kg N-Eq.]	6.56E-03	0.00E+00	1.97E-05	1.16E-05	4.49E-06	-1.40E-03
EP-terrestrial	[mol N-Eq.]	7.18E-02	0.00E+00	2.13E-04	2.07E-04	4.90E-05	-1.42E-02
POCP	[kg NMVOC-Eq.]	1.82E-02	0.00E+00	3.79E-05	3.30E-05	1.39E-05	-4.72E-03
ADPE	[kg Sb-Eq.]	6.61E-05	0.00E+00	7.70E-10	3.99E-10	2.01E-10	-3.54E-05
ADPF	[MJ]	1.07E+02	0.00E+00	1.48E-01	6.97E-02	4.83E-02	-2.67E+01
WDP	[m^3 world-Eq deprived]	1.17E+00	0.00E+00	5.29E-05	3.78E-02	3.45E-04	-4.99E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-1" (2.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.16E+01	0.00E+00	1.12E-02	1.92E-02	7.88E-03	-2.61E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.27E+01	0.00E+00	1.12E-02	1.92E-02	7.88E-03	-2.61E+00
PENRE	[MJ]	1.01E+02	0.00E+00	1.48E-01	6.21E+00	4.83E-02	-2.67E+01
PENRM	[MJ]	6.65E+00	0.00E+00	0.00E+00	-6.14E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.07E+02	0.00E+00	1.48E-01	6.97E-02	4.83E-02	-2.67E+01
SM	[kg]	2.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.78E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.14E-01	0.00E+00	5.52E-06	8.86E-04	1.02E-05	-1.41E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-1" (2.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.89E-08	0.00E+00	5.95E-12	3.76E-11	1.04E-11	-1.10E-04
NHWD	[kg]	1.33E+00	0.00E+00	2.07E-05	1.32E-02	1.39E-01	1.57E-01
RWD	[kg]	2.86E-03	0.00E+00	2.80E-07	3.74E-06	6.70E-07	-2.70E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.90E+00	0.00E+00	0.00E+00	2.64E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.83E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.22E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-1" (2.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.152 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-5/4" (3.95 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.10E+01	0.00E+00	1.54E-02	4.52E-01	4.04E-03	-2.90E+00
GWP-fossil	[kg CO_2-Eq.]	1.09E+01	0.00E+00	1.52E-02	4.52E-01	4.01E-03	-2.91E+00
GWP-biogenic	[kg CO_2-Eq.]	1.29E-01	0.00E+00	2.84E-05	1.70E-05	1.24E-05	1.44E-02
GWP-luluc	[kg CO_2-Eq.]	3.01E-02	0.00E+00	1.59E-04	1.15E-05	1.26E-05	-3.32E-03
ODP	[kg CFC11-Eq.]	1.48E-10	0.00E+00	2.57E-15	3.42E-14	1.30E-14	8.73E-13
AP	[mol H^+-Eq.]	4.04E-02	0.00E+00	5.54E-05	4.47E-05	2.50E-05	-1.10E-02
EP-freshwater	[kg P-Eq.]	4.74E-05	0.00E+00	4.18E-08	9.64E-09	5.67E-09	-2.09E-06
EP-marine	[kg N-Eq.]	8.75E-03	0.00E+00	2.63E-05	1.19E-05	6.10E-06	-1.67E-03
EP-terrestrial	[mol N-Eq.]	9.59E-02	0.00E+00	2.85E-04	2.12E-04	6.66E-05	-1.69E-02
POCP	[kg NMVOC-Eq.]	2.37E-02	0.00E+00	5.07E-05	3.38E-05	1.89E-05	-5.75E-03
ADPE	[kg Sb-Eq.]	6.73E-05	0.00E+00	1.03E-09	4.10E-10	2.73E-10	-4.10E-05
ADPF	[MJ]	1.36E+02	0.00E+00	1.99E-01	7.15E-02	6.57E-02	-3.28E+01
WDP	[m^3 world-Eq deprived]	1.52E+00	0.00E+00	7.08E-05	3.87E-02	4.69E-04	-5.72E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-5/4" (3.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.27E+02	0.00E+00	1.50E-02	1.97E-02	1.07E-02	-2.68E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.28E+02	0.00E+00	1.50E-02	1.97E-02	1.07E-02	-2.68E+00
PENRE	[MJ]	1.29E+02	0.00E+00	1.99E-01	6.82E+00	6.57E-02	-3.28E+01
PENRM	[MJ]	7.26E+00	0.00E+00	0.00E+00	-6.75E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.36E+02	0.00E+00	1.99E-01	7.15E-02	6.57E-02	-3.28E+01
SM	[kg]	2.76E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.17E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.33E-01	0.00E+00	7.40E-06	9.09E-04	1.38E-05	-1.90E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-5/4" (3.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.38E-07	0.00E+00	7.96E-12	3.86E-11	1.42E-11	-1.22E-04
NHWD	[kg]	1.84E+00	0.00E+00	2.77E-05	1.36E-02	1.89E-01	2.15E-01
RWD	[kg]	3.84E-03	0.00E+00	3.75E-07	3.84E-06	9.10E-07	-2.83E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.79E+00	0.00E+00	0.00E+00	3.59E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.00E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.25E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-5/4" (3.95 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.153 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-2" (3.00 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.55E+00	0.00E+00	1.17E-02	4.67E-01	3.02E-03	-2.42E+00
GWP-fossil	[kg CO_2-Eq.]	8.44E+00	0.00E+00	1.15E-02	4.67E-01	3.00E-03	-2.43E+00
GWP-biogenic	[kg CO_2-Eq.]	9.00E-02	0.00E+00	2.15E-05	1.75E-05	9.23E-06	1.15E-02
GWP-luluc	[kg CO_2-Eq.]	2.24E-02	0.00E+00	1.21E-04	1.19E-05	9.42E-06	-3.08E-03
ODP	[kg CFC11-Eq.]	1.09E-10	0.00E+00	1.95E-15	3.53E-14	9.71E-15	2.61E-13
AP	[mol H^+-Eq.]	3.30E-02	0.00E+00	4.21E-05	4.62E-05	1.87E-05	-9.52E-03
EP-freshwater	[kg P-Eq.]	3.41E-05	0.00E+00	3.17E-08	9.95E-09	4.24E-09	-1.90E-06
EP-marine	[kg N-Eq.]	6.59E-03	0.00E+00	2.00E-05	1.23E-05	4.56E-06	-1.45E-03
EP-terrestrial	[mol N-Eq.]	7.21E-02	0.00E+00	2.16E-04	2.19E-04	4.97E-05	-1.47E-02
POCP	[kg NMVOC-Eq.]	1.83E-02	0.00E+00	3.85E-05	3.50E-05	1.41E-05	-4.89E-03
ADPE	[kg Sb-Eq.]	6.61E-05	0.00E+00	7.83E-10	4.23E-10	2.04E-10	-3.65E-05
ADPF	[MJ]	1.08E+02	0.00E+00	1.51E-01	7.39E-02	4.90E-02	-2.78E+01
WDP	[m^3 world-Eq deprived]	1.18E+00	0.00E+00	5.38E-05	4.00E-02	3.50E-04	-5.16E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-2" (3.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.23E+01	0.00E+00	1.14E-02	2.03E-02	7.99E-03	-2.71E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.35E+01	0.00E+00	1.14E-02	2.03E-02	7.99E-03	-2.71E+00
PENRE	[MJ]	1.01E+02	0.00E+00	1.51E-01	6.45E+00	4.90E-02	-2.78E+01
PENRM	[MJ]	6.88E+00	0.00E+00	0.00E+00	-6.37E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.08E+02	0.00E+00	1.51E-01	7.39E-02	4.90E-02	-2.78E+01
SM	[kg]	2.01E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.14E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.14E-01	0.00E+00	5.62E-06	9.39E-04	1.03E-05	-1.46E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-2" (3.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.95E-08	0.00E+00	6.05E-12	3.99E-11	1.06E-11	-1.14E-04
NHWD	[kg]	1.33E+00	0.00E+00	2.11E-05	1.40E-02	1.41E-01	1.63E-01
RWD	[kg]	2.87E-03	0.00E+00	2.85E-07	3.97E-06	6.80E-07	-2.84E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.91E+00	0.00E+00	0.00E+00	2.68E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.23E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.30E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 685 MM: UNI ABS 175-2" (3.00 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.154 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-1" (3.05 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.80E+00	0.00E+00	1.19E-02	5.17E-01	3.05E-03	-2.46E+00
GWP-fossil	[kg CO_2-Eq.]	8.69E+00	0.00E+00	1.17E-02	5.17E-01	3.03E-03	-2.47E+00
GWP-biogenic	[kg CO_2-Eq.]	8.94E-02	0.00E+00	2.19E-05	1.94E-05	9.34E-06	1.16E-02
GWP-luluc	[kg CO_2-Eq.]	2.26E-02	0.00E+00	1.23E-04	1.32E-05	9.53E-06	-3.04E-03
ODP	[kg CFC11-Eq.]	1.10E-10	0.00E+00	1.99E-15	3.91E-14	9.82E-15	1.71E-13
AP	[mol H^+-Eq.]	3.36E-02	0.00E+00	4.28E-05	5.11E-05	1.89E-05	-9.50E-03
EP-freshwater	[kg P-Eq.]	3.43E-05	0.00E+00	3.22E-08	1.10E-08	4.29E-09	-1.89E-06
EP-marine	[kg N-Eq.]	6.70E-03	0.00E+00	2.03E-05	1.36E-05	4.61E-06	-1.45E-03
EP-terrestrial	[mol N-Eq.]	7.33E-02	0.00E+00	2.20E-04	2.43E-04	5.03E-05	-1.47E-02
POCP	[kg NMVOC-Eq.]	1.87E-02	0.00E+00	3.92E-05	3.87E-05	1.43E-05	-4.92E-03
ADPE	[kg Sb-Eq.]	6.63E-05	0.00E+00	7.96E-10	4.68E-10	2.06E-10	-3.61E-05
ADPF	[MJ]	1.12E+02	0.00E+00	1.53E-01	8.18E-02	4.96E-02	-2.83E+01
WDP	[m^3 world-Eq deprived]	1.20E+00	0.00E+00	5.47E-05	4.43E-02	3.54E-04	-5.10E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-1" (3.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.29E+01	0.00E+00	1.16E-02	2.25E-02	8.08E-03	-2.73E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.41E+01	0.00E+00	1.16E-02	2.25E-02	8.08E-03	-2.73E+00
PENRE	[MJ]	1.05E+02	0.00E+00	1.53E-01	7.08E+00	4.96E-02	-2.83E+01
PENRM	[MJ]	7.51E+00	0.00E+00	0.00E+00	-7.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.12E+02	0.00E+00	1.53E-01	8.18E-02	4.96E-02	-2.83E+01
SM	[kg]	2.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.37E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.27E-01	0.00E+00	5.71E-06	1.04E-03	1.04E-05	-1.51E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-1" (3.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.96E-08	0.00E+00	6.15E-12	4.41E-11	1.07E-11	-1.11E-04
NHWD	[kg]	1.33E+00	0.00E+00	2.14E-05	1.55E-02	1.43E-01	1.68E-01
RWD	[kg]	2.89E-03	0.00E+00	2.89E-07	4.39E-06	6.88E-07	-3.04E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.90E+00	0.00E+00	0.00E+00	2.71E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.01E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.43E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-1" (3.05 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.155 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-5/4" (4.10 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.13E+01	0.00E+00	1.60E-02	5.35E-01	4.17E-03	-3.14E+00
GWP-fossil	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.58E-02	5.35E-01	4.14E-03	-3.15E+00
GWP-biogenic	[kg CO_2-Eq.]	1.29E-01	0.00E+00	2.94E-05	2.01E-05	1.27E-05	1.54E-02
GWP-luluc	[kg CO_2-Eq.]	3.07E-02	0.00E+00	1.66E-04	1.37E-05	1.30E-05	-3.48E-03
ODP	[kg CFC11-Eq.]	1.50E-10	0.00E+00	2.67E-15	4.05E-14	1.34E-14	8.44E-13
AP	[mol H^+-Eq.]	4.11E-02	0.00E+00	5.75E-05	5.30E-05	2.58E-05	-1.16E-02
EP-freshwater	[kg P-Eq.]	4.79E-05	0.00E+00	4.34E-08	1.14E-08	5.85E-09	-2.21E-06
EP-marine	[kg N-Eq.]	8.89E-03	0.00E+00	2.73E-05	1.41E-05	6.29E-06	-1.78E-03
EP-terrestrial	[mol N-Eq.]	9.75E-02	0.00E+00	2.96E-04	2.51E-04	6.86E-05	-1.79E-02
POCP	[kg NMVOC-Eq.]	2.42E-02	0.00E+00	5.26E-05	4.01E-05	1.95E-05	-6.15E-03
ADPE	[kg Sb-Eq.]	6.75E-05	0.00E+00	1.07E-09	4.85E-10	2.81E-10	-4.30E-05
ADPF	[MJ]	1.41E+02	0.00E+00	2.06E-01	8.48E-02	6.77E-02	-3.54E+01
WDP	[m^3 world-Eq deprived]	1.55E+00	0.00E+00	7.35E-05	4.59E-02	4.84E-04	-6.01E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-5/4" (4.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.29E+02	0.00E+00	1.55E-02	2.33E-02	1.10E-02	-2.86E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.30E+02	0.00E+00	1.55E-02	2.33E-02	1.10E-02	-2.86E+00
PENRE	[MJ]	1.32E+02	0.00E+00	2.06E-01	7.69E+00	6.77E-02	-3.54E+01
PENRM	[MJ]	8.12E+00	0.00E+00	0.00E+00	-7.61E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.41E+02	0.00E+00	2.06E-01	8.48E-02	6.77E-02	-3.54E+01
SM	[kg]	2.77E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.27E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.47E-01	0.00E+00	7.68E-06	1.08E-03	1.43E-05	-2.08E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-5/4" (4.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.39E-07	0.00E+00	8.27E-12	4.57E-11	1.46E-11	-1.26E-04
NHWD	[kg]	1.85E+00	0.00E+00	2.88E-05	1.61E-02	1.95E-01	2.35E-01
RWD	[kg]	3.86E-03	0.00E+00	3.89E-07	4.55E-06	9.39E-07	-3.22E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.79E+00	0.00E+00	0.00E+00	3.70E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.30E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.49E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-5/4" (4.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.156 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-6/4" (3.21 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.14E+00	0.00E+00	1.25E-02	5.30E-01	3.22E-03	-2.59E+00
GWP-fossil	[kg CO_2-Eq.]	9.02E+00	0.00E+00	1.23E-02	5.30E-01	3.20E-03	-2.60E+00
GWP-biogenic	[kg CO_2-Eq.]	9.47E-02	0.00E+00	2.31E-05	1.99E-05	9.84E-06	1.23E-02
GWP-luluc	[kg CO_2-Eq.]	2.38E-02	0.00E+00	1.30E-04	1.35E-05	1.00E-05	-3.16E-03
ODP	[kg CFC11-Eq.]	1.15E-10	0.00E+00	2.09E-15	4.01E-14	1.03E-14	2.61E-13
AP	[mol H^+-Eq.]	3.46E-02	0.00E+00	4.50E-05	5.24E-05	1.99E-05	-9.95E-03
EP-freshwater	[kg P-Eq.]	3.62E-05	0.00E+00	3.39E-08	1.13E-08	4.52E-09	-1.97E-06
EP-marine	[kg N-Eq.]	6.99E-03	0.00E+00	2.14E-05	1.40E-05	4.86E-06	-1.52E-03
EP-terrestrial	[mol N-Eq.]	7.66E-02	0.00E+00	2.31E-04	2.49E-04	5.30E-05	-1.54E-02
POCP	[kg NMVOC-Eq.]	1.95E-02	0.00E+00	4.12E-05	3.97E-05	1.51E-05	-5.17E-03
ADPE	[kg Sb-Eq.]	6.64E-05	0.00E+00	8.37E-10	4.80E-10	2.17E-10	-3.76E-05
ADPF	[MJ]	1.16E+02	0.00E+00	1.61E-01	8.38E-02	5.23E-02	-2.97E+01
WDP	[m^3 world-Eq deprived]	1.25E+00	0.00E+00	5.76E-05	4.54E-02	3.73E-04	-5.31E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-6/4" (3.21 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.79E+01	0.00E+00	1.22E-02	2.31E-02	8.52E-03	-2.80E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.91E+01	0.00E+00	1.22E-02	2.31E-02	8.52E-03	-2.80E+00
PENRE	[MJ]	1.08E+02	0.00E+00	1.61E-01	7.24E+00	5.23E-02	-2.97E+01
PENRM	[MJ]	7.67E+00	0.00E+00	0.00E+00	-7.15E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.16E+02	0.00E+00	1.61E-01	8.38E-02	5.23E-02	-2.97E+01
SM	[kg]	2.11E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.99E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.30E-01	0.00E+00	6.01E-06	1.07E-03	1.10E-05	-1.61E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-6/4" (3.21 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.05E-07	0.00E+00	6.47E-12	4.52E-11	1.13E-11	-1.15E-04
NHWD	[kg]	1.40E+00	0.00E+00	2.25E-05	1.59E-02	1.51E-01	1.81E-01
RWD	[kg]	3.02E-03	0.00E+00	3.05E-07	4.50E-06	7.25E-07	-3.12E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.02E+00	0.00E+00	0.00E+00	2.86E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.21E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.47E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-6/4" (3.21 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.157 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-2" (3.13 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.84E+00	0.00E+00	1.22E-02	5.48E-01	3.12E-03	-2.61E+00
GWP-fossil	[kg CO_2-Eq.]	8.73E+00	0.00E+00	1.20E-02	5.48E-01	3.10E-03	-2.62E+00
GWP-biogenic	[kg CO_2-Eq.]	8.99E-02	0.00E+00	2.25E-05	2.06E-05	9.56E-06	1.23E-02
GWP-luluc	[kg CO_2-Eq.]	2.29E-02	0.00E+00	1.26E-04	1.40E-05	9.75E-06	-3.22E-03
ODP	[kg CFC11-Eq.]	1.11E-10	0.00E+00	2.04E-15	4.15E-14	1.00E-14	1.96E-13
AP	[mol H^+-Eq.]	3.37E-02	0.00E+00	4.39E-05	5.43E-05	1.94E-05	-1.01E-02
EP-freshwater	[kg P-Eq.]	3.46E-05	0.00E+00	3.31E-08	1.17E-08	4.39E-09	-2.00E-06
EP-marine	[kg N-Eq.]	6.73E-03	0.00E+00	2.09E-05	1.45E-05	4.72E-06	-1.54E-03
EP-terrestrial	[mol N-Eq.]	7.37E-02	0.00E+00	2.26E-04	2.57E-04	5.15E-05	-1.56E-02
POCP	[kg NMVOC-Eq.]	1.88E-02	0.00E+00	4.02E-05	4.10E-05	1.46E-05	-5.22E-03
ADPE	[kg Sb-Eq.]	6.63E-05	0.00E+00	8.16E-10	4.97E-10	2.11E-10	-3.82E-05
ADPF	[MJ]	1.13E+02	0.00E+00	1.57E-01	8.68E-02	5.08E-02	-3.00E+01
WDP	[m^3 world-Eq deprived]	1.21E+00	0.00E+00	5.61E-05	4.70E-02	3.63E-04	-5.40E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-2" (3.13 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.40E+01	0.00E+00	1.19E-02	2.39E-02	8.27E-03	-2.88E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.51E+01	0.00E+00	1.19E-02	2.39E-02	8.27E-03	-2.88E+00
PENRE	[MJ]	1.05E+02	0.00E+00	1.57E-01	7.31E+00	5.08E-02	-3.00E+01
PENRM	[MJ]	7.74E+00	0.00E+00	0.00E+00	-7.23E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.13E+02	0.00E+00	1.57E-01	8.68E-02	5.08E-02	-3.00E+01
SM	[kg]	2.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.28E-01	0.00E+00	5.86E-06	1.10E-03	1.07E-05	-1.61E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-2" (3.13 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.00E-07	0.00E+00	6.31E-12	4.68E-11	1.10E-11	-1.17E-04
NHWD	[kg]	1.34E+00	0.00E+00	2.20E-05	1.65E-02	1.46E-01	1.80E-01
RWD	[kg]	2.90E-03	0.00E+00	2.97E-07	4.66E-06	7.04E-07	-3.22E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.91E+00	0.00E+00	0.00E+00	2.77E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.50E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.52E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 785 MM: UNI ABS 200-2" (3.13 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.158 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-5/4" (4.07 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.14E+01	0.00E+00	1.58E-02	5.47E-01	4.13E-03	-3.05E+00
GWP-fossil	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.56E-02	5.47E-01	4.10E-03	-3.07E+00
GWP-biogenic	[kg CO_2-Eq.]	1.29E-01	0.00E+00	2.92E-05	2.06E-05	1.26E-05	1.49E-02
GWP-luluc	[kg CO_2-Eq.]	3.06E-02	0.00E+00	1.64E-04	1.40E-05	1.29E-05	-3.38E-03
ODP	[kg CFC11-Eq.]	1.50E-10	0.00E+00	2.65E-15	4.14E-14	1.33E-14	7.36E-13
AP	[mol H^+-Eq.]	4.13E-02	0.00E+00	5.71E-05	5.42E-05	2.56E-05	-1.13E-02
EP-freshwater	[kg P-Eq.]	4.79E-05	0.00E+00	4.30E-08	1.17E-08	5.80E-09	-2.15E-06
EP-marine	[kg N-Eq.]	8.92E-03	0.00E+00	2.71E-05	1.44E-05	6.24E-06	-1.73E-03
EP-terrestrial	[mol N-Eq.]	9.78E-02	0.00E+00	2.93E-04	2.57E-04	6.80E-05	-1.74E-02
POCP	[kg NMVOC-Eq.]	2.43E-02	0.00E+00	5.23E-05	4.10E-05	1.93E-05	-5.97E-03
ADPE	[kg Sb-Eq.]	6.75E-05	0.00E+00	1.06E-09	4.96E-10	2.79E-10	-4.17E-05
ADPF	[MJ]	1.42E+02	0.00E+00	2.05E-01	8.67E-02	6.71E-02	-3.45E+01
WDP	[m^3 world-Eq deprived]	1.56E+00	0.00E+00	7.30E-05	4.69E-02	4.79E-04	-5.84E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-5/4" (4.07 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.29E+02	0.00E+00	1.54E-02	2.38E-02	1.09E-02	-2.82E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.30E+02	0.00E+00	1.54E-02	2.38E-02	1.09E-02	-2.82E+00
PENRE	[MJ]	1.33E+02	0.00E+00	2.05E-01	7.91E+00	6.71E-02	-3.45E+01
PENRM	[MJ]	8.33E+00	0.00E+00	0.00E+00	-7.82E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.42E+02	0.00E+00	2.05E-01	8.67E-02	6.71E-02	-3.45E+01
SM	[kg]	2.77E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.50E-01	0.00E+00	7.62E-06	1.10E-03	1.41E-05	-2.02E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-5/4" (4.07 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.39E-07	0.00E+00	8.21E-12	4.68E-11	1.45E-11	-1.22E-04
NHWD	[kg]	1.85E+00	0.00E+00	2.86E-05	1.64E-02	1.93E-01	2.29E-01
RWD	[kg]	3.87E-03	0.00E+00	3.86E-07	4.65E-06	9.30E-07	-3.25E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.79E+00	0.00E+00	0.00E+00	3.67E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.48E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.52E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-5/4" (4.07 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.159 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-2" (3.10 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.91E+00	0.00E+00	1.21E-02	5.57E-01	3.09E-03	-2.53E+00
GWP-fossil	[kg CO_2-Eq.]	8.80E+00	0.00E+00	1.19E-02	5.57E-01	3.07E-03	-2.53E+00
GWP-biogenic	[kg CO_2-Eq.]	8.97E-02	0.00E+00	2.23E-05	2.09E-05	9.45E-06	1.18E-02
GWP-luluc	[kg CO_2-Eq.]	2.29E-02	0.00E+00	1.25E-04	1.42E-05	9.64E-06	-3.10E-03
ODP	[kg CFC11-Eq.]	1.11E-10	0.00E+00	2.02E-15	4.22E-14	9.93E-15	1.02E-13
AP	[mol H^+-Eq.]	3.39E-02	0.00E+00	4.35E-05	5.52E-05	1.91E-05	-9.68E-03
EP-freshwater	[kg P-Eq.]	3.46E-05	0.00E+00	3.28E-08	1.19E-08	4.34E-09	-1.93E-06
EP-marine	[kg N-Eq.]	6.76E-03	0.00E+00	2.07E-05	1.47E-05	4.66E-06	-1.48E-03
EP-terrestrial	[mol N-Eq.]	7.40E-02	0.00E+00	2.24E-04	2.62E-04	5.09E-05	-1.50E-02
POCP	[kg NMVOC-Eq.]	1.89E-02	0.00E+00	3.98E-05	4.17E-05	1.45E-05	-5.03E-03
ADPE	[kg Sb-Eq.]	6.63E-05	0.00E+00	8.09E-10	5.05E-10	2.08E-10	-3.66E-05
ADPF	[MJ]	1.14E+02	0.00E+00	1.56E-01	8.83E-02	5.02E-02	-2.91E+01
WDP	[m^3 world-Eq deprived]	1.22E+00	0.00E+00	5.56E-05	4.78E-02	3.58E-04	-5.19E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-2" (3.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.38E+01	0.00E+00	1.17E-02	2.43E-02	8.18E-03	-2.82E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.50E+01	0.00E+00	1.17E-02	2.43E-02	8.18E-03	-2.82E+00
PENRE	[MJ]	1.06E+02	0.00E+00	1.56E-01	7.53E+00	5.02E-02	-2.91E+01
PENRM	[MJ]	7.95E+00	0.00E+00	0.00E+00	-7.44E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.14E+02	0.00E+00	1.56E-01	8.83E-02	5.02E-02	-2.91E+01
SM	[kg]	2.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.64E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.31E-01	0.00E+00	5.80E-06	1.12E-03	1.06E-05	-1.56E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-2" (3.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.00E-07	0.00E+00	6.25E-12	4.76E-11	1.08E-11	-1.12E-04
NHWD	[kg]	1.34E+00	0.00E+00	2.18E-05	1.67E-02	1.44E-01	1.74E-01
RWD	[kg]	2.91E-03	0.00E+00	2.94E-07	4.74E-06	6.96E-07	-3.23E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.91E+00	0.00E+00	0.00E+00	2.74E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.64E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.55E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 810 MM: UNI ABS 225-2" (3.10 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.160 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-1" (3.32 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.51E+00	0.00E+00	1.29E-02	6.10E-01	3.30E-03	-2.71E+00
GWP-fossil	[kg CO_2-Eq.]	9.39E+00	0.00E+00	1.28E-02	6.10E-01	3.28E-03	-2.72E+00
GWP-biogenic	[kg CO_2-Eq.]	9.49E-02	0.00E+00	2.38E-05	2.29E-05	1.01E-05	1.27E-02
GWP-luluc	[kg CO_2-Eq.]	2.43E-02	0.00E+00	1.34E-04	1.56E-05	1.03E-05	-3.18E-03
ODP	[kg CFC11-Eq.]	1.17E-10	0.00E+00	2.16E-15	4.61E-14	1.06E-14	1.45E-13
AP	[mol H^+-Eq.]	3.55E-02	0.00E+00	4.66E-05	6.04E-05	2.05E-05	-1.02E-02
EP-freshwater	[kg P-Eq.]	3.68E-05	0.00E+00	3.51E-08	1.30E-08	4.64E-09	-2.00E-06
EP-marine	[kg N-Eq.]	7.19E-03	0.00E+00	2.21E-05	1.61E-05	4.99E-06	-1.56E-03
EP-terrestrial	[mol N-Eq.]	7.86E-02	0.00E+00	2.39E-04	2.86E-04	5.44E-05	-1.58E-02
POCP	[kg NMVOC-Eq.]	2.01E-02	0.00E+00	4.26E-05	4.57E-05	1.55E-05	-5.33E-03
ADPE	[kg Sb-Eq.]	6.67E-05	0.00E+00	8.66E-10	5.53E-10	2.23E-10	-3.79E-05
ADPF	[MJ]	1.22E+02	0.00E+00	1.67E-01	9.66E-02	5.36E-02	-3.11E+01
WDP	[m^3 world-Eq deprived]	1.29E+00	0.00E+00	5.95E-05	5.23E-02	3.83E-04	-5.37E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-1" (3.32 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.98E+01	0.00E+00	1.26E-02	2.66E-02	8.75E-03	-2.89E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.01E+02	0.00E+00	1.26E-02	2.66E-02	8.75E-03	-2.89E+00
PENRE	[MJ]	1.13E+02	0.00E+00	1.67E-01	8.20E+00	5.36E-02	-3.11E+01
PENRM	[MJ]	8.61E+00	0.00E+00	0.00E+00	-8.10E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.22E+02	0.00E+00	1.67E-01	9.66E-02	5.36E-02	-3.11E+01
SM	[kg]	2.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.46E-01	0.00E+00	6.22E-06	1.23E-03	1.13E-05	-1.71E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-1" (3.32 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.06E-07	0.00E+00	6.69E-12	5.21E-11	1.16E-11	-1.14E-04
NHWD	[kg]	1.41E+00	0.00E+00	2.33E-05	1.83E-02	1.54E-01	1.92E-01
RWD	[kg]	3.06E-03	0.00E+00	3.15E-07	5.18E-06	7.44E-07	-3.47E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.03E+00	0.00E+00	0.00E+00	2.93E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.45E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.69E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-1" (3.32 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.161 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-5/4" (3.36 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.61E+00	0.00E+00	1.31E-02	6.15E-01	3.34E-03	-2.73E+00
GWP-fossil	[kg CO_2-Eq.]	9.49E+00	0.00E+00	1.29E-02	6.15E-01	3.32E-03	-2.74E+00
GWP-biogenic	[kg CO_2-Eq.]	9.64E-02	0.00E+00	2.41E-05	2.31E-05	1.02E-05	1.28E-02
GWP-luluc	[kg CO_2-Eq.]	2.46E-02	0.00E+00	1.36E-04	1.57E-05	1.04E-05	-3.19E-03
ODP	[kg CFC11-Eq.]	1.19E-10	0.00E+00	2.19E-15	4.65E-14	1.08E-14	1.53E-13
AP	[mol H^+-Eq.]	3.58E-02	0.00E+00	4.71E-05	6.08E-05	2.07E-05	-1.02E-02
EP-freshwater	[kg P-Eq.]	3.74E-05	0.00E+00	3.55E-08	1.31E-08	4.69E-09	-2.01E-06
EP-marine	[kg N-Eq.]	7.28E-03	0.00E+00	2.24E-05	1.62E-05	5.05E-06	-1.57E-03
EP-terrestrial	[mol N-Eq.]	7.96E-02	0.00E+00	2.42E-04	2.89E-04	5.51E-05	-1.59E-02
POCP	[kg NMVOC-Eq.]	2.04E-02	0.00E+00	4.31E-05	4.60E-05	1.57E-05	-5.37E-03
ADPE	[kg Sb-Eq.]	6.67E-05	0.00E+00	8.76E-10	5.57E-10	2.25E-10	-3.81E-05
ADPF	[MJ]	1.23E+02	0.00E+00	1.69E-01	9.73E-02	5.43E-02	-3.13E+01
WDP	[m^3 world-Eq deprived]	1.31E+00	0.00E+00	6.03E-05	5.27E-02	3.88E-04	-5.40E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-5/4" (3.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.01E+02	0.00E+00	1.27E-02	2.68E-02	8.85E-03	-2.90E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.02E+02	0.00E+00	1.27E-02	2.68E-02	8.85E-03	-2.90E+00
PENRE	[MJ]	1.14E+02	0.00E+00	1.69E-01	8.28E+00	5.43E-02	-3.13E+01
PENRM	[MJ]	8.69E+00	0.00E+00	0.00E+00	-8.18E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.23E+02	0.00E+00	1.69E-01	9.73E-02	5.43E-02	-3.13E+01
SM	[kg]	2.17E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.47E-01	0.00E+00	6.29E-06	1.24E-03	1.14E-05	-1.73E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-5/4" (3.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.08E-07	0.00E+00	6.77E-12	5.25E-11	1.17E-11	-1.14E-04
NHWD	[kg]	1.43E+00	0.00E+00	2.36E-05	1.85E-02	1.56E-01	1.94E-01
RWD	[kg]	3.10E-03	0.00E+00	3.19E-07	5.22E-06	7.53E-07	-3.49E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.07E+00	0.00E+00	0.00E+00	2.97E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.53E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.71E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-5/4" (3.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.162 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-6/4" (3.40 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.57E+00	0.00E+00	1.32E-02	6.28E-01	3.38E-03	-2.85E+00
GWP-fossil	[kg CO_2-Eq.]	9.45E+00	0.00E+00	1.31E-02	6.28E-01	3.36E-03	-2.86E+00
GWP-biogenic	[kg CO_2-Eq.]	9.57E-02	0.00E+00	2.44E-05	2.36E-05	1.03E-05	1.34E-02
GWP-luluc	[kg CO_2-Eq.]	2.47E-02	0.00E+00	1.37E-04	1.60E-05	1.06E-05	-3.33E-03
ODP	[kg CFC11-Eq.]	1.19E-10	0.00E+00	2.21E-15	4.75E-14	1.09E-14	2.07E-13
AP	[mol H^+-Eq.]	3.57E-02	0.00E+00	4.77E-05	6.22E-05	2.10E-05	-1.07E-02
EP-freshwater	[kg P-Eq.]	3.72E-05	0.00E+00	3.59E-08	1.34E-08	4.75E-09	-2.09E-06
EP-marine	[kg N-Eq.]	7.24E-03	0.00E+00	2.27E-05	1.66E-05	5.10E-06	-1.64E-03
EP-terrestrial	[mol N-Eq.]	7.92E-02	0.00E+00	2.45E-04	2.95E-04	5.57E-05	-1.66E-02
POCP	[kg NMVOC-Eq.]	2.03E-02	0.00E+00	4.37E-05	4.70E-05	1.58E-05	-5.60E-03
ADPE	[kg Sb-Eq.]	6.67E-05	0.00E+00	8.87E-10	5.70E-10	2.28E-10	-3.98E-05
ADPF	[MJ]	1.23E+02	0.00E+00	1.71E-01	9.95E-02	5.49E-02	-3.26E+01
WDP	[m^3 world-Eq deprived]	1.30E+00	0.00E+00	6.10E-05	5.38E-02	3.92E-04	-5.63E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-6/4" (3.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.01E+02	0.00E+00	1.29E-02	2.74E-02	8.95E-03	-3.00E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.02E+02	0.00E+00	1.29E-02	2.74E-02	8.95E-03	-3.00E+00
PENRE	[MJ]	1.14E+02	0.00E+00	1.71E-01	8.30E+00	5.49E-02	-3.26E+01
PENRM	[MJ]	8.71E+00	0.00E+00	0.00E+00	-8.20E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.23E+02	0.00E+00	1.71E-01	9.95E-02	5.49E-02	-3.26E+01
SM	[kg]	2.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.11E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.46E-01	0.00E+00	6.37E-06	1.26E-03	1.16E-05	-1.81E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-6/4" (3.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.07E-07	0.00E+00	6.86E-12	5.37E-11	1.19E-11	-1.19E-04
NHWD	[kg]	1.42E+00	0.00E+00	2.39E-05	1.89E-02	1.58E-01	2.03E-01
RWD	[kg]	3.08E-03	0.00E+00	3.23E-07	5.34E-06	7.61E-07	-3.58E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.05E+00	0.00E+00	0.00E+00	3.00E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.74E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.74E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-6/4" (3.40 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.163 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-2" (3.50 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.98E+00	0.00E+00	1.36E-02	6.31E-01	3.48E-03	-2.81E+00
GWP-fossil	[kg CO_2-Eq.]	9.85E+00	0.00E+00	1.35E-02	6.31E-01	3.46E-03	-2.82E+00
GWP-biogenic	[kg CO_2-Eq.]	1.02E-01	0.00E+00	2.51E-05	2.37E-05	1.07E-05	1.32E-02
GWP-luluc	[kg CO_2-Eq.]	2.57E-02	0.00E+00	1.41E-04	1.61E-05	1.09E-05	-3.24E-03
ODP	[kg CFC11-Eq.]	1.25E-10	0.00E+00	2.28E-15	4.77E-14	1.12E-14	1.82E-13
AP	[mol H^+-Eq.]	3.69E-02	0.00E+00	4.91E-05	6.25E-05	2.16E-05	-1.05E-02
EP-freshwater	[kg P-Eq.]	3.93E-05	0.00E+00	3.70E-08	1.35E-08	4.90E-09	-2.05E-06
EP-marine	[kg N-Eq.]	7.59E-03	0.00E+00	2.33E-05	1.67E-05	5.26E-06	-1.60E-03
EP-terrestrial	[mol N-Eq.]	8.30E-02	0.00E+00	2.52E-04	2.96E-04	5.74E-05	-1.62E-02
POCP	[kg NMVOC-Eq.]	2.12E-02	0.00E+00	4.49E-05	4.73E-05	1.63E-05	-5.50E-03
ADPE	[kg Sb-Eq.]	6.69E-05	0.00E+00	9.13E-10	5.72E-10	2.35E-10	-3.88E-05
ADPF	[MJ]	1.27E+02	0.00E+00	1.76E-01	9.99E-02	5.66E-02	-3.21E+01
WDP	[m^3 world-Eq deprived]	1.36E+00	0.00E+00	6.28E-05	5.41E-02	4.05E-04	-5.49E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-2" (3.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.06E+02	0.00E+00	1.33E-02	2.75E-02	9.23E-03	-2.94E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.07E+02	0.00E+00	1.33E-02	2.75E-02	9.23E-03	-2.94E+00
PENRE	[MJ]	1.19E+02	0.00E+00	1.76E-01	8.53E+00	5.66E-02	-3.21E+01
PENRM	[MJ]	8.94E+00	0.00E+00	0.00E+00	-8.43E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.27E+02	0.00E+00	1.76E-01	9.99E-02	5.66E-02	-3.21E+01
SM	[kg]	2.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.49E-01	0.00E+00	6.55E-06	1.27E-03	1.19E-05	-1.79E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-2" (3.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.13E-07	0.00E+00	7.06E-12	5.39E-11	1.22E-11	-1.16E-04
NHWD	[kg]	1.50E+00	0.00E+00	2.46E-05	1.90E-02	1.63E-01	2.01E-01
RWD	[kg]	3.24E-03	0.00E+00	3.32E-07	5.36E-06	7.85E-07	-3.57E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.19E+00	0.00E+00	0.00E+00	3.10E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.78E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.75E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 905 MM: UNI ABS 250-2" (3.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.164 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-1" (3.49 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.94E+00	0.00E+00	1.36E-02	7.28E-01	3.43E-03	-2.95E+00
GWP-fossil	[kg CO_2-Eq.]	9.82E+00	0.00E+00	1.34E-02	7.28E-01	3.41E-03	-2.96E+00
GWP-biogenic	[kg CO_2-Eq.]	9.46E-02	0.00E+00	2.51E-05	2.73E-05	1.05E-05	1.37E-02
GWP-luluc	[kg CO_2-Eq.]	2.50E-02	0.00E+00	1.41E-04	1.86E-05	1.07E-05	-3.32E-03
ODP	[kg CFC11-Eq.]	1.20E-10	0.00E+00	2.27E-15	5.50E-14	1.11E-14	1.79E-14
AP	[mol H^+-Eq.]	3.66E-02	0.00E+00	4.90E-05	7.20E-05	2.13E-05	-1.08E-02
EP-freshwater	[kg P-Eq.]	3.76E-05	0.00E+00	3.69E-08	1.55E-08	4.82E-09	-2.11E-06
EP-marine	[kg N-Eq.]	7.40E-03	0.00E+00	2.33E-05	1.92E-05	5.19E-06	-1.66E-03
EP-terrestrial	[mol N-Eq.]	8.09E-02	0.00E+00	2.52E-04	3.42E-04	5.66E-05	-1.68E-02
POCP	[kg NMVOC-Eq.]	2.09E-02	0.00E+00	4.48E-05	5.45E-05	1.61E-05	-5.71E-03
ADPE	[kg Sb-Eq.]	6.69E-05	0.00E+00	9.10E-10	6.60E-10	2.32E-10	-3.96E-05
ADPF	[MJ]	1.29E+02	0.00E+00	1.75E-01	1.15E-01	5.58E-02	-3.38E+01
WDP	[m^3 world-Eq deprived]	1.34E+00	0.00E+00	6.26E-05	6.24E-02	3.99E-04	-5.62E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-1" (3.49 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.02E+02	0.00E+00	1.32E-02	3.17E-02	9.10E-03	-3.09E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.03E+02	0.00E+00	1.32E-02	3.17E-02	9.10E-03	-3.09E+00
PENRE	[MJ]	1.19E+02	0.00E+00	1.75E-01	9.50E+00	5.58E-02	-3.38E+01
PENRM	[MJ]	9.90E+00	0.00E+00	0.00E+00	-9.38E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.29E+02	0.00E+00	1.75E-01	1.15E-01	5.58E-02	-3.38E+01
SM	[kg]	2.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.66E-01	0.00E+00	6.53E-06	1.46E-03	1.18E-05	-1.90E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-1" (3.49 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.07E-07	0.00E+00	7.04E-12	6.22E-11	1.21E-11	-1.16E-04
NHWD	[kg]	1.42E+00	0.00E+00	2.45E-05	2.19E-02	1.61E-01	2.13E-01
RWD	[kg]	3.10E-03	0.00E+00	3.31E-07	6.18E-06	7.74E-07	-4.00E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.03E+00	0.00E+00	0.00E+00	3.05E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.13E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.02E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2- optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-1" (3.49 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.165 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-5/4" (3.53 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.01E+01	0.00E+00	1.37E-02	7.30E-01	3.48E-03	-2.94E+00
GWP-fossil	[kg CO_2-Eq.]	9.97E+00	0.00E+00	1.36E-02	7.29E-01	3.45E-03	-2.96E+00
GWP-biogenic	[kg CO_2-Eq.]	9.68E-02	0.00E+00	2.54E-05	2.74E-05	1.06E-05	1.36E-02
GWP-luluc	[kg CO_2-Eq.]	2.54E-02	0.00E+00	1.43E-04	1.86E-05	1.09E-05	-3.30E-03
ODP	[kg CFC11-Eq.]	1.22E-10	0.00E+00	2.30E-15	5.52E-14	1.12E-14	1.62E-14
AP	[mol H^+-Eq.]	3.70E-02	0.00E+00	4.95E-05	7.22E-05	2.16E-05	-1.08E-02
EP-freshwater	[kg P-Eq.]	3.83E-05	0.00E+00	3.73E-08	1.56E-08	4.88E-09	-2.10E-06
EP-marine	[kg N-Eq.]	7.52E-03	0.00E+00	2.35E-05	1.92E-05	5.25E-06	-1.66E-03
EP-terrestrial	[mol N-Eq.]	8.22E-02	0.00E+00	2.55E-04	3.43E-04	5.73E-05	-1.67E-02
POCP	[kg NMVOC-Eq.]	2.12E-02	0.00E+00	4.53E-05	5.46E-05	1.63E-05	-5.70E-03
ADPE	[kg Sb-Eq.]	6.70E-05	0.00E+00	9.21E-10	6.61E-10	2.35E-10	-3.94E-05
ADPF	[MJ]	1.31E+02	0.00E+00	1.77E-01	1.16E-01	5.65E-02	-3.38E+01
WDP	[m^3 world-Eq deprived]	1.36E+00	0.00E+00	6.33E-05	6.25E-02	4.04E-04	-5.60E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-5/4" (3.53 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.04E+02	0.00E+00	1.34E-02	3.18E-02	9.21E-03	-3.08E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.05E+02	0.00E+00	1.34E-02	3.18E-02	9.21E-03	-3.08E+00
PENRE	[MJ]	1.21E+02	0.00E+00	1.77E-01	9.59E+00	5.65E-02	-3.38E+01
PENRM	[MJ]	9.98E+00	0.00E+00	0.00E+00	-9.47E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.31E+02	0.00E+00	1.77E-01	1.16E-01	5.65E-02	-3.38E+01
SM	[kg]	2.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.67E-01	0.00E+00	6.61E-06	1.47E-03	1.19E-05	-1.90E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-5/4" (3.53 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.09E-07	0.00E+00	7.12E-12	6.23E-11	1.22E-11	-1.16E-04
NHWD	[kg]	1.44E+00	0.00E+00	2.48E-05	2.19E-02	1.63E-01	2.14E-01
RWD	[kg]	3.16E-03	0.00E+00	3.35E-07	6.20E-06	7.84E-07	-4.00E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.08E+00	0.00E+00	0.00E+00	3.09E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.13E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.03E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-5/4" (3.53 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.166 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-6/4" (3.50 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.00E+01	0.00E+00	1.36E-02	7.33E-01	3.44E-03	-2.94E+00
GWP-fossil	[kg CO_2-Eq.]	9.88E+00	0.00E+00	1.35E-02	7.33E-01	3.42E-03	-2.95E+00
GWP-biogenic	[kg CO_2-Eq.]	9.53E-02	0.00E+00	2.51E-05	2.75E-05	1.05E-05	1.36E-02
GWP-luluc	[kg CO_2-Eq.]	2.52E-02	0.00E+00	1.41E-04	1.87E-05	1.08E-05	-3.30E-03
ODP	[kg CFC11-Eq.]	1.21E-10	0.00E+00	2.28E-15	5.55E-14	1.11E-14	-7.97E-15
AP	[mol H^+-Eq.]	3.67E-02	0.00E+00	4.91E-05	7.26E-05	2.13E-05	-1.07E-02
EP-freshwater	[kg P-Eq.]	3.78E-05	0.00E+00	3.70E-08	1.56E-08	4.84E-09	-2.10E-06
EP-marine	[kg N-Eq.]	7.44E-03	0.00E+00	2.33E-05	1.93E-05	5.20E-06	-1.65E-03
EP-terrestrial	[mol N-Eq.]	8.14E-02	0.00E+00	2.52E-04	3.44E-04	5.67E-05	-1.67E-02
POCP	[kg NMVOC-Eq.]	2.10E-02	0.00E+00	4.49E-05	5.49E-05	1.61E-05	-5.68E-03
ADPE	[kg Sb-Eq.]	6.70E-05	0.00E+00	9.13E-10	6.65E-10	2.32E-10	-3.94E-05
ADPF	[MJ]	1.30E+02	0.00E+00	1.76E-01	1.16E-01	5.60E-02	-3.37E+01
WDP	[m^3 world-Eq deprived]	1.34E+00	0.00E+00	6.28E-05	6.29E-02	4.00E-04	-5.59E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-6/4" (3.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.03E+02	0.00E+00	1.33E-02	3.19E-02	9.12E-03	-3.09E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.04E+02	0.00E+00	1.33E-02	3.19E-02	9.12E-03	-3.09E+00
PENRE	[MJ]	1.20E+02	0.00E+00	1.76E-01	9.60E+00	5.60E-02	-3.37E+01
PENRM	[MJ]	9.99E+00	0.00E+00	0.00E+00	-9.48E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.30E+02	0.00E+00	1.76E-01	1.16E-01	5.60E-02	-3.37E+01
SM	[kg]	2.17E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.66E-01	0.00E+00	6.55E-06	1.48E-03	1.18E-05	-1.89E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-6/4" (3.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.08E-07	0.00E+00	7.06E-12	6.26E-11	1.21E-11	-1.16E-04
NHWD	[kg]	1.42E+00	0.00E+00	2.46E-05	2.20E-02	1.61E-01	2.13E-01
RWD	[kg]	3.12E-03	0.00E+00	3.32E-07	6.23E-06	7.76E-07	-4.02E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.05E+00	0.00E+00	0.00E+00	3.06E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.14E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.04E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-6/4" (3.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.167 UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-2" (3.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.02E+01	0.00E+00	1.40E-02	7.54E-01	3.54E-03	-3.05E+00
GWP-fossil	[kg CO_2-Eq.]	1.00E+01	0.00E+00	1.38E-02	7.54E-01	3.52E-03	-3.07E+00
GWP-biogenic	[kg CO_2-Eq.]	9.77E-02	0.00E+00	2.59E-05	2.83E-05	1.08E-05	1.42E-02
GWP-luluc	[kg CO_2-Eq.]	2.57E-02	0.00E+00	1.45E-04	1.93E-05	1.11E-05	-3.41E-03
ODP	[kg CFC11-Eq.]	1.23E-10	0.00E+00	2.34E-15	5.71E-14	1.14E-14	3.27E-14
AP	[mol H^+-Eq.]	3.72E-02	0.00E+00	5.05E-05	7.47E-05	2.20E-05	-1.11E-02
EP-freshwater	[kg P-Eq.]	3.87E-05	0.00E+00	3.81E-08	1.61E-08	4.97E-09	-2.17E-06
EP-marine	[kg N-Eq.]	7.58E-03	0.00E+00	2.40E-05	1.99E-05	5.35E-06	-1.72E-03
EP-terrestrial	[mol N-Eq.]	8.28E-02	0.00E+00	2.60E-04	3.54E-04	5.83E-05	-1.73E-02
POCP	[kg NMVOC-Eq.]	2.14E-02	0.00E+00	4.62E-05	5.65E-05	1.66E-05	-5.90E-03
ADPE	[kg Sb-Eq.]	6.70E-05	0.00E+00	9.39E-10	6.84E-10	2.39E-10	-4.08E-05
ADPF	[MJ]	1.32E+02	0.00E+00	1.81E-01	1.19E-01	5.76E-02	-3.50E+01
WDP	[m^3 world-Eq deprived]	1.37E+00	0.00E+00	6.46E-05	6.47E-02	4.11E-04	-5.79E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-2" (3.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.05E+02	0.00E+00	1.36E-02	3.29E-02	9.38E-03	-3.18E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.06E+02	0.00E+00	1.36E-02	3.29E-02	9.38E-03	-3.18E+00
PENRE	[MJ]	1.21E+02	0.00E+00	1.81E-01	9.77E+00	5.76E-02	-3.50E+01
PENRM	[MJ]	1.02E+01	0.00E+00	0.00E+00	-9.65E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.32E+02	0.00E+00	1.81E-01	1.19E-01	5.76E-02	-3.50E+01
SM	[kg]	2.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.67E-01	0.00E+00	6.74E-06	1.52E-03	1.21E-05	-1.98E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-2" (3.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.10E-07	0.00E+00	7.26E-12	6.44E-11	1.24E-11	-1.19E-04
NHWD	[kg]	1.45E+00	0.00E+00	2.53E-05	2.27E-02	1.66E-01	2.22E-01
RWD	[kg]	3.18E-03	0.00E+00	3.42E-07	6.41E-06	7.98E-07	-4.14E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.10E+00	0.00E+00	0.00E+00	3.15E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.17E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.09E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 INT THREAD, STRAP L 1055 MM: UNI ABS 300-2" (3.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.168 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-50

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-50 (10.9 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.91E+01	0.00E+00	4.23E-02	1.83E+00	1.09E-02	-8.00E+00
GWP-fossil	[kg CO_2-Eq.]	2.87E+01	0.00E+00	4.18E-02	1.83E+00	1.08E-02	-8.03E+00
GWP-biogenic	[kg CO_2-Eq.]	3.15E-01	0.00E+00	7.81E-05	6.87E-05	3.33E-05	3.81E-02
GWP-luluc	[kg CO_2-Eq.]	7.80E-02	0.00E+00	4.39E-04	4.67E-05	3.40E-05	-7.85E-03
ODP	[kg CFC11-Eq.]	3.73E-10	0.00E+00	7.08E-15	1.38E-13	3.50E-14	1.14E-12
AP	[mol H^+-Eq.]	9.81E-02	0.00E+00	1.53E-04	1.81E-04	6.74E-05	-2.77E-02
EP-freshwater	[kg P-Eq.]	1.17E-04	0.00E+00	1.15E-07	3.90E-08	1.53E-08	-5.17E-06
EP-marine	[kg N-Eq.]	2.18E-02	0.00E+00	7.25E-05	4.83E-05	1.64E-05	-4.30E-03
EP-terrestrial	[mol N-Eq.]	2.39E-01	0.00E+00	7.84E-04	8.59E-04	1.79E-04	-4.29E-02
POCP	[kg NMVOC-Eq.]	6.02E-02	0.00E+00	1.40E-04	1.37E-04	5.10E-05	-1.51E-02
ADPE	[kg Sb-Eq.]	1.43E-04	0.00E+00	2.84E-09	1.66E-09	7.34E-10	-9.77E-05
ADPF	[MJ]	3.69E+02	0.00E+00	5.46E-01	2.90E-01	1.77E-01	-9.03E+01
WDP	[m^3 world-Eq deprived]	3.79E+00	0.00E+00	1.95E-04	1.57E-01	1.26E-03	-1.38E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-50 (10.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.23E+02	0.00E+00	4.12E-02	7.97E-02	2.88E-02	-6.94E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.25E+02	0.00E+00	4.12E-02	7.97E-02	2.88E-02	-6.94E+00
PENRE	[MJ]	3.44E+02	0.00E+00	5.46E-01	2.45E+01	1.77E-01	-9.03E+01
PENRM	[MJ]	2.48E+01	0.00E+00	0.00E+00	-2.43E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.69E+02	0.00E+00	5.46E-01	2.90E-01	1.77E-01	-9.03E+01
SM	[kg]	7.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.35E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.63E-01	0.00E+00	2.04E-05	3.68E-03	3.72E-05	-5.57E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-50 (10.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.37E-07	0.00E+00	2.19E-11	1.56E-10	3.82E-11	-2.67E-04
NHWD	[kg]	4.25E+00	0.00E+00	7.63E-05	5.50E-02	5.09E-01	6.32E-01
RWD	[kg]	9.47E-03	0.00E+00	1.03E-06	1.56E-05	2.45E-06	-9.87E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.46E+00	0.00E+00	0.00E+00	9.66E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-50 (10.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.169 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 410 MM: UNI ABS+FLA 80-50

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 410 MM: UNI ABS+FLA 80-50 (6.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.83E+01	0.00E+00	2.57E-02	5.90E-01	6.82E-03	-4.88E+00
GWP-fossil	[kg CO_2-Eq.]	1.80E+01	0.00E+00	2.54E-02	5.90E-01	6.77E-03	-4.90E+00
GWP-biogenic	[kg CO_2-Eq.]	2.23E-01	0.00E+00	4.74E-05	2.22E-05	2.09E-05	2.44E-02
GWP-luluc	[kg CO_2-Eq.]	5.11E-02	0.00E+00	2.66E-04	1.51E-05	2.13E-05	-6.45E-03
ODP	[kg CFC11-Eq.]	2.54E-10	0.00E+00	4.30E-15	4.46E-14	2.19E-14	1.58E-12
AP	[mol H^+-Eq.]	7.11E-02	0.00E+00	9.26E-05	5.84E-05	4.23E-05	-1.99E-02
EP-freshwater	[kg P-Eq.]	8.03E-05	0.00E+00	6.98E-08	1.26E-08	9.58E-09	-3.93E-06
EP-marine	[kg N-Eq.]	1.48E-02	0.00E+00	4.40E-05	1.56E-05	1.03E-05	-3.00E-03
EP-terrestrial	[mol N-Eq.]	1.62E-01	0.00E+00	4.76E-04	2.77E-04	1.12E-04	-3.06E-02
POCP	[kg NMVOC-Eq.]	3.97E-02	0.00E+00	8.47E-05	4.42E-05	3.19E-05	-1.01E-02
ADPE	[kg Sb-Eq.]	1.37E-04	0.00E+00	1.72E-09	5.35E-10	4.60E-10	-7.78E-05
ADPF	[MJ]	2.22E+02	0.00E+00	3.32E-01	9.34E-02	1.11E-01	-5.56E+01
WDP	[m^3 world-Eq deprived]	2.58E+00	0.00E+00	1.18E-04	5.06E-02	7.92E-04	-1.09E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 410 MM: UNI ABS+FLA 80-50 (6.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.16E+02	0.00E+00	2.50E-02	2.57E-02	1.81E-02	-5.15E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.17E+02	0.00E+00	2.50E-02	2.57E-02	1.81E-02	-5.15E+00
PENRE	[MJ]	2.12E+02	0.00E+00	3.32E-01	1.17E+01	1.11E-01	-5.56E+01
PENRM	[MJ]	9.93E+00	0.00E+00	0.00E+00	-1.16E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.22E+02	0.00E+00	3.32E-01	9.34E-02	1.11E-01	-5.56E+01
SM	[kg]	4.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.85E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.78E-01	0.00E+00	1.24E-05	1.19E-03	2.33E-05	-2.95E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 410 MM: UNI ABS+FLA 80-50 (6.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.37E-07	0.00E+00	1.33E-11	5.04E-11	2.39E-11	-2.46E-04
NHWD	[kg]	3.21E+00	0.00E+00	4.63E-05	1.77E-02	3.19E-01	3.29E-01
RWD	[kg]	6.66E-03	0.00E+00	6.26E-07	5.01E-06	1.54E-06	-4.31E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.76E+00	0.00E+00	0.00E+00	6.05E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 410 MM: UNI ABS+FLA 80-50 (6.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.170 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 455 MM: UNI ABS+FLA 100-50

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 455 MM: UNI ABS+FLA 100-50 (6.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.83E+01	0.00E+00	2.57E-02	7.20E-01	6.78E-03	-4.98E+00
GWP-fossil	[kg CO_2-Eq.]	1.81E+01	0.00E+00	2.54E-02	7.20E-01	6.74E-03	-5.00E+00
GWP-biogenic	[kg CO_2-Eq.]	2.19E-01	0.00E+00	4.74E-05	2.51E-05	2.08E-05	2.41E-02
GWP-luluc	[kg CO_2-Eq.]	5.07E-02	0.00E+00	2.66E-04	1.39E-05	2.12E-05	-6.48E-03
ODP	[kg CFC11-Eq.]	2.51E-10	0.00E+00	4.30E-15	4.93E-14	2.18E-14	9.43E-13
AP	[mol H^+-Eq.]	7.08E-02	0.00E+00	9.26E-05	7.17E-05	4.21E-05	-1.99E-02
EP-freshwater	[kg P-Eq.]	7.95E-05	0.00E+00	6.98E-08	1.15E-08	9.53E-09	-3.97E-06
EP-marine	[kg N-Eq.]	1.47E-02	0.00E+00	4.40E-05	1.77E-05	1.02E-05	-3.02E-03
EP-terrestrial	[mol N-Eq.]	1.62E-01	0.00E+00	4.76E-04	3.40E-04	1.12E-04	-3.08E-02
POCP	[kg NMVOC-Eq.]	3.98E-02	0.00E+00	8.47E-05	5.11E-05	3.18E-05	-1.02E-02
ADPE	[kg Sb-Eq.]	1.35E-04	0.00E+00	1.72E-09	5.80E-10	4.58E-10	-7.73E-05
ADPF	[MJ]	2.24E+02	0.00E+00	3.32E-01	1.03E-01	1.10E-01	-5.71E+01
WDP	[m^3 world-Eq deprived]	2.58E+00	0.00E+00	1.18E-04	6.34E-02	7.87E-04	-1.09E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 455 MM: UNI ABS+FLA 100-50 (6.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.14E+02	0.00E+00	2.50E-02	2.84E-02	1.80E-02	-5.50E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.15E+02	0.00E+00	2.50E-02	2.84E-02	1.80E-02	-5.50E+00
PENRE	[MJ]	2.12E+02	0.00E+00	3.32E-01	1.17E+01	1.10E-01	-5.71E+01
PENRM	[MJ]	1.22E+01	0.00E+00	0.00E+00	-1.16E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.24E+02	0.00E+00	3.32E-01	1.03E-01	1.10E-01	-5.71E+01
SM	[kg]	4.71E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.88E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.87E-01	0.00E+00	1.24E-05	1.49E-03	2.32E-05	-3.00E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 455 MM: UNI ABS+FLA 100-50 (6.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.34E-07	0.00E+00	1.33E-11	5.59E-11	2.38E-11	-2.43E-04
NHWD	[kg]	3.16E+00	0.00E+00	4.63E-05	1.48E-02	3.17E-01	3.34E-01
RWD	[kg]	6.57E-03	0.00E+00	6.26E-07	5.66E-06	1.53E-06	-5.29E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	4.69E+00	0.00E+00	0.00E+00	6.02E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.27E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.27E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 455 MM: UNI ABS+FLA 100-50 (6.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.171 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 520 MM: UNI ABS+FLA 125-50

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 520 MM: UNI ABS+FLA 125-50 (7.52 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.09E+01	0.00E+00	2.93E-02	8.14E-01	7.73E-03	-5.45E+00
GWP-fossil	[kg CO_2-Eq.]	2.06E+01	0.00E+00	2.89E-02	8.14E-01	7.68E-03	-5.47E+00
GWP-biogenic	[kg CO_2-Eq.]	2.54E-01	0.00E+00	5.40E-05	2.86E-05	2.37E-05	2.66E-02
GWP-luluc	[kg CO_2-Eq.]	5.80E-02	0.00E+00	3.04E-04	1.63E-05	2.41E-05	-6.63E-03
ODP	[kg CFC11-Eq.]	2.87E-10	0.00E+00	4.89E-15	5.64E-14	2.49E-14	1.22E-12
AP	[mol H^+-Eq.]	7.83E-02	0.00E+00	1.06E-04	8.10E-05	4.79E-05	-2.11E-02
EP-freshwater	[kg P-Eq.]	9.18E-05	0.00E+00	7.95E-08	1.36E-08	1.09E-08	-4.13E-06
EP-marine	[kg N-Eq.]	1.68E-02	0.00E+00	5.01E-05	2.02E-05	1.17E-05	-3.21E-03
EP-terrestrial	[mol N-Eq.]	1.85E-01	0.00E+00	5.42E-04	3.84E-04	1.27E-04	-3.26E-02
POCP	[kg NMVOC-Eq.]	4.53E-02	0.00E+00	9.65E-05	5.81E-05	3.62E-05	-1.09E-02
ADPE	[kg Sb-Eq.]	1.36E-04	0.00E+00	1.96E-09	6.66E-10	5.21E-10	-8.02E-05
ADPF	[MJ]	2.55E+02	0.00E+00	3.78E-01	1.18E-01	1.26E-01	-6.20E+01
WDP	[m^3 world-Eq deprived]	2.92E+00	0.00E+00	1.35E-04	7.15E-02	8.97E-04	-1.13E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 520 MM: UNI ABS+FLA 125-50 (7.52 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.46E+02	0.00E+00	2.85E-02	3.25E-02	2.05E-02	-5.56E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.47E+02	0.00E+00	2.85E-02	3.25E-02	2.05E-02	-5.56E+00
PENRE	[MJ]	2.41E+02	0.00E+00	3.78E-01	1.34E+01	1.26E-01	-6.20E+01
PENRM	[MJ]	1.38E+01	0.00E+00	0.00E+00	-1.32E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.55E+02	0.00E+00	3.78E-01	1.18E-01	1.26E-01	-6.20E+01
SM	[kg]	5.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.13E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.21E-01	0.00E+00	1.41E-05	1.68E-03	2.65E-05	-3.43E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 520 MM: UNI ABS+FLA 125-50 (7.52 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.69E-07	0.00E+00	1.52E-11	6.39E-11	2.71E-11	-2.45E-04
NHWD	[kg]	3.62E+00	0.00E+00	5.28E-05	1.76E-02	3.62E-01	3.85E-01
RWD	[kg]	7.46E-03	0.00E+00	7.13E-07	6.46E-06	1.74E-06	-5.71E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.48E+00	0.00E+00	0.00E+00	6.86E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.41E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.53E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 520 MM: UNI ABS+FLA 125-50 (7.52 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.172 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-50

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-50 (7.66 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.14E+01	0.00E+00	2.98E-02	9.28E-01	7.83E-03	-5.62E+00
GWP-fossil	[kg CO_2-Eq.]	2.11E+01	0.00E+00	2.94E-02	9.28E-01	7.78E-03	-5.64E+00
GWP-biogenic	[kg CO_2-Eq.]	2.53E-01	0.00E+00	5.50E-05	3.29E-05	2.40E-05	2.72E-02
GWP-luluc	[kg CO_2-Eq.]	5.86E-02	0.00E+00	3.09E-04	1.93E-05	2.45E-05	-6.70E-03
ODP	[kg CFC11-Eq.]	2.89E-10	0.00E+00	4.99E-15	6.50E-14	2.52E-14	1.05E-12
AP	[mol H^+-Eq.]	7.93E-02	0.00E+00	1.07E-04	9.22E-05	4.86E-05	-2.15E-02
EP-freshwater	[kg P-Eq.]	9.24E-05	0.00E+00	8.10E-08	1.60E-08	1.10E-08	-4.19E-06
EP-marine	[kg N-Eq.]	1.70E-02	0.00E+00	5.11E-05	2.32E-05	1.18E-05	-3.28E-03
EP-terrestrial	[mol N-Eq.]	1.87E-01	0.00E+00	5.52E-04	4.37E-04	1.29E-04	-3.32E-02
POCP	[kg NMVOC-Eq.]	4.61E-02	0.00E+00	9.83E-05	6.67E-05	3.67E-05	-1.12E-02
ADPE	[kg Sb-Eq.]	1.36E-04	0.00E+00	2.00E-09	7.69E-10	5.28E-10	-8.10E-05
ADPF	[MJ]	2.62E+02	0.00E+00	3.85E-01	1.36E-01	1.27E-01	-6.40E+01
WDP	[m^3 world-Eq deprived]	2.97E+00	0.00E+00	1.37E-04	8.12E-02	9.09E-04	-1.14E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-50 (7.66 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.48E+02	0.00E+00	2.90E-02	3.75E-02	2.07E-02	-5.72E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.49E+02	0.00E+00	2.90E-02	3.75E-02	2.07E-02	-5.72E+00
PENRE	[MJ]	2.47E+02	0.00E+00	3.85E-01	1.47E+01	1.27E-01	-6.40E+01
PENRM	[MJ]	1.50E+01	0.00E+00	0.00E+00	-1.45E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.62E+02	0.00E+00	3.85E-01	1.36E-01	1.27E-01	-6.40E+01
SM	[kg]	5.41E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.41E-01	0.00E+00	1.43E-05	1.91E-03	2.68E-05	-3.57E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-50 (7.66 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.70E-07	0.00E+00	1.54E-11	7.37E-11	2.75E-11	-2.45E-04
NHWD	[kg]	3.62E+00	0.00E+00	5.38E-05	2.11E-02	3.66E-01	4.01E-01
RWD	[kg]	7.50E-03	0.00E+00	7.27E-07	7.43E-06	1.76E-06	-6.20E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.48E+00	0.00E+00	0.00E+00	6.95E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.59E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.84E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-50 (7.66 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.173 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-80

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-80 (9.56 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.64E+01	0.00E+00	3.72E-02	1.07E+00	9.81E-03	-6.65E+00
GWP-fossil	[kg CO_2-Eq.]	2.60E+01	0.00E+00	3.67E-02	1.07E+00	9.75E-03	-6.68E+00
GWP-biogenic	[kg CO_2-Eq.]	3.30E-01	0.00E+00	6.87E-05	3.75E-05	3.00E-05	3.25E-02
GWP-luluc	[kg CO_2-Eq.]	7.37E-02	0.00E+00	3.86E-04	2.11E-05	3.06E-05	-7.27E-03
ODP	[kg CFC11-Eq.]	3.66E-10	0.00E+00	6.22E-15	7.37E-14	3.16E-14	1.61E-12
AP	[mol H^+-Eq.]	9.40E-02	0.00E+00	1.34E-04	1.06E-04	6.08E-05	-2.45E-02
EP-freshwater	[kg P-Eq.]	1.18E-04	0.00E+00	1.01E-07	1.75E-08	1.38E-08	-4.64E-06
EP-marine	[kg N-Eq.]	2.13E-02	0.00E+00	6.37E-05	2.65E-05	1.48E-05	-3.75E-03
EP-terrestrial	[mol N-Eq.]	2.34E-01	0.00E+00	6.89E-04	5.05E-04	1.62E-04	-3.77E-02
POCP	[kg NMVOC-Eq.]	5.69E-02	0.00E+00	1.23E-04	7.62E-05	4.60E-05	-1.30E-02
ADPE	[kg Sb-Eq.]	1.38E-04	0.00E+00	2.49E-09	8.69E-10	6.62E-10	-8.98E-05
ADPF	[MJ]	3.21E+02	0.00E+00	4.80E-01	1.55E-01	1.59E-01	-7.51E+01
WDP	[m^3 world-Eq deprived]	3.66E+00	0.00E+00	1.71E-04	9.41E-02	1.14E-03	-1.26E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-80 (9.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.16E+02	0.00E+00	3.62E-02	4.25E-02	2.60E-02	-6.06E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.17E+02	0.00E+00	3.62E-02	4.25E-02	2.60E-02	-6.06E+00
PENRE	[MJ]	3.03E+02	0.00E+00	4.80E-01	1.76E+01	1.59E-01	-7.51E+01
PENRM	[MJ]	1.80E+01	0.00E+00	0.00E+00	-1.75E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.21E+02	0.00E+00	4.80E-01	1.55E-01	1.59E-01	-7.51E+01
SM	[kg]	6.86E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.71E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.78E-01	0.00E+00	1.79E-05	2.21E-03	3.36E-05	-4.44E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-80 (9.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.45E-07	0.00E+00	1.93E-11	8.36E-11	3.44E-11	-2.61E-04
NHWD	[kg]	4.61E+00	0.00E+00	6.71E-05	2.27E-02	4.59E-01	5.02E-01
RWD	[kg]	9.39E-03	0.00E+00	9.07E-07	8.45E-06	2.21E-06	-7.10E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	7.18E+00	0.00E+00	0.00E+00	8.71E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.87E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.34E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-80 (9.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.174 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-100

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-100 (13.2 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.56E+01	0.00E+00	5.12E-02	1.19E+00	1.36E-02	-8.66E+00
GWP-fossil	[kg CO_2-Eq.]	3.50E+01	0.00E+00	5.06E-02	1.19E+00	1.35E-02	-8.69E+00
GWP-biogenic	[kg CO_2-Eq.]	4.73E-01	0.00E+00	9.45E-05	4.13E-05	4.17E-05	4.35E-02
GWP-luluc	[kg CO_2-Eq.]	1.02E-01	0.00E+00	5.31E-04	2.29E-05	4.25E-05	-8.32E-03
ODP	[kg CFC11-Eq.]	5.09E-10	0.00E+00	8.57E-15	8.12E-14	4.38E-14	3.43E-12
AP	[mol H^+-Eq.]	1.21E-01	0.00E+00	1.85E-04	1.18E-04	8.44E-05	-3.04E-02
EP-freshwater	[kg P-Eq.]	1.67E-04	0.00E+00	1.39E-07	1.90E-08	1.91E-08	-5.49E-06
EP-marine	[kg N-Eq.]	2.92E-02	0.00E+00	8.77E-05	2.93E-05	2.06E-05	-4.68E-03
EP-terrestrial	[mol N-Eq.]	3.21E-01	0.00E+00	9.49E-04	5.60E-04	2.24E-04	-4.66E-02
POCP	[kg NMVOC-Eq.]	7.69E-02	0.00E+00	1.69E-04	8.42E-05	6.38E-05	-1.65E-02
ADPE	[kg Sb-Eq.]	1.43E-04	0.00E+00	3.43E-09	9.56E-10	9.19E-10	-1.08E-04
ADPF	[MJ]	4.27E+02	0.00E+00	6.61E-01	1.70E-01	2.21E-01	-9.63E+01
WDP	[m^3 world-Eq deprived]	4.93E+00	0.00E+00	2.36E-04	1.05E-01	1.58E-03	-1.49E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-100 (13.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.44E+02	0.00E+00	4.99E-02	4.68E-02	3.61E-02	-6.33E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.45E+02	0.00E+00	4.99E-02	4.68E-02	3.61E-02	-6.33E+00
PENRE	[MJ]	4.05E+02	0.00E+00	6.61E-01	2.16E+01	2.21E-01	-9.63E+01
PENRM	[MJ]	2.14E+01	0.00E+00	0.00E+00	-2.14E+01	0.00E+00	0.00E+00
PENRT	[MJ]	4.27E+02	0.00E+00	6.61E-01	1.70E-01	2.21E-01	-9.63E+01
SM	[kg]	9.58E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.73E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.48E-01	0.00E+00	2.46E-05	2.45E-03	4.66E-05	-6.20E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-100 (13.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.86E-07	0.00E+00	2.65E-11	9.22E-11	4.78E-11	-2.93E-04
NHWD	[kg]	6.46E+00	0.00E+00	9.23E-05	2.44E-02	6.37E-01	7.08E-01
RWD	[kg]	1.29E-02	0.00E+00	1.25E-06	9.33E-06	3.07E-06	-7.94E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.04E+01	0.00E+00	0.00E+00	1.21E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.09E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.74E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 595 MM: UNI ABS+FLA 150-100 (13.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.175 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-40

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-40 (9.04 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.49E+01	0.00E+00	3.52E-02	1.23E+00	9.18E-03	-6.75E+00
GWP-fossil	[kg CO_2-Eq.]	2.45E+01	0.00E+00	3.47E-02	1.23E+00	9.12E-03	-6.78E+00
GWP-biogenic	[kg CO_2-Eq.]	2.90E-01	0.00E+00	6.49E-05	4.43E-05	2.81E-05	3.26E-02
GWP-luluc	[kg CO_2-Eq.]	6.79E-02	0.00E+00	3.65E-04	2.69E-05	2.87E-05	-7.31E-03
ODP	[kg CFC11-Eq.]	3.33E-10	0.00E+00	5.88E-15	8.79E-14	2.95E-14	1.32E-12
AP	[mol H^+-Eq.]	8.91E-02	0.00E+00	1.27E-04	1.22E-04	5.69E-05	-2.46E-02
EP-freshwater	[kg P-Eq.]	1.07E-04	0.00E+00	9.56E-08	2.24E-08	1.29E-08	-4.68E-06
EP-marine	[kg N-Eq.]	1.97E-02	0.00E+00	6.03E-05	3.12E-05	1.39E-05	-3.78E-03
EP-terrestrial	[mol N-Eq.]	2.16E-01	0.00E+00	6.52E-04	5.80E-04	1.51E-04	-3.80E-02
POCP	[kg NMVOC-Eq.]	5.33E-02	0.00E+00	1.16E-04	8.94E-05	4.30E-05	-1.31E-02
ADPE	[kg Sb-Eq.]	1.38E-04	0.00E+00	2.36E-09	1.04E-09	6.19E-10	-8.99E-05
ADPF	[MJ]	3.07E+02	0.00E+00	4.54E-01	1.84E-01	1.49E-01	-7.64E+01
WDP	[m^3 world-Eq deprived]	3.42E+00	0.00E+00	1.62E-04	1.07E-01	1.07E-03	-1.26E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-40 (9.04 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.87E+02	0.00E+00	3.42E-02	5.07E-02	2.43E-02	-6.25E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.89E+02	0.00E+00	3.42E-02	5.07E-02	2.43E-02	-6.25E+00
PENRE	[MJ]	2.88E+02	0.00E+00	4.54E-01	9.22E+00	1.49E-01	-7.64E+01
PENRM	[MJ]	1.88E+01	0.00E+00	0.00E+00	-9.04E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.07E+02	0.00E+00	4.54E-01	1.84E-01	1.49E-01	-7.64E+01
SM	[kg]	6.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.75E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.10E-01	0.00E+00	1.69E-05	2.52E-03	3.14E-05	-4.51E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-40 (9.04 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.10E-07	0.00E+00	1.82E-11	9.96E-11	3.22E-11	-2.60E-04
NHWD	[kg]	4.13E+00	0.00E+00	6.34E-05	3.01E-02	4.30E-01	5.10E-01
RWD	[kg]	8.53E-03	0.00E+00	8.58E-07	1.00E-05	2.07E-06	-7.64E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.33E+00	0.00E+00	0.00E+00	8.16E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.06E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.69E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-40 (9.04 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.176 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-50

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-50 (9.24 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.54E+01	0.00E+00	3.60E-02	1.23E+00	9.39E-03	-6.86E+00
GWP-fossil	[kg CO_2-Eq.]	2.50E+01	0.00E+00	3.55E-02	1.23E+00	9.34E-03	-6.88E+00
GWP-biogenic	[kg CO_2-Eq.]	2.99E-01	0.00E+00	6.64E-05	4.44E-05	2.88E-05	3.32E-02
GWP-luluc	[kg CO_2-Eq.]	6.95E-02	0.00E+00	3.73E-04	2.70E-05	2.93E-05	-7.36E-03
ODP	[kg CFC11-Eq.]	3.42E-10	0.00E+00	6.01E-15	8.81E-14	3.02E-14	1.43E-12
AP	[mol H^+-Eq.]	9.07E-02	0.00E+00	1.30E-04	1.23E-04	5.83E-05	-2.49E-02
EP-freshwater	[kg P-Eq.]	1.10E-04	0.00E+00	9.77E-08	2.25E-08	1.32E-08	-4.73E-06
EP-marine	[kg N-Eq.]	2.01E-02	0.00E+00	6.16E-05	3.13E-05	1.42E-05	-3.83E-03
EP-terrestrial	[mol N-Eq.]	2.21E-01	0.00E+00	6.66E-04	5.81E-04	1.55E-04	-3.85E-02
POCP	[kg NMVOC-Eq.]	5.45E-02	0.00E+00	1.19E-04	8.95E-05	4.40E-05	-1.33E-02
ADPE	[kg Sb-Eq.]	1.38E-04	0.00E+00	2.41E-09	1.05E-09	6.34E-10	-9.09E-05
ADPF	[MJ]	3.13E+02	0.00E+00	4.64E-01	1.85E-01	1.53E-01	-7.75E+01
WDP	[m^3 world-Eq deprived]	3.49E+00	0.00E+00	1.66E-04	1.07E-01	1.09E-03	-1.28E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-50 (9.24 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.95E+02	0.00E+00	3.50E-02	5.08E-02	2.49E-02	-6.25E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.96E+02	0.00E+00	3.50E-02	5.08E-02	2.49E-02	-6.25E+00
PENRE	[MJ]	2.94E+02	0.00E+00	4.64E-01	1.86E+01	1.53E-01	-7.75E+01
PENRM	[MJ]	1.89E+01	0.00E+00	0.00E+00	-1.84E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.13E+02	0.00E+00	4.64E-01	1.85E-01	1.53E-01	-7.75E+01
SM	[kg]	6.33E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.80E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.14E-01	0.00E+00	1.73E-05	2.52E-03	3.22E-05	-4.61E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-50 (9.24 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.18E-07	0.00E+00	1.86E-11	9.98E-11	3.30E-11	-2.61E-04
NHWD	[kg]	4.23E+00	0.00E+00	6.48E-05	3.02E-02	4.40E-01	5.21E-01
RWD	[kg]	8.73E-03	0.00E+00	8.77E-07	1.00E-05	2.12E-06	-7.66E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.51E+00	0.00E+00	0.00E+00	8.35E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.07E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.69E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-50 (9.24 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.177 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-80

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-80 (10.5 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.90E+01	0.00E+00	4.10E-02	1.37E+00	1.07E-02	-7.46E+00
GWP-fossil	[kg CO_2-Eq.]	2.86E+01	0.00E+00	4.05E-02	1.37E+00	1.07E-02	-7.49E+00
GWP-biogenic	[kg CO_2-Eq.]	3.53E-01	0.00E+00	7.57E-05	4.86E-05	3.29E-05	3.61E-02
GWP-luluc	[kg CO_2-Eq.]	8.02E-02	0.00E+00	4.26E-04	2.87E-05	3.35E-05	-7.66E-03
ODP	[kg CFC11-Eq.]	3.96E-10	0.00E+00	6.86E-15	9.61E-14	3.46E-14	1.56E-12
AP	[mol H^+-Eq.]	1.01E-01	0.00E+00	1.48E-04	1.36E-04	6.66E-05	-2.66E-02
EP-freshwater	[kg P-Eq.]	1.28E-04	0.00E+00	1.11E-07	2.38E-08	1.51E-08	-4.98E-06
EP-marine	[kg N-Eq.]	2.32E-02	0.00E+00	7.03E-05	3.43E-05	1.62E-05	-4.09E-03
EP-terrestrial	[mol N-Eq.]	2.55E-01	0.00E+00	7.60E-04	6.43E-04	1.77E-04	-4.10E-02
POCP	[kg NMVOC-Eq.]	6.23E-02	0.00E+00	1.35E-04	9.83E-05	5.03E-05	-1.43E-02
ADPE	[kg Sb-Eq.]	1.40E-04	0.00E+00	2.75E-09	1.14E-09	7.25E-10	-9.53E-05
ADPF	[MJ]	3.56E+02	0.00E+00	5.30E-01	2.01E-01	1.75E-01	-8.41E+01
WDP	[m^3 world-Eq deprived]	3.99E+00	0.00E+00	1.89E-04	1.19E-01	1.25E-03	-1.34E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-80 (10.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.43E+02	0.00E+00	3.99E-02	5.54E-02	2.85E-02	-6.51E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.44E+02	0.00E+00	3.99E-02	5.54E-02	2.85E-02	-6.51E+00
PENRE	[MJ]	3.35E+02	0.00E+00	5.30E-01	1.07E+01	1.75E-01	-8.41E+01
PENRM	[MJ]	2.16E+01	0.00E+00	0.00E+00	-1.05E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.56E+02	0.00E+00	5.30E-01	2.01E-01	1.75E-01	-8.41E+01
SM	[kg]	7.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.10E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.40E-01	0.00E+00	1.97E-05	2.80E-03	3.68E-05	-5.11E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-80 (10.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.72E-07	0.00E+00	2.13E-11	1.09E-10	3.77E-11	-2.68E-04
NHWD	[kg]	4.94E+00	0.00E+00	7.40E-05	3.16E-02	5.03E-01	5.80E-01
RWD	[kg]	1.01E-02	0.00E+00	1.00E-06	1.10E-05	2.42E-06	-8.44E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	7.73E+00	0.00E+00	0.00E+00	9.54E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.33E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.16E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-80 (10.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.178 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-100

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-100 (11.9 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.25E+01	0.00E+00	4.65E-02	1.48E+00	1.22E-02	-8.32E+00
GWP-fossil	[kg CO_2-Eq.]	3.20E+01	0.00E+00	4.59E-02	1.48E+00	1.21E-02	-8.36E+00
GWP-biogenic	[kg CO_2-Eq.]	4.07E-01	0.00E+00	8.58E-05	5.24E-05	3.73E-05	4.05E-02
GWP-luluc	[kg CO_2-Eq.]	9.10E-02	0.00E+00	4.82E-04	3.04E-05	3.81E-05	-8.16E-03
ODP	[kg CFC11-Eq.]	4.50E-10	0.00E+00	7.77E-15	1.04E-13	3.92E-14	2.05E-12
AP	[mol H^+-Eq.]	1.11E-01	0.00E+00	1.68E-04	1.47E-04	7.56E-05	-2.91E-02
EP-freshwater	[kg P-Eq.]	1.47E-04	0.00E+00	1.26E-07	2.53E-08	1.71E-08	-5.37E-06
EP-marine	[kg N-Eq.]	2.62E-02	0.00E+00	7.96E-05	3.70E-05	1.84E-05	-4.50E-03
EP-terrestrial	[mol N-Eq.]	2.87E-01	0.00E+00	8.61E-04	6.99E-04	2.01E-04	-4.49E-02
POCP	[kg NMVOC-Eq.]	6.99E-02	0.00E+00	1.53E-04	1.06E-04	5.71E-05	-1.58E-02
ADPE	[kg Sb-Eq.]	1.41E-04	0.00E+00	3.11E-09	1.22E-09	8.23E-10	-1.03E-04
ADPF	[MJ]	3.98E+02	0.00E+00	6.00E-01	2.17E-01	1.98E-01	-9.34E+01
WDP	[m^3 world-Eq deprived]	4.47E+00	0.00E+00	2.14E-04	1.30E-01	1.42E-03	-1.44E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-100 (11.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.91E+02	0.00E+00	4.52E-02	5.97E-02	3.23E-02	-6.81E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.92E+02	0.00E+00	4.52E-02	5.97E-02	3.23E-02	-6.81E+00
PENRE	[MJ]	3.74E+02	0.00E+00	6.00E-01	2.34E+01	1.98E-01	-9.34E+01
PENRM	[MJ]	2.37E+01	0.00E+00	0.00E+00	-2.32E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.98E+02	0.00E+00	6.00E-01	2.17E-01	1.98E-01	-9.34E+01
SM	[kg]	8.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.52E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.67E-01	0.00E+00	2.24E-05	3.05E-03	4.17E-05	-5.84E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-100 (11.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.25E-07	0.00E+00	2.41E-11	1.17E-10	4.28E-11	-2.83E-04
NHWD	[kg]	5.62E+00	0.00E+00	8.38E-05	3.32E-02	5.71E-01	6.65E-01
RWD	[kg]	1.14E-02	0.00E+00	1.13E-06	1.18E-05	2.75E-06	-9.17E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	8.92E+00	0.00E+00	0.00E+00	1.08E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.55E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.56E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 785 MM: UNI ABS+FLA 200-100 (11.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.179 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-50

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-50 (8.14 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.29E+01	0.00E+00	3.17E-02	1.40E+00	8.15E-03	-6.30E+00
GWP-fossil	[kg CO_2-Eq.]	2.26E+01	0.00E+00	3.13E-02	1.40E+00	8.10E-03	-6.32E+00
GWP-biogenic	[kg CO_2-Eq.]	2.48E-01	0.00E+00	5.85E-05	5.05E-05	2.49E-05	2.95E-02
GWP-luluc	[kg CO_2-Eq.]	6.03E-02	0.00E+00	3.29E-04	3.13E-05	2.55E-05	-6.98E-03
ODP	[kg CFC11-Eq.]	2.94E-10	0.00E+00	5.30E-15	1.01E-13	2.62E-14	3.04E-13
AP	[mol H^+-Eq.]	8.28E-02	0.00E+00	1.14E-04	1.39E-04	5.05E-05	-2.30E-02
EP-freshwater	[kg P-Eq.]	9.37E-05	0.00E+00	8.61E-08	2.60E-08	1.15E-08	-4.45E-06
EP-marine	[kg N-Eq.]	1.77E-02	0.00E+00	5.43E-05	3.56E-05	1.23E-05	-3.53E-03
EP-terrestrial	[mol N-Eq.]	1.94E-01	0.00E+00	5.87E-04	6.57E-04	1.34E-04	-3.56E-02
POCP	[kg NMVOC-Eq.]	4.87E-02	0.00E+00	1.05E-04	1.02E-04	3.82E-05	-1.22E-02
ADPE	[kg Sb-Eq.]	1.37E-04	0.00E+00	2.12E-09	1.19E-09	5.50E-10	-8.39E-05
ADPF	[MJ]	2.88E+02	0.00E+00	4.09E-01	2.11E-01	1.32E-01	-7.20E+01
WDP	[m^3 world-Eq deprived]	3.12E+00	0.00E+00	1.46E-04	1.21E-01	9.46E-04	-1.19E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-50 (8.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.52E+02	0.00E+00	3.08E-02	5.79E-02	2.16E-02	-6.40E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.53E+02	0.00E+00	3.08E-02	5.79E-02	2.16E-02	-6.40E+00
PENRE	[MJ]	2.68E+02	0.00E+00	4.09E-01	2.00E+01	1.32E-01	-7.20E+01
PENRM	[MJ]	2.03E+01	0.00E+00	0.00E+00	-1.98E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.88E+02	0.00E+00	4.09E-01	2.11E-01	1.32E-01	-7.20E+01
SM	[kg]	5.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.51E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.21E-01	0.00E+00	1.52E-05	2.85E-03	2.79E-05	-4.11E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-50 (8.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.70E-07	0.00E+00	1.64E-11	1.14E-10	2.86E-11	-2.45E-04
NHWD	[kg]	3.59E+00	0.00E+00	5.71E-05	3.52E-02	3.82E-01	4.62E-01
RWD	[kg]	7.56E-03	0.00E+00	7.72E-07	1.14E-05	1.84E-06	-8.25E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.38E+00	0.00E+00	0.00E+00	7.24E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.31E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.14E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-50 (8.14 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.180 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-80

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-80 (11.7 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.23E+01	0.00E+00	4.57E-02	1.54E+00	1.19E-02	-8.21E+00
GWP-fossil	[kg CO_2-Eq.]	3.18E+01	0.00E+00	4.51E-02	1.54E+00	1.19E-02	-8.24E+00
GWP-biogenic	[kg CO_2-Eq.]	3.94E-01	0.00E+00	8.43E-05	5.53E-05	3.66E-05	3.98E-02
GWP-luluc	[kg CO_2-Eq.]	8.92E-02	0.00E+00	4.74E-04	3.33E-05	3.73E-05	-8.00E-03
ODP	[kg CFC11-Eq.]	4.40E-10	0.00E+00	7.64E-15	1.10E-13	3.84E-14	1.86E-12
AP	[mol H^+-Eq.]	1.11E-01	0.00E+00	1.65E-04	1.53E-04	7.41E-05	-2.86E-02
EP-freshwater	[kg P-Eq.]	1.43E-04	0.00E+00	1.24E-07	2.77E-08	1.68E-08	-5.27E-06
EP-marine	[kg N-Eq.]	2.58E-02	0.00E+00	7.83E-05	3.90E-05	1.80E-05	-4.42E-03
EP-terrestrial	[mol N-Eq.]	2.83E-01	0.00E+00	8.47E-04	7.27E-04	1.97E-04	-4.41E-02
POCP	[kg NMVOC-Eq.]	6.92E-02	0.00E+00	1.51E-04	1.12E-04	5.60E-05	-1.55E-02
ADPE	[kg Sb-Eq.]	1.42E-04	0.00E+00	3.06E-09	1.30E-09	8.06E-10	-1.01E-04
ADPF	[MJ]	3.97E+02	0.00E+00	5.90E-01	2.30E-01	1.94E-01	-9.22E+01
WDP	[m^3 world-Eq deprived]	4.42E+00	0.00E+00	2.11E-04	1.35E-01	1.39E-03	-1.41E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-80 (11.7 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.82E+02	0.00E+00	4.45E-02	6.32E-02	3.17E-02	-6.75E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.83E+02	0.00E+00	4.45E-02	6.32E-02	3.17E-02	-6.75E+00
PENRE	[MJ]	3.73E+02	0.00E+00	5.90E-01	2.39E+01	1.94E-01	-9.22E+01
PENRM	[MJ]	2.42E+01	0.00E+00	0.00E+00	-2.37E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.97E+02	0.00E+00	5.90E-01	2.30E-01	1.94E-01	-9.22E+01
SM	[kg]	8.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.47E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.91E-01	0.00E+00	2.20E-05	3.16E-03	4.09E-05	-5.76E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-80 (11.7 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.14E-07	0.00E+00	2.37E-11	1.24E-10	4.20E-11	-2.75E-04
NHWD	[kg]	5.48E+00	0.00E+00	8.24E-05	3.70E-02	5.59E-01	6.56E-01
RWD	[kg]	1.12E-02	0.00E+00	1.11E-06	1.25E-05	2.69E-06	-9.27E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	8.65E+00	0.00E+00	0.00E+00	1.06E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.60E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.65E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-80 (11.7 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.181 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-100

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-100 (12.5 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.44E+01	0.00E+00	4.88E-02	1.65E+00	1.28E-02	-8.65E+00
GWP-fossil	[kg CO_2-Eq.]	3.39E+01	0.00E+00	4.82E-02	1.65E+00	1.27E-02	-8.69E+00
GWP-biogenic	[kg CO_2-Eq.]	4.25E-01	0.00E+00	9.01E-05	5.88E-05	3.91E-05	4.19E-02
GWP-luluc	[kg CO_2-Eq.]	9.55E-02	0.00E+00	5.06E-04	3.48E-05	3.99E-05	-8.27E-03
ODP	[kg CFC11-Eq.]	4.72E-10	0.00E+00	8.16E-15	1.16E-13	4.11E-14	1.91E-12
AP	[mol H^+-Eq.]	1.17E-01	0.00E+00	1.76E-04	1.64E-04	7.92E-05	-2.98E-02
EP-freshwater	[kg P-Eq.]	1.54E-04	0.00E+00	1.33E-07	2.90E-08	1.79E-08	-5.48E-06
EP-marine	[kg N-Eq.]	2.76E-02	0.00E+00	8.36E-05	4.15E-05	1.93E-05	-4.62E-03
EP-terrestrial	[mol N-Eq.]	3.03E-01	0.00E+00	9.04E-04	7.78E-04	2.10E-04	-4.60E-02
POCP	[kg NMVOC-Eq.]	7.38E-02	0.00E+00	1.61E-04	1.19E-04	5.98E-05	-1.62E-02
ADPE	[kg Sb-Eq.]	1.43E-04	0.00E+00	3.27E-09	1.38E-09	8.61E-10	-1.05E-04
ADPF	[MJ]	4.23E+02	0.00E+00	6.30E-01	2.44E-01	2.07E-01	-9.71E+01
WDP	[m^3 world-Eq deprived]	4.71E+00	0.00E+00	2.25E-04	1.44E-01	1.48E-03	-1.47E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-100 (12.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.11E+02	0.00E+00	4.75E-02	6.70E-02	3.38E-02	-7.01E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.12E+02	0.00E+00	4.75E-02	6.70E-02	3.38E-02	-7.01E+00
PENRE	[MJ]	3.97E+02	0.00E+00	6.30E-01	2.58E+01	2.07E-01	-9.71E+01
PENRM	[MJ]	2.60E+01	0.00E+00	0.00E+00	-2.55E+01	0.00E+00	0.00E+00
PENRT	[MJ]	4.23E+02	0.00E+00	6.30E-01	2.44E-01	2.07E-01	-9.71E+01
SM	[kg]	8.77E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.68E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.07E-01	0.00E+00	2.35E-05	3.38E-03	4.37E-05	-6.12E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-100 (12.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.45E-07	0.00E+00	2.53E-11	1.32E-10	4.48E-11	-2.82E-04
NHWD	[kg]	5.88E+00	0.00E+00	8.80E-05	3.84E-02	5.97E-01	6.98E-01
RWD	[kg]	1.20E-02	0.00E+00	1.19E-06	1.33E-05	2.88E-06	-9.89E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.36E+00	0.00E+00	0.00E+00	1.13E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.81E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.02E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 905 MM: UNI ABS+FLA 250-100 (12.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.182 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-50

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-50 (8.48 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.37E+01	0.00E+00	3.30E-02	1.63E+00	8.42E-03	-6.77E+00
GWP-fossil	[kg CO_2-Eq.]	2.34E+01	0.00E+00	3.26E-02	1.63E+00	8.37E-03	-6.79E+00
GWP-biogenic	[kg CO_2-Eq.]	2.47E-01	0.00E+00	6.09E-05	5.93E-05	2.58E-05	3.14E-02
GWP-luluc	[kg CO_2-Eq.]	6.18E-02	0.00E+00	3.42E-04	3.72E-05	2.63E-05	-7.24E-03
ODP	[kg CFC11-Eq.]	2.99E-10	0.00E+00	5.52E-15	1.18E-13	2.71E-14	5.76E-14
AP	[mol H^+-Eq.]	8.49E-02	0.00E+00	1.19E-04	1.62E-04	5.22E-05	-2.42E-02
EP-freshwater	[kg P-Eq.]	9.51E-05	0.00E+00	8.97E-08	3.10E-08	1.18E-08	-4.66E-06
EP-marine	[kg N-Eq.]	1.81E-02	0.00E+00	5.65E-05	4.18E-05	1.27E-05	-3.74E-03
EP-terrestrial	[mol N-Eq.]	1.98E-01	0.00E+00	6.12E-04	7.67E-04	1.39E-04	-3.76E-02
POCP	[kg NMVOC-Eq.]	5.03E-02	0.00E+00	1.09E-04	1.19E-04	3.95E-05	-1.29E-02
ADPE	[kg Sb-Eq.]	1.38E-04	0.00E+00	2.21E-09	1.41E-09	5.68E-10	-8.71E-05
ADPF	[MJ]	3.02E+02	0.00E+00	4.26E-01	2.48E-01	1.37E-01	-7.74E+01
WDP	[m^3 world-Eq deprived]	3.21E+00	0.00E+00	1.52E-04	1.41E-01	9.78E-04	-1.24E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-50 (8.48 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.57E+02	0.00E+00	3.21E-02	6.81E-02	2.23E-02	-6.79E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.58E+02	0.00E+00	3.21E-02	6.81E-02	2.23E-02	-6.79E+00
PENRE	[MJ]	2.80E+02	0.00E+00	4.26E-01	2.26E+01	1.37E-01	-7.74E+01
PENRM	[MJ]	2.28E+01	0.00E+00	0.00E+00	-2.23E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.02E+02	0.00E+00	4.26E-01	2.48E-01	1.37E-01	-7.74E+01
SM	[kg]	5.44E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.72E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.61E-01	0.00E+00	1.59E-05	3.32E-03	2.88E-05	-4.48E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-50 (8.48 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.72E-07	0.00E+00	1.71E-11	1.34E-10	2.96E-11	-2.49E-04
NHWD	[kg]	3.60E+00	0.00E+00	5.95E-05	4.22E-02	3.94E-01	5.05E-01
RWD	[kg]	7.64E-03	0.00E+00	8.04E-07	1.34E-05	1.90E-06	-9.30E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	5.38E+00	0.00E+00	0.00E+00	7.48E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.68E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.79E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-50 (8.48 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.183 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-100

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-100 (12.9 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.53E+01	0.00E+00	5.01E-02	1.89E+00	1.30E-02	-9.12E+00
GWP-fossil	[kg CO_2-Eq.]	3.48E+01	0.00E+00	4.95E-02	1.89E+00	1.29E-02	-9.16E+00
GWP-biogenic	[kg CO_2-Eq.]	4.25E-01	0.00E+00	9.25E-05	6.77E-05	3.99E-05	4.38E-02
GWP-luluc	[kg CO_2-Eq.]	9.70E-02	0.00E+00	5.20E-04	4.08E-05	4.07E-05	-8.51E-03
ODP	[kg CFC11-Eq.]	4.77E-10	0.00E+00	8.38E-15	1.34E-13	4.19E-14	1.65E-12
AP	[mol H^+-Eq.]	1.19E-01	0.00E+00	1.81E-04	1.88E-04	8.08E-05	-3.10E-02
EP-freshwater	[kg P-Eq.]	1.55E-04	0.00E+00	1.36E-07	3.40E-08	1.83E-08	-5.68E-06
EP-marine	[kg N-Eq.]	2.80E-02	0.00E+00	8.59E-05	4.78E-05	1.97E-05	-4.82E-03
EP-terrestrial	[mol N-Eq.]	3.07E-01	0.00E+00	9.29E-04	8.89E-04	2.15E-04	-4.79E-02
POCP	[kg NMVOC-Eq.]	7.54E-02	0.00E+00	1.65E-04	1.37E-04	6.11E-05	-1.70E-02
ADPE	[kg Sb-Eq.]	1.43E-04	0.00E+00	3.36E-09	1.59E-09	8.79E-10	-1.07E-04
ADPF	[MJ]	4.37E+02	0.00E+00	6.47E-01	2.81E-01	2.12E-01	-1.02E+02
WDP	[m^3 world-Eq deprived]	4.80E+00	0.00E+00	2.31E-04	1.65E-01	1.51E-03	-1.51E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-100 (12.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.15E+02	0.00E+00	4.88E-02	7.74E-02	3.45E-02	-7.40E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.16E+02	0.00E+00	4.88E-02	7.74E-02	3.45E-02	-7.40E+00
PENRE	[MJ]	4.08E+02	0.00E+00	6.47E-01	2.84E+01	2.12E-01	-1.02E+02
PENRM	[MJ]	2.86E+01	0.00E+00	0.00E+00	-2.81E+01	0.00E+00	0.00E+00
PENRT	[MJ]	4.37E+02	0.00E+00	6.47E-01	2.81E-01	2.12E-01	-1.02E+02
SM	[kg]	8.81E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.89E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.47E-01	0.00E+00	2.41E-05	3.86E-03	4.46E-05	-6.50E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-100 (12.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.47E-07	0.00E+00	2.60E-11	1.52E-10	4.58E-11	-2.86E-04
NHWD	[kg]	5.89E+00	0.00E+00	9.04E-05	4.55E-02	6.10E-01	7.41E-01
RWD	[kg]	1.20E-02	0.00E+00	1.22E-06	1.53E-05	2.94E-06	-1.10E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.36E+00	0.00E+00	0.00E+00	1.16E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.18E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.68E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1055 MM: UNI ABS+FLA 300-100 (12.9 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.184 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-80

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-80 (14.6 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.08E+01	0.00E+00	5.68E-02	1.91E+00	1.49E-02	-1.08E+01
GWP-fossil	[kg CO_2-Eq.]	4.03E+01	0.00E+00	5.61E-02	1.91E+00	1.48E-02	-1.09E+01
GWP-biogenic	[kg CO_2-Eq.]	4.37E-01	0.00E+00	1.05E-04	6.92E-05	4.55E-05	5.38E-02
GWP-luluc	[kg CO_2-Eq.]	1.07E-01	0.00E+00	5.89E-04	4.28E-05	4.64E-05	-8.72E-03
ODP	[kg CFC11-Eq.]	5.16E-10	0.00E+00	9.50E-15	1.38E-13	4.78E-14	3.96E-12
AP	[mol H^+-Eq.]	1.34E-01	0.00E+00	2.05E-04	1.90E-04	9.21E-05	-3.51E-02
EP-freshwater	[kg P-Eq.]	1.69E-04	0.00E+00	1.54E-07	3.57E-08	2.09E-08	-6.07E-06
EP-marine	[kg N-Eq.]	3.14E-02	0.00E+00	9.73E-05	4.88E-05	2.24E-05	-5.48E-03
EP-terrestrial	[mol N-Eq.]	3.43E-01	0.00E+00	1.05E-03	9.00E-04	2.45E-04	-5.38E-02
POCP	[kg NMVOC-Eq.]	8.61E-02	0.00E+00	1.87E-04	1.39E-04	6.96E-05	-1.97E-02
ADPE	[kg Sb-Eq.]	1.47E-04	0.00E+00	3.81E-09	1.64E-09	1.00E-09	-1.17E-04
ADPF	[MJ]	5.01E+02	0.00E+00	7.34E-01	2.88E-01	2.41E-01	-1.19E+02
WDP	[m^3 world-Eq deprived]	5.44E+00	0.00E+00	2.62E-04	1.66E-01	1.72E-03	-1.62E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-80 (14.6 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.52E+02	0.00E+00	5.53E-02	7.93E-02	3.94E-02	-6.70E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.53E+02	0.00E+00	5.53E-02	7.93E-02	3.94E-02	-6.70E+00
PENRE	[MJ]	4.71E+02	0.00E+00	7.34E-01	2.94E+01	2.41E-01	-1.19E+02
PENRM	[MJ]	2.96E+01	0.00E+00	0.00E+00	-2.91E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.01E+02	0.00E+00	7.34E-01	2.88E-01	2.41E-01	-1.19E+02
SM	[kg]	9.55E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.87E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.02E-01	0.00E+00	2.73E-05	3.90E-03	5.09E-05	-8.22E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-80 (14.6 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.75E-07	0.00E+00	2.94E-11	1.56E-10	5.22E-11	-2.46E-04
NHWD	[kg]	6.28E+00	0.00E+00	1.02E-04	4.83E-02	6.95E-01	3.29E-01
RWD	[kg]	1.27E-02	0.00E+00	1.39E-06	1.56E-05	3.35E-06	-4.31E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.96E+00	0.00E+00	0.00E+00	1.32E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.17E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.67E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-80 (14.6 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.185 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-100

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-100 (15.8 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.26E+01	0.00E+00	6.14E-02	2.09E+00	1.60E-02	-1.22E+01
GWP-fossil	[kg CO_2-Eq.]	4.20E+01	0.00E+00	6.07E-02	2.09E+00	1.59E-02	-1.22E+01
GWP-biogenic	[kg CO_2-Eq.]	4.63E-01	0.00E+00	1.13E-04	7.53E-05	4.91E-05	6.09E-02
GWP-luluc	[kg CO_2-Eq.]	1.14E-01	0.00E+00	6.37E-04	4.60E-05	5.01E-05	-9.61E-03
ODP	[kg CFC11-Eq.]	5.46E-10	0.00E+00	1.03E-14	1.50E-13	5.16E-14	4.74E-12
AP	[mol H^+-Eq.]	1.39E-01	0.00E+00	2.21E-04	2.08E-04	9.95E-05	-3.94E-02
EP-freshwater	[kg P-Eq.]	1.79E-04	0.00E+00	1.67E-07	3.83E-08	2.25E-08	-6.73E-06
EP-marine	[kg N-Eq.]	3.29E-02	0.00E+00	1.05E-04	5.31E-05	2.42E-05	-6.14E-03
EP-terrestrial	[mol N-Eq.]	3.60E-01	0.00E+00	1.14E-03	9.85E-04	2.64E-04	-6.02E-02
POCP	[kg NMVOC-Eq.]	9.00E-02	0.00E+00	2.03E-04	1.52E-04	7.52E-05	-2.21E-02
ADPE	[kg Sb-Eq.]	1.48E-04	0.00E+00	4.12E-09	1.78E-09	1.08E-09	-1.30E-04
ADPF	[MJ]	5.23E+02	0.00E+00	7.93E-01	3.13E-01	2.61E-01	-1.34E+02
WDP	[m^3 world-Eq deprived]	5.67E+00	0.00E+00	2.83E-04	1.82E-01	1.86E-03	-1.80E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-100 (15.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.80E+02	0.00E+00	5.98E-02	8.62E-02	4.25E-02	-7.25E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.81E+02	0.00E+00	5.98E-02	8.62E-02	4.25E-02	-7.25E+00
PENRE	[MJ]	4.91E+02	0.00E+00	7.93E-01	3.12E+01	2.61E-01	-1.34E+02
PENRM	[MJ]	3.14E+01	0.00E+00	0.00E+00	-3.09E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.23E+02	0.00E+00	7.93E-01	3.13E-01	2.61E-01	-1.34E+02
SM	[kg]	1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.53E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.17E-01	0.00E+00	2.95E-05	4.27E-03	5.49E-05	-9.34E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-100 (15.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.03E-07	0.00E+00	3.18E-11	1.69E-10	5.64E-11	-3.13E-04
NHWD	[kg]	6.62E+00	0.00E+00	1.11E-04	5.15E-02	7.51E-01	1.08E+00
RWD	[kg]	1.34E-02	0.00E+00	1.50E-06	1.70E-05	3.62E-06	-1.20E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.05E+01	0.00E+00	0.00E+00	1.43E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.50E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.25E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1175 MM: UNI ABS+FLA 350-100 (15.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.186 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-80

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-80 (15.1 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.22E+01	0.00E+00	5.88E-02	2.14E+00	1.53E-02	-1.15E+01
GWP-fossil	[kg CO_2-Eq.]	4.17E+01	0.00E+00	5.81E-02	2.14E+00	1.52E-02	-1.16E+01
GWP-biogenic	[kg CO_2-Eq.]	4.34E-01	0.00E+00	1.09E-04	7.78E-05	4.68E-05	5.71E-02
GWP-luluc	[kg CO_2-Eq.]	1.09E-01	0.00E+00	6.10E-04	4.86E-05	4.78E-05	-9.01E-03
ODP	[kg CFC11-Eq.]	5.22E-10	0.00E+00	9.83E-15	1.55E-13	4.93E-14	4.04E-12
AP	[mol H^+-Eq.]	1.37E-01	0.00E+00	2.12E-04	2.13E-04	9.49E-05	-3.69E-02
EP-freshwater	[kg P-Eq.]	1.71E-04	0.00E+00	1.60E-07	4.05E-08	2.15E-08	-6.33E-06
EP-marine	[kg N-Eq.]	3.21E-02	0.00E+00	1.01E-04	5.48E-05	2.31E-05	-5.78E-03
EP-terrestrial	[mol N-Eq.]	3.51E-01	0.00E+00	1.09E-03	1.01E-03	2.52E-04	-5.66E-02
POCP	[kg NMVOC-Eq.]	8.86E-02	0.00E+00	1.94E-04	1.57E-04	7.17E-05	-2.08E-02
ADPE	[kg Sb-Eq.]	1.48E-04	0.00E+00	3.94E-09	1.84E-09	1.03E-09	-1.22E-04
ADPF	[MJ]	5.21E+02	0.00E+00	7.59E-01	3.25E-01	2.49E-01	-1.27E+02
WDP	[m^3 world-Eq deprived]	5.58E+00	0.00E+00	2.71E-04	1.86E-01	1.78E-03	-1.69E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-80 (15.1 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.58E+02	0.00E+00	5.72E-02	8.93E-02	4.06E-02	-7.00E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.60E+02	0.00E+00	5.72E-02	8.93E-02	4.06E-02	-7.00E+00
PENRE	[MJ]	4.89E+02	0.00E+00	7.59E-01	3.20E+01	2.49E-01	-1.27E+02
PENRM	[MJ]	3.22E+01	0.00E+00	0.00E+00	-3.17E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.21E+02	0.00E+00	7.59E-01	3.25E-01	2.49E-01	-1.27E+02
SM	[kg]	9.61E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.22E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.75E-01	0.00E+00	2.83E-05	4.36E-03	5.24E-05	-8.83E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-80 (15.1 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.77E-07	0.00E+00	3.05E-11	1.75E-10	5.37E-11	-2.90E-04
NHWD	[kg]	6.30E+00	0.00E+00	1.06E-04	5.51E-02	7.16E-01	1.02E+00
RWD	[kg]	1.28E-02	0.00E+00	1.43E-06	1.76E-05	3.45E-06	-1.20E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.96E+00	0.00E+00	0.00E+00	1.36E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.53E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.31E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-80 (15.1 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.187 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-100

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-100 (16.3 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.40E+01	0.00E+00	6.34E-02	2.32E+00	1.65E-02	-1.29E+01
GWP-fossil	[kg CO_2-Eq.]	4.34E+01	0.00E+00	6.26E-02	2.32E+00	1.64E-02	-1.29E+01
GWP-biogenic	[kg CO_2-Eq.]	4.61E-01	0.00E+00	1.17E-04	8.40E-05	5.05E-05	6.41E-02
GWP-luluc	[kg CO_2-Eq.]	1.16E-01	0.00E+00	6.58E-04	5.19E-05	5.15E-05	-9.88E-03
ODP	[kg CFC11-Eq.]	5.53E-10	0.00E+00	1.06E-14	1.67E-13	5.31E-14	4.82E-12
AP	[mol H^+-Eq.]	1.43E-01	0.00E+00	2.29E-04	2.31E-04	1.02E-04	-4.11E-02
EP-freshwater	[kg P-Eq.]	1.81E-04	0.00E+00	1.72E-07	4.32E-08	2.32E-08	-6.99E-06
EP-marine	[kg N-Eq.]	3.36E-02	0.00E+00	1.09E-04	5.92E-05	2.49E-05	-6.43E-03
EP-terrestrial	[mol N-Eq.]	3.67E-01	0.00E+00	1.17E-03	1.09E-03	2.72E-04	-6.29E-02
POCP	[kg NMVOC-Eq.]	9.25E-02	0.00E+00	2.09E-04	1.69E-04	7.73E-05	-2.32E-02
ADPE	[kg Sb-Eq.]	1.49E-04	0.00E+00	4.25E-09	1.99E-09	1.11E-09	-1.34E-04
ADPF	[MJ]	5.43E+02	0.00E+00	8.19E-01	3.50E-01	2.68E-01	-1.42E+02
WDP	[m^3 world-Eq deprived]	5.82E+00	0.00E+00	2.92E-04	2.02E-01	1.92E-03	-1.86E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-100 (16.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.86E+02	0.00E+00	6.17E-02	9.63E-02	4.37E-02	-7.52E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.88E+02	0.00E+00	6.17E-02	9.63E-02	4.37E-02	-7.52E+00
PENRE	[MJ]	5.09E+02	0.00E+00	8.19E-01	3.38E+01	2.68E-01	-1.42E+02
PENRM	[MJ]	3.40E+01	0.00E+00	0.00E+00	-3.35E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.43E+02	0.00E+00	8.19E-01	3.50E-01	2.68E-01	-1.42E+02
SM	[kg]	1.01E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.88E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.90E-01	0.00E+00	3.05E-05	4.74E-03	5.65E-05	-9.95E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-100 (16.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.05E-07	0.00E+00	3.28E-11	1.89E-10	5.79E-11	-3.17E-04
NHWD	[kg]	6.64E+00	0.00E+00	1.14E-04	5.85E-02	7.72E-01	1.15E+00
RWD	[kg]	1.35E-02	0.00E+00	1.55E-06	1.90E-05	3.72E-06	-1.30E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.05E+01	0.00E+00	0.00E+00	1.47E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.85E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.89E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-100 (16.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.188 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-150

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-150 (26.7 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.22E+01	0.00E+00	1.04E-01	3.51E+00	2.71E-02	-2.03E+01
GWP-fossil	[kg CO_2-Eq.]	7.12E+01	0.00E+00	1.03E-01	3.51E+00	2.70E-02	-2.04E+01
GWP-biogenic	[kg CO_2-Eq.]	7.87E-01	0.00E+00	1.92E-04	1.27E-04	8.30E-05	1.02E-01
GWP-luluc	[kg CO_2-Eq.]	1.92E-01	0.00E+00	1.08E-03	7.85E-05	8.47E-05	-1.53E-02
ODP	[kg CFC11-Eq.]	9.25E-10	0.00E+00	1.74E-14	2.52E-13	8.73E-14	8.32E-12
AP	[mol H^+-Eq.]	2.32E-01	0.00E+00	3.74E-04	3.48E-04	1.68E-04	-6.45E-02
EP-freshwater	[kg P-Eq.]	3.04E-04	0.00E+00	2.82E-07	6.54E-08	3.81E-08	-1.09E-05
EP-marine	[kg N-Eq.]	5.57E-02	0.00E+00	1.78E-04	8.94E-05	4.10E-05	-1.01E-02
EP-terrestrial	[mol N-Eq.]	6.09E-01	0.00E+00	1.92E-03	1.65E-03	4.47E-04	-9.85E-02
POCP	[kg NMVOC-Eq.]	1.52E-01	0.00E+00	3.42E-04	2.56E-04	1.27E-04	-3.65E-02
ADPE	[kg Sb-Eq.]	2.26E-04	0.00E+00	6.96E-09	3.00E-09	1.83E-09	-2.10E-04
ADPF	[MJ]	8.84E+02	0.00E+00	1.34E+00	5.29E-01	4.41E-01	-2.23E+02
WDP	[m^3 world-Eq deprived]	9.58E+00	0.00E+00	4.78E-04	3.05E-01	3.15E-03	-2.90E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-150 (26.7 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.14E+02	0.00E+00	1.01E-01	1.45E-01	7.19E-02	-1.13E+01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.15E+02	0.00E+00	1.01E-01	1.45E-01	7.19E-02	-1.13E+01
PENRE	[MJ]	8.32E+02	0.00E+00	1.34E+00	5.25E+01	4.41E-01	-2.23E+02
PENRM	[MJ]	5.24E+01	0.00E+00	0.00E+00	-5.19E+01	0.00E+00	0.00E+00
PENRT	[MJ]	8.84E+02	0.00E+00	1.34E+00	5.29E-01	4.41E-01	-2.23E+02
SM	[kg]	1.70E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.33E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.23E+00	0.00E+00	4.99E-05	7.15E-03	9.29E-05	-1.58E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-150 (26.7 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.51E-07	0.00E+00	5.38E-11	2.86E-10	9.53E-11	-4.88E-04
NHWD	[kg]	1.12E+01	0.00E+00	1.87E-04	8.86E-02	1.27E+00	1.83E+00
RWD	[kg]	2.26E-02	0.00E+00	2.53E-06	2.87E-05	6.11E-06	-1.97E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.80E+01	0.00E+00	0.00E+00	2.41E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.81E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.04E+01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1325 MM: UNI ABS+FLA 400-150 (26.7 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.189 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-80

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-80 (15.6 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.36E+01	0.00E+00	6.09E-02	2.38E+00	1.58E-02	-1.23E+01
GWP-fossil	[kg CO_2-Eq.]	4.31E+01	0.00E+00	6.01E-02	2.38E+00	1.57E-02	-1.23E+01
GWP-biogenic	[kg CO_2-Eq.]	4.31E-01	0.00E+00	1.12E-04	8.67E-05	4.83E-05	6.06E-02
GWP-luluc	[kg CO_2-Eq.]	1.11E-01	0.00E+00	6.31E-04	5.47E-05	4.93E-05	-9.30E-03
ODP	[kg CFC11-Eq.]	5.29E-10	0.00E+00	1.02E-14	1.73E-13	5.08E-14	4.15E-12
AP	[mol H^+-Eq.]	1.41E-01	0.00E+00	2.19E-04	2.36E-04	9.78E-05	-3.88E-02
EP-freshwater	[kg P-Eq.]	1.73E-04	0.00E+00	1.65E-07	4.56E-08	2.22E-08	-6.61E-06
EP-marine	[kg N-Eq.]	3.28E-02	0.00E+00	1.04E-04	6.11E-05	2.38E-05	-6.09E-03
EP-terrestrial	[mol N-Eq.]	3.58E-01	0.00E+00	1.13E-03	1.12E-03	2.60E-04	-5.95E-02
POCP	[kg NMVOC-Eq.]	9.13E-02	0.00E+00	2.01E-04	1.74E-04	7.39E-05	-2.20E-02
ADPE	[kg Sb-Eq.]	1.49E-04	0.00E+00	4.08E-09	2.06E-09	1.06E-09	-1.26E-04
ADPF	[MJ]	5.42E+02	0.00E+00	7.86E-01	3.62E-01	2.56E-01	-1.35E+02
WDP	[m^3 world-Eq deprived]	5.73E+00	0.00E+00	2.81E-04	2.06E-01	1.83E-03	-1.75E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-80 (15.6 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.65E+02	0.00E+00	5.93E-02	9.96E-02	4.18E-02	-7.29E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.66E+02	0.00E+00	5.93E-02	9.96E-02	4.18E-02	-7.29E+00
PENRE	[MJ]	5.07E+02	0.00E+00	7.86E-01	3.47E+01	2.56E-01	-1.35E+02
PENRM	[MJ]	3.49E+01	0.00E+00	0.00E+00	-3.43E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.42E+02	0.00E+00	7.86E-01	3.62E-01	2.56E-01	-1.35E+02
SM	[kg]	9.68E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.59E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.50E-01	0.00E+00	2.93E-05	4.84E-03	5.40E-05	-9.47E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-80 (15.6 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.80E-07	0.00E+00	3.15E-11	1.96E-10	5.54E-11	-2.94E-04
NHWD	[kg]	6.32E+00	0.00E+00	1.10E-04	6.22E-02	7.38E-01	1.09E+00
RWD	[kg]	1.29E-02	0.00E+00	1.48E-06	1.96E-05	3.56E-06	-1.30E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.96E+00	0.00E+00	0.00E+00	1.40E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.89E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.96E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-80 (15.6 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.190 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-100

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-100 (16.8 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.54E+01	0.00E+00	6.55E-02	2.56E+00	1.70E-02	-1.36E+01
GWP-fossil	[kg CO_2-Eq.]	4.48E+01	0.00E+00	6.47E-02	2.56E+00	1.69E-02	-1.37E+01
GWP-biogenic	[kg CO_2-Eq.]	4.58E-01	0.00E+00	1.21E-04	9.30E-05	5.19E-05	6.76E-02
GWP-luluc	[kg CO_2-Eq.]	1.18E-01	0.00E+00	6.79E-04	5.80E-05	5.30E-05	-1.02E-02
ODP	[kg CFC11-Eq.]	5.60E-10	0.00E+00	1.09E-14	1.85E-13	5.46E-14	4.91E-12
AP	[mol H^+-Eq.]	1.46E-01	0.00E+00	2.36E-04	2.54E-04	1.05E-04	-4.29E-02
EP-freshwater	[kg P-Eq.]	1.83E-04	0.00E+00	1.78E-07	4.84E-08	2.38E-08	-7.26E-06
EP-marine	[kg N-Eq.]	3.43E-02	0.00E+00	1.12E-04	6.55E-05	2.56E-05	-6.73E-03
EP-terrestrial	[mol N-Eq.]	3.75E-01	0.00E+00	1.21E-03	1.21E-03	2.80E-04	-6.57E-02
POCP	[kg NMVOC-Eq.]	9.52E-02	0.00E+00	2.16E-04	1.87E-04	7.95E-05	-2.44E-02
ADPE	[kg Sb-Eq.]	1.50E-04	0.00E+00	4.39E-09	2.20E-09	1.14E-09	-1.39E-04
ADPF	[MJ]	5.63E+02	0.00E+00	8.45E-01	3.88E-01	2.76E-01	-1.50E+02
WDP	[m^3 world-Eq deprived]	5.97E+00	0.00E+00	3.02E-04	2.22E-01	1.97E-03	-1.93E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-100 (16.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.93E+02	0.00E+00	6.37E-02	1.07E-01	4.50E-02	-7.82E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.94E+02	0.00E+00	6.37E-02	1.07E-01	4.50E-02	-7.82E+00
PENRE	[MJ]	5.27E+02	0.00E+00	8.45E-01	3.65E+01	2.76E-01	-1.50E+02
PENRM	[MJ]	3.66E+01	0.00E+00	0.00E+00	-3.61E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.63E+02	0.00E+00	8.45E-01	3.88E-01	2.76E-01	-1.50E+02
SM	[kg]	1.02E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.24E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	8.66E-01	0.00E+00	3.15E-05	5.22E-03	5.81E-05	-1.06E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-100 (16.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.08E-07	0.00E+00	3.39E-11	2.10E-10	5.96E-11	-3.21E-04
NHWD	[kg]	6.65E+00	0.00E+00	1.18E-04	6.57E-02	7.94E-01	1.22E+00
RWD	[kg]	1.36E-02	0.00E+00	1.60E-06	2.10E-05	3.82E-06	-1.41E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.05E+01	0.00E+00	0.00E+00	1.51E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.22E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.55E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2- optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-100 (16.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.191 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-150

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-150 (27.5 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.43E+01	0.00E+00	1.07E-01	3.87E+00	2.78E-02	-2.14E+01
GWP-fossil	[kg CO_2-Eq.]	7.33E+01	0.00E+00	1.06E-01	3.86E+00	2.77E-02	-2.15E+01
GWP-biogenic	[kg CO_2-Eq.]	7.83E-01	0.00E+00	1.97E-04	1.40E-04	8.52E-05	1.07E-01
GWP-luluc	[kg CO_2-Eq.]	1.95E-01	0.00E+00	1.11E-03	8.77E-05	8.69E-05	-1.57E-02
ODP	[kg CFC11-Eq.]	9.35E-10	0.00E+00	1.79E-14	2.80E-13	8.95E-14	8.45E-12
AP	[mol H^+-Eq.]	2.37E-01	0.00E+00	3.85E-04	3.84E-04	1.73E-04	-6.72E-02
EP-freshwater	[kg P-Eq.]	3.07E-04	0.00E+00	2.90E-07	7.30E-08	3.91E-08	-1.13E-05
EP-marine	[kg N-Eq.]	5.68E-02	0.00E+00	1.83E-04	9.89E-05	4.20E-05	-1.05E-02
EP-terrestrial	[mol N-Eq.]	6.20E-01	0.00E+00	1.98E-03	1.82E-03	4.58E-04	-1.03E-01
POCP	[kg NMVOC-Eq.]	1.56E-01	0.00E+00	3.53E-04	2.82E-04	1.30E-04	-3.83E-02
ADPE	[kg Sb-Eq.]	2.28E-04	0.00E+00	7.16E-09	3.33E-09	1.88E-09	-2.17E-04
ADPF	[MJ]	9.15E+02	0.00E+00	1.38E+00	5.86E-01	4.52E-01	-2.35E+02
WDP	[m^3 world-Eq deprived]	9.80E+00	0.00E+00	4.93E-04	3.36E-01	3.23E-03	-3.00E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-150 (27.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.24E+02	0.00E+00	1.04E-01	1.61E-01	7.37E-02	-1.17E+01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.25E+02	0.00E+00	1.04E-01	1.61E-01	7.37E-02	-1.17E+01
PENRE	[MJ]	8.59E+02	0.00E+00	1.38E+00	5.65E+01	4.52E-01	-2.35E+02
PENRM	[MJ]	5.64E+01	0.00E+00	0.00E+00	-5.59E+01	0.00E+00	0.00E+00
PENRT	[MJ]	9.15E+02	0.00E+00	1.38E+00	5.86E-01	4.52E-01	-2.35E+02
SM	[kg]	1.71E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.87E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.34E+00	0.00E+00	5.14E-05	7.87E-03	9.52E-05	-1.68E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-150 (27.5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.55E-07	0.00E+00	5.54E-11	3.16E-10	9.77E-11	-4.94E-04
NHWD	[kg]	1.12E+01	0.00E+00	1.93E-04	9.93E-02	1.30E+00	1.94E+00
RWD	[kg]	2.27E-02	0.00E+00	2.60E-06	3.17E-05	6.27E-06	-2.14E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.80E+01	0.00E+00	0.00E+00	2.47E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.37E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.14E+01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1480 MM: UNI ABS+FLA 450-150 (27,5 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.192 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-80

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-80 (16.2 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.50E+01	0.00E+00	6.28E-02	2.61E+00	1.62E-02	-1.30E+01
GWP-fossil	[kg CO_2-Eq.]	4.45E+01	0.00E+00	6.21E-02	2.61E+00	1.61E-02	-1.30E+01
GWP-biogenic	[kg CO_2-Eq.]	4.29E-01	0.00E+00	1.16E-04	9.52E-05	4.97E-05	6.39E-02
GWP-luluc	[kg CO_2-Eq.]	1.13E-01	0.00E+00	6.52E-04	6.05E-05	5.07E-05	-9.59E-03
ODP	[kg CFC11-Eq.]	5.36E-10	0.00E+00	1.05E-14	1.90E-13	5.22E-14	4.24E-12
AP	[mol H^+-Eq.]	1.44E-01	0.00E+00	2.27E-04	2.58E-04	1.01E-04	-4.06E-02
EP-freshwater	[kg P-Eq.]	1.75E-04	0.00E+00	1.71E-07	5.04E-08	2.28E-08	-6.87E-06
EP-marine	[kg N-Eq.]	3.35E-02	0.00E+00	1.08E-04	6.71E-05	2.45E-05	-6.38E-03
EP-terrestrial	[mol N-Eq.]	3.65E-01	0.00E+00	1.16E-03	1.23E-03	2.67E-04	-6.22E-02
POCP	[kg NMVOC-Eq.]	9.38E-02	0.00E+00	2.07E-04	1.91E-04	7.61E-05	-2.31E-02
ADPE	[kg Sb-Eq.]	1.50E-04	0.00E+00	4.21E-09	2.26E-09	1.09E-09	-1.31E-04
ADPF	[MJ]	5.62E+02	0.00E+00	8.12E-01	3.98E-01	2.64E-01	-1.43E+02
WDP	[m^3 world-Eq deprived]	5.88E+00	0.00E+00	2.90E-04	2.26E-01	1.88E-03	-1.82E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-80 (16.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.71E+02	0.00E+00	6.12E-02	1.09E-01	4.30E-02	-7.58E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.73E+02	0.00E+00	6.12E-02	1.09E-01	4.30E-02	-7.58E+00
PENRE	[MJ]	5.24E+02	0.00E+00	8.12E-01	3.73E+01	2.64E-01	-1.43E+02
PENRM	[MJ]	3.74E+01	0.00E+00	0.00E+00	-3.69E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.62E+02	0.00E+00	8.12E-01	3.98E-01	2.64E-01	-1.43E+02
SM	[kg]	9.74E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.94E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.23E-01	0.00E+00	3.02E-05	5.30E-03	5.55E-05	-1.01E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-80 (16.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.82E-07	0.00E+00	3.26E-11	2.15E-10	5.70E-11	-2.99E-04
NHWD	[kg]	6.33E+00	0.00E+00	1.13E-04	6.90E-02	7.60E-01	1.16E+00
RWD	[kg]	1.30E-02	0.00E+00	1.53E-06	2.15E-05	3.66E-06	-1.40E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.96E+00	0.00E+00	0.00E+00	1.44E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.25E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.59E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-80 (16.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.193 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-100

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-100 (17.3 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.68E+01	0.00E+00	6.74E-02	2.80E+00	1.74E-02	-1.43E+01
GWP-fossil	[kg CO_2-Eq.]	4.62E+01	0.00E+00	6.66E-02	2.80E+00	1.73E-02	-1.44E+01
GWP-biogenic	[kg CO_2-Eq.]	4.55E-01	0.00E+00	1.24E-04	1.02E-04	5.33E-05	7.09E-02
GWP-luluc	[kg CO_2-Eq.]	1.20E-01	0.00E+00	7.00E-04	6.41E-05	5.44E-05	-1.05E-02
ODP	[kg CFC11-Eq.]	5.67E-10	0.00E+00	1.13E-14	2.03E-13	5.60E-14	4.97E-12
AP	[mol H^+-Eq.]	1.50E-01	0.00E+00	2.43E-04	2.78E-04	1.08E-04	-4.47E-02
EP-freshwater	[kg P-Eq.]	1.85E-04	0.00E+00	1.83E-07	5.34E-08	2.45E-08	-7.52E-06
EP-marine	[kg N-Eq.]	3.50E-02	0.00E+00	1.16E-04	7.18E-05	2.63E-05	-7.03E-03
EP-terrestrial	[mol N-Eq.]	3.82E-01	0.00E+00	1.25E-03	1.32E-03	2.87E-04	-6.85E-02
POCP	[kg NMVOC-Eq.]	9.77E-02	0.00E+00	2.22E-04	2.05E-04	8.16E-05	-2.55E-02
ADPE	[kg Sb-Eq.]	1.51E-04	0.00E+00	4.52E-09	2.42E-09	1.18E-09	-1.43E-04
ADPF	[MJ]	5.83E+02	0.00E+00	8.71E-01	4.26E-01	2.83E-01	-1.58E+02
WDP	[m^3 world-Eq deprived]	6.11E+00	0.00E+00	3.11E-04	2.43E-01	2.02E-03	-1.99E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-100 (17.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.00E+02	0.00E+00	6.57E-02	1.17E-01	4.62E-02	-8.13E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.01E+02	0.00E+00	6.57E-02	1.17E-01	4.62E-02	-8.13E+00
PENRE	[MJ]	5.44E+02	0.00E+00	8.71E-01	3.91E+01	2.83E-01	-1.58E+02
PENRM	[MJ]	3.92E+01	0.00E+00	0.00E+00	-3.87E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.83E+02	0.00E+00	8.71E-01	4.26E-01	2.83E-01	-1.58E+02
SM	[kg]	1.02E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.59E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.39E-01	0.00E+00	3.24E-05	5.70E-03	5.96E-05	-1.12E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-100 (17.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.10E-07	0.00E+00	3.49E-11	2.30E-10	6.12E-11	-3.25E-04
NHWD	[kg]	6.67E+00	0.00E+00	1.22E-04	7.28E-02	8.15E-01	1.29E+00
RWD	[kg]	1.36E-02	0.00E+00	1.64E-06	2.30E-05	3.93E-06	-1.52E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.05E+01	0.00E+00	0.00E+00	1.55E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.59E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.22E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500-100 (17.3 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.194 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500/532-150

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500/532-150 (28.8 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.73E+01	0.00E+00	1.12E-01	4.25E+00	2.91E-02	-2.31E+01
GWP-fossil	[kg CO_2-Eq.]	7.63E+01	0.00E+00	1.11E-01	4.25E+00	2.90E-02	-2.32E+01
GWP-biogenic	[kg CO_2-Eq.]	7.94E-01	0.00E+00	2.07E-04	1.55E-04	8.92E-05	1.16E-01
GWP-luluc	[kg CO_2-Eq.]	2.02E-01	0.00E+00	1.16E-03	9.74E-05	9.10E-05	-1.65E-02
ODP	[kg CFC11-Eq.]	9.62E-10	0.00E+00	1.88E-14	3.09E-13	9.38E-14	9.19E-12
AP	[mol H^+-Eq.]	2.45E-01	0.00E+00	4.05E-04	4.22E-04	1.81E-04	-7.19E-02
EP-freshwater	[kg P-Eq.]	3.15E-04	0.00E+00	3.05E-07	8.12E-08	4.09E-08	-1.19E-05
EP-marine	[kg N-Eq.]	5.86E-02	0.00E+00	1.92E-04	1.09E-04	4.40E-05	-1.13E-02
EP-terrestrial	[mol N-Eq.]	6.40E-01	0.00E+00	2.08E-03	2.00E-03	4.80E-04	-1.10E-01
POCP	[kg NMVOC-Eq.]	1.62E-01	0.00E+00	3.70E-04	3.11E-04	1.37E-04	-4.11E-02
ADPE	[kg Sb-Eq.]	2.30E-04	0.00E+00	7.52E-09	3.67E-09	1.97E-09	-2.29E-04
ADPF	[MJ]	9.55E+02	0.00E+00	1.45E+00	6.46E-01	4.74E-01	-2.53E+02
WDP	[m^3 world-Eq deprived]	1.01E+01	0.00E+00	5.17E-04	3.69E-01	3.38E-03	-3.18E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500/532-150 (28.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.49E+02	0.00E+00	1.09E-01	1.78E-01	7.72E-02	-1.22E+01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.50E+02	0.00E+00	1.09E-01	1.78E-01	7.72E-02	-1.22E+01
PENRE	[MJ]	8.95E+02	0.00E+00	1.45E+00	6.06E+01	4.74E-01	-2.53E+02
PENRM	[MJ]	6.05E+01	0.00E+00	0.00E+00	-6.00E+01	0.00E+00	0.00E+00
PENRT	[MJ]	9.55E+02	0.00E+00	1.45E+00	6.46E-01	4.74E-01	-2.53E+02
SM	[kg]	1.75E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E+01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.46E+00	0.00E+00	5.40E-05	8.65E-03	9.98E-05	-1.83E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500/532-150 (28.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.74E-07	0.00E+00	5.81E-11	3.49E-10	1.02E-10	-5.12E-04
NHWD	[kg]	1.14E+01	0.00E+00	2.02E-04	1.11E-01	1.36E+00	2.11E+00
RWD	[kg]	2.32E-02	0.00E+00	2.74E-06	3.50E-05	6.57E-06	-2.32E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.83E+01	0.00E+00	0.00E+00	2.59E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.97E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.25E+01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1630 MM: UNI ABS+FLA 500/532-150 (28.8 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.195 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-80

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-80 (17.2 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.79E+01	0.00E+00	6.71E-02	3.09E+00	1.72E-02	-1.45E+01
GWP-fossil	[kg CO_2-Eq.]	4.74E+01	0.00E+00	6.62E-02	3.09E+00	1.71E-02	-1.45E+01
GWP-biogenic	[kg CO_2-Eq.]	4.23E-01	0.00E+00	1.24E-04	1.13E-04	5.26E-05	7.09E-02
GWP-luluc	[kg CO_2-Eq.]	1.18E-01	0.00E+00	6.96E-04	7.28E-05	5.37E-05	-1.02E-02
ODP	[kg CFC11-Eq.]	5.50E-10	0.00E+00	1.12E-14	2.27E-13	5.53E-14	4.43E-12
AP	[mol H^+-Eq.]	1.52E-01	0.00E+00	2.42E-04	3.06E-04	1.07E-04	-4.44E-02
EP-freshwater	[kg P-Eq.]	1.79E-04	0.00E+00	1.82E-07	6.07E-08	2.41E-08	-7.43E-06
EP-marine	[kg N-Eq.]	3.49E-02	0.00E+00	1.15E-04	7.98E-05	2.60E-05	-7.01E-03
EP-terrestrial	[mol N-Eq.]	3.81E-01	0.00E+00	1.24E-03	1.45E-03	2.83E-04	-6.81E-02
POCP	[kg NMVOC-Eq.]	9.91E-02	0.00E+00	2.21E-04	2.28E-04	8.05E-05	-2.55E-02
ADPE	[kg Sb-Eq.]	1.52E-04	0.00E+00	4.49E-09	2.70E-09	1.16E-09	-1.40E-04
ADPF	[MJ]	6.03E+02	0.00E+00	8.66E-01	4.75E-01	2.79E-01	-1.59E+02
WDP	[m^3 world-Eq deprived]	6.18E+00	0.00E+00	3.09E-04	2.67E-01	2.00E-03	-1.95E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-80 (17.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4.85E+02	0.00E+00	6.53E-02	1.31E-01	4.55E-02	-8.20E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	4.86E+02	0.00E+00	6.53E-02	1.31E-01	4.55E-02	-8.20E+00
PENRE	[MJ]	5.61E+02	0.00E+00	8.66E-01	4.28E+01	2.79E-01	-1.59E+02
PENRM	[MJ]	4.28E+01	0.00E+00	0.00E+00	-4.23E+01	0.00E+00	0.00E+00
PENRT	[MJ]	6.03E+02	0.00E+00	8.66E-01	4.75E-01	2.79E-01	-1.59E+02
SM	[kg]	9.88E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.68E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.08E+00	0.00E+00	3.23E-05	6.27E-03	5.88E-05	-1.14E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-80 (17.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	4.88E-07	0.00E+00	3.47E-11	2.56E-10	6.03E-11	-3.08E-04
NHWD	[kg]	6.37E+00	0.00E+00	1.21E-04	8.35E-02	8.04E-01	1.32E+00
RWD	[kg]	1.32E-02	0.00E+00	1.63E-06	2.56E-05	3.87E-06	-1.62E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	9.96E+00	0.00E+00	0.00E+00	1.53E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.94E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-80 (17.2 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.196 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-100

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-100 (18.4 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	4.95E+01	0.00E+00	7.16E-02	3.31E+00	1.84E-02	-1.59E+01
GWP-fossil	[kg CO_2-Eq.]	4.89E+01	0.00E+00	7.08E-02	3.31E+00	1.82E-02	-1.60E+01
GWP-biogenic	[kg CO_2-Eq.]	4.47E-01	0.00E+00	1.32E-04	1.21E-04	5.62E-05	7.83E-02
GWP-luluc	[kg CO_2-Eq.]	1.24E-01	0.00E+00	7.43E-04	7.69E-05	5.74E-05	-1.11E-02
ODP	[kg CFC11-Eq.]	5.78E-10	0.00E+00	1.20E-14	2.41E-13	5.91E-14	5.19E-12
AP	[mol H^+-Eq.]	1.56E-01	0.00E+00	2.58E-04	3.28E-04	1.14E-04	-4.88E-02
EP-freshwater	[kg P-Eq.]	1.89E-04	0.00E+00	1.95E-07	6.41E-08	2.58E-08	-8.12E-06
EP-marine	[kg N-Eq.]	3.63E-02	0.00E+00	1.23E-04	8.52E-05	2.77E-05	-7.70E-03
EP-terrestrial	[mol N-Eq.]	3.95E-01	0.00E+00	1.33E-03	1.56E-03	3.03E-04	-7.47E-02
POCP	[kg NMVOC-Eq.]	1.03E-01	0.00E+00	2.36E-04	2.43E-04	8.61E-05	-2.81E-02
ADPE	[kg Sb-Eq.]	1.53E-04	0.00E+00	4.80E-09	2.88E-09	1.24E-09	-1.54E-04
ADPF	[MJ]	6.23E+02	0.00E+00	9.25E-01	5.06E-01	2.99E-01	-1.75E+02
WDP	[m^3 world-Eq deprived]	6.38E+00	0.00E+00	3.30E-04	2.86E-01	2.13E-03	-2.14E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-100 (18.4 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5.11E+02	0.00E+00	6.97E-02	1.39E-01	4.87E-02	-8.78E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.12E+02	0.00E+00	6.97E-02	1.39E-01	4.87E-02	-8.78E+00
PENRE	[MJ]	5.78E+02	0.00E+00	9.25E-01	4.45E+01	2.99E-01	-1.75E+02
PENRM	[MJ]	4.45E+01	0.00E+00	0.00E+00	-4.40E+01	0.00E+00	0.00E+00
PENRT	[MJ]	6.23E+02	0.00E+00	9.25E-01	5.06E-01	2.99E-01	-1.75E+02
SM	[kg]	1.03E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.38E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.09E+00	0.00E+00	3.45E-05	6.72E-03	6.29E-05	-1.26E+00

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-100 (18.4 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5.13E-07	0.00E+00	3.71E-11	2.73E-10	6.45E-11	-3.36E-04
NHWD	[kg]	6.66E+00	0.00E+00	1.29E-04	8.79E-02	8.60E-01	1.45E+00
RWD	[kg]	1.37E-02	0.00E+00	1.75E-06	2.73E-05	4.14E-06	-1.75E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.05E+01	0.00E+00	0.00E+00	1.63E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.38E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.63E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 1945 MM: UNI ABS+FLA 600-100 (18.4 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.197 UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 610 MM: UNI ABS+FLA 160-185-80

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 610 MM: UNI ABS+FLA 160-185-80 (8.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.38E+01	0.00E+00	3.35E-02	1.10E+00	8.77E-03	-6.22E+00
GWP-fossil	[kg CO_2-Eq.]	2.35E+01	0.00E+00	3.31E-02	1.10E+00	8.72E-03	-6.24E+00
GWP-biogenic	[kg CO_2-Eq.]	2.88E-01	0.00E+00	6.18E-05	3.85E-05	2.69E-05	2.99E-02
GWP-luluc	[kg CO_2-Eq.]	6.57E-02	0.00E+00	3.47E-04	2.18E-05	2.74E-05	-7.08E-03
ODP	[kg CFC11-Eq.]	3.25E-10	0.00E+00	5.60E-15	7.57E-14	2.82E-14	1.01E-12
AP	[mol H^+-Eq.]	8.63E-02	0.00E+00	1.21E-04	1.09E-04	5.44E-05	-2.32E-02
EP-freshwater	[kg P-Eq.]	1.04E-04	0.00E+00	9.09E-08	1.81E-08	1.23E-08	-4.48E-06
EP-marine	[kg N-Eq.]	1.90E-02	0.00E+00	5.73E-05	2.72E-05	1.33E-05	-3.55E-03
EP-terrestrial	[mol N-Eq.]	2.09E-01	0.00E+00	6.20E-04	5.17E-04	1.45E-04	-3.59E-02
POCP	[kg NMVOC-Eq.]	5.13E-02	0.00E+00	1.10E-04	7.82E-05	4.11E-05	-1.22E-02
ADPE	[kg Sb-Eq.]	1.37E-04	0.00E+00	2.24E-09	8.93E-10	5.92E-10	-8.60E-05
ADPF	[MJ]	2.92E+02	0.00E+00	4.32E-01	1.59E-01	1.43E-01	-7.08E+01
WDP	[m^3 world-Eq deprived]	3.30E+00	0.00E+00	1.54E-04	9.64E-02	1.02E-03	-1.21E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 610 MM: UNI ABS+FLA 160-185-80 (8.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.80E+02	0.00E+00	3.26E-02	4.36E-02	2.32E-02	-6.13E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.81E+02	0.00E+00	3.26E-02	4.36E-02	2.32E-02	-6.13E+00
PENRE	[MJ]	2.75E+02	0.00E+00	4.32E-01	1.73E+01	1.43E-01	-7.08E+01
PENRM	[MJ]	1.77E+01	0.00E+00	0.00E+00	-1.71E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.92E+02	0.00E+00	4.32E-01	1.59E-01	1.43E-01	-7.08E+01
SM	[kg]	6.07E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.48E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.62E-01	0.00E+00	1.61E-05	2.26E-03	3.00E-05	-4.04E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 610 MM: UNI ABS+FLA 160-185-80 (8.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.05E-07	0.00E+00	1.73E-11	8.59E-11	3.08E-11	-2.54E-04
NHWD	[kg]	4.07E+00	0.00E+00	6.03E-05	2.35E-02	4.11E-01	4.55E-01
RWD	[kg]	8.38E-03	0.00E+00	8.16E-07	8.68E-06	1.98E-06	-7.18E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.24E+00	0.00E+00	0.00E+00	7.79E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.91E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.41E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL PIPE SADDLE PN16 FLA OUTLET, STRAP L 610 MM: UNI ABS+FLA 160-185-80 (8.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.198 UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-1" (7.42 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.09E+01	0.00E+00	2.89E-02	1.79E+00	7.20E-03	-6.33E+00
GWP-fossil	[kg CO_2-Eq.]	2.07E+01	0.00E+00	2.85E-02	1.79E+00	7.15E-03	-6.35E+00
GWP-biogenic	[kg CO_2-Eq.]	1.90E-01	0.00E+00	5.33E-05	6.63E-05	2.20E-05	2.83E-02
GWP-luluc	[kg CO_2-Eq.]	5.19E-02	0.00E+00	3.00E-04	5.49E-05	2.25E-05	-7.30E-03
ODP	[kg CFC11-Eq.]	2.46E-10	0.00E+00	4.83E-15	1.63E-13	2.32E-14	-9.35E-13
AP	[mol H^+-Eq.]	7.64E-02	0.00E+00	1.04E-04	1.83E-04	4.46E-05	-2.32E-02
EP-freshwater	[kg P-Eq.]	9.79E-05	0.00E+00	7.85E-08	4.00E-08	1.01E-08	-4.62E-06
EP-marine	[kg N-Eq.]	1.51E-02	0.00E+00	4.95E-05	4.92E-05	1.09E-05	-3.58E-03
EP-terrestrial	[mol N-Eq.]	1.65E-01	0.00E+00	5.35E-04	8.67E-04	1.19E-04	-3.62E-02
POCP	[kg NMVOC-Eq.]	4.32E-02	0.00E+00	9.53E-05	1.40E-04	3.37E-05	-1.22E-02
ADPE	[kg Sb-Eq.]	1.46E-04	0.00E+00	1.94E-09	1.91E-09	4.86E-10	-8.51E-05
ADPF	[MJ]	2.75E+02	0.00E+00	3.73E-01	3.41E-01	1.17E-01	-7.33E+01
WDP	[m^3 world-Eq deprived]	4.98E+00	0.00E+00	1.33E-04	1.56E-01	8.36E-04	-1.22E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-1" (7.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.09E+02	0.00E+00	2.81E-02	9.08E-02	1.91E-02	-7.26E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.10E+02	0.00E+00	2.81E-02	9.08E-02	1.91E-02	-7.26E+00
PENRE	[MJ]	2.53E+02	0.00E+00	3.73E-01	2.17E+01	1.17E-01	-7.33E+01
PENRM	[MJ]	2.19E+01	0.00E+00	0.00E+00	-2.13E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.75E+02	0.00E+00	3.73E-01	3.41E-01	1.17E-01	-7.33E+01
SM	[kg]	4.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.43E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.12E-01	0.00E+00	1.39E-05	3.66E-03	2.46E-05	-3.97E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-1" (7.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.16E-07	0.00E+00	1.50E-11	1.80E-10	2.53E-11	-2.53E-04
NHWD	[kg]	2.80E+00	0.00E+00	5.21E-05	6.58E-02	3.37E-01	4.44E-01
RWD	[kg]	6.32E-03	0.00E+00	7.04E-07	1.65E-05	1.62E-06	-9.77E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.93E+00	0.00E+00	0.00E+00	6.39E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-1" (7.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.199 UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-6/4" (7.31 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.06E+01	0.00E+00	2.84E-02	1.82E+00	7.07E-03	-6.56E+00
GWP-fossil	[kg CO_2-Eq.]	2.04E+01	0.00E+00	2.81E-02	1.82E+00	7.02E-03	-6.58E+00
GWP-biogenic	[kg CO_2-Eq.]	1.84E-01	0.00E+00	5.25E-05	6.71E-05	2.16E-05	2.95E-02
GWP-luluc	[kg CO_2-Eq.]	5.08E-02	0.00E+00	2.95E-04	5.56E-05	2.21E-05	-7.48E-03
ODP	[kg CFC11-Eq.]	2.41E-10	0.00E+00	4.76E-15	1.65E-13	2.27E-14	-7.91E-13
AP	[mol H^+-Eq.]	7.60E-02	0.00E+00	1.03E-04	1.86E-04	4.38E-05	-2.39E-02
EP-freshwater	[kg P-Eq.]	9.72E-05	0.00E+00	7.73E-08	4.05E-08	9.93E-09	-4.75E-06
EP-marine	[kg N-Eq.]	1.50E-02	0.00E+00	4.87E-05	4.98E-05	1.07E-05	-3.69E-03
EP-terrestrial	[mol N-Eq.]	1.64E-01	0.00E+00	5.27E-04	8.78E-04	1.16E-04	-3.74E-02
POCP	[kg NMVOC-Eq.]	4.29E-02	0.00E+00	9.39E-05	1.41E-04	3.31E-05	-1.26E-02
ADPE	[kg Sb-Eq.]	1.44E-04	0.00E+00	1.91E-09	1.93E-09	4.77E-10	-8.77E-05
ADPF	[MJ]	2.71E+02	0.00E+00	3.67E-01	3.45E-01	1.15E-01	-7.57E+01
WDP	[m^3 world-Eq deprived]	4.98E+00	0.00E+00	1.31E-04	1.58E-01	8.21E-04	-1.25E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-6/4" (7.31 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.05E+02	0.00E+00	2.77E-02	9.20E-02	1.87E-02	-7.37E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.06E+02	0.00E+00	2.77E-02	9.20E-02	1.87E-02	-7.37E+00
PENRE	[MJ]	2.49E+02	0.00E+00	3.67E-01	2.18E+01	1.15E-01	-7.57E+01
PENRM	[MJ]	2.19E+01	0.00E+00	0.00E+00	-2.14E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.71E+02	0.00E+00	3.67E-01	3.45E-01	1.15E-01	-7.57E+01
SM	[kg]	4.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.54E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.10E-01	0.00E+00	1.37E-05	3.70E-03	2.42E-05	-4.15E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-6/4" (7.31 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.12E-07	0.00E+00	1.47E-11	1.82E-10	2.48E-11	-2.59E-04
NHWD	[kg]	2.80E+00	0.00E+00	5.13E-05	6.66E-02	3.31E-01	4.64E-01
RWD	[kg]	6.16E-03	0.00E+00	6.93E-07	1.67E-05	1.59E-06	-9.92E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.93E+00	0.00E+00	0.00E+00	6.28E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-6/4" (7.31 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.200 UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-2" (7.12 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.04E+01	0.00E+00	2.77E-02	1.80E+00	6.87E-03	-6.30E+00
GWP-fossil	[kg CO_2-Eq.]	2.02E+01	0.00E+00	2.74E-02	1.80E+00	6.83E-03	-6.32E+00
GWP-biogenic	[kg CO_2-Eq.]	1.80E-01	0.00E+00	5.11E-05	6.67E-05	2.10E-05	2.81E-02
GWP-luluc	[kg CO_2-Eq.]	4.97E-02	0.00E+00	2.87E-04	5.52E-05	2.15E-05	-7.24E-03
ODP	[kg CFC11-Eq.]	2.36E-10	0.00E+00	4.63E-15	1.64E-13	2.21E-14	-9.84E-13
AP	[mol H^+-Eq.]	7.53E-02	0.00E+00	9.99E-05	1.84E-04	4.26E-05	-2.30E-02
EP-freshwater	[kg P-Eq.]	9.57E-05	0.00E+00	7.53E-08	4.02E-08	9.65E-09	-4.58E-06
EP-marine	[kg N-Eq.]	1.48E-02	0.00E+00	4.75E-05	4.94E-05	1.04E-05	-3.55E-03
EP-terrestrial	[mol N-Eq.]	1.61E-01	0.00E+00	5.13E-04	8.72E-04	1.13E-04	-3.59E-02
POCP	[kg NMVOC-Eq.]	4.24E-02	0.00E+00	9.14E-05	1.40E-04	3.22E-05	-1.21E-02
ADPE	[kg Sb-Eq.]	1.44E-04	0.00E+00	1.86E-09	1.92E-09	4.64E-10	-8.44E-05
ADPF	[MJ]	2.69E+02	0.00E+00	3.58E-01	3.42E-01	1.12E-01	-7.29E+01
WDP	[m^3 world-Eq deprived]	4.94E+00	0.00E+00	1.28E-04	1.56E-01	7.98E-04	-1.21E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-2" (7.12 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.00E+02	0.00E+00	2.70E-02	9.12E-02	1.82E-02	-7.22E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.02E+02	0.00E+00	2.70E-02	9.12E-02	1.82E-02	-7.22E+00
PENRE	[MJ]	2.47E+02	0.00E+00	3.58E-01	2.18E+01	1.12E-01	-7.29E+01
PENRM	[MJ]	2.19E+01	0.00E+00	0.00E+00	-2.14E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.69E+02	0.00E+00	3.58E-01	3.42E-01	1.12E-01	-7.29E+01
SM	[kg]	4.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.42E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.08E-01	0.00E+00	1.33E-05	3.68E-03	2.35E-05	-3.96E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-2" (7.12 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.08E-07	0.00E+00	1.44E-11	1.80E-10	2.41E-11	-2.50E-04
NHWD	[kg]	2.75E+00	0.00E+00	5.00E-05	6.61E-02	3.22E-01	4.42E-01
RWD	[kg]	6.06E-03	0.00E+00	6.75E-07	1.66E-05	1.55E-06	-9.80E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.84E+00	0.00E+00	0.00E+00	6.10E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.85E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.10E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1155 MM: UNI SPER 350-2" (7.12 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.201 UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-6/4" (7.66 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.16E+01	0.00E+00	2.98E-02	2.08E+00	7.33E-03	-7.01E+00
GWP-fossil	[kg CO_2-Eq.]	2.14E+01	0.00E+00	2.94E-02	2.08E+00	7.29E-03	-7.04E+00
GWP-biogenic	[kg CO_2-Eq.]	1.83E-01	0.00E+00	5.50E-05	7.70E-05	2.25E-05	3.12E-02
GWP-luluc	[kg CO_2-Eq.]	5.23E-02	0.00E+00	3.09E-04	6.24E-05	2.29E-05	-7.70E-03
ODP	[kg CFC11-Eq.]	2.46E-10	0.00E+00	4.99E-15	1.85E-13	2.36E-14	-1.13E-12
AP	[mol H^+-Eq.]	7.84E-02	0.00E+00	1.07E-04	2.12E-04	4.55E-05	-2.50E-02
EP-freshwater	[kg P-Eq.]	9.88E-05	0.00E+00	8.10E-08	4.61E-08	1.03E-08	-4.94E-06
EP-marine	[kg N-Eq.]	1.55E-02	0.00E+00	5.11E-05	5.67E-05	1.11E-05	-3.88E-03
EP-terrestrial	[mol N-Eq.]	1.69E-01	0.00E+00	5.52E-04	1.00E-03	1.21E-04	-3.91E-02
POCP	[kg NMVOC-Eq.]	4.47E-02	0.00E+00	9.83E-05	1.61E-04	3.44E-05	-1.33E-02
ADPE	[kg Sb-Eq.]	1.45E-04	0.00E+00	2.00E-09	2.17E-09	4.95E-10	-9.03E-05
ADPF	[MJ]	2.87E+02	0.00E+00	3.85E-01	3.86E-01	1.19E-01	-8.10E+01
WDP	[m^3 world-Eq deprived]	5.08E+00	0.00E+00	1.37E-04	1.80E-01	8.52E-04	-1.29E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-6/4" (7.66 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.09E+02	0.00E+00	2.90E-02	1.03E-01	1.94E-02	-7.77E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.11E+02	0.00E+00	2.90E-02	1.03E-01	1.94E-02	-7.77E+00
PENRE	[MJ]	2.62E+02	0.00E+00	3.85E-01	2.46E+01	1.19E-01	-8.10E+01
PENRM	[MJ]	2.48E+01	0.00E+00	0.00E+00	-2.43E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.87E+02	0.00E+00	3.85E-01	3.86E-01	1.19E-01	-8.10E+01
SM	[kg]	4.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.74E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.55E-01	0.00E+00	1.43E-05	4.23E-03	2.51E-05	-4.51E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-6/4" (7.66 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.14E-07	0.00E+00	1.54E-11	2.04E-10	2.58E-11	-2.61E-04
NHWD	[kg]	2.81E+00	0.00E+00	5.38E-05	7.45E-02	3.43E-01	5.06E-01
RWD	[kg]	6.25E-03	0.00E+00	7.27E-07	1.90E-05	1.65E-06	-1.11E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.93E+00	0.00E+00	0.00E+00	6.52E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.28E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.87E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-6/4" (7.66 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.202 UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-2" (7.47 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.14E+01	0.00E+00	2.91E-02	2.06E+00	7.14E-03	-6.76E+00
GWP-fossil	[kg CO_2-Eq.]	2.11E+01	0.00E+00	2.87E-02	2.06E+00	7.09E-03	-6.78E+00
GWP-biogenic	[kg CO_2-Eq.]	1.79E-01	0.00E+00	5.37E-05	7.65E-05	2.18E-05	2.99E-02
GWP-luluc	[kg CO_2-Eq.]	5.13E-02	0.00E+00	3.02E-04	6.18E-05	2.23E-05	-7.46E-03
ODP	[kg CFC11-Eq.]	2.42E-10	0.00E+00	4.86E-15	1.83E-13	2.30E-14	-1.32E-12
AP	[mol H^+-Eq.]	7.76E-02	0.00E+00	1.05E-04	2.10E-04	4.43E-05	-2.41E-02
EP-freshwater	[kg P-Eq.]	9.73E-05	0.00E+00	7.90E-08	4.57E-08	1.00E-08	-4.78E-06
EP-marine	[kg N-Eq.]	1.53E-02	0.00E+00	4.98E-05	5.63E-05	1.08E-05	-3.74E-03
EP-terrestrial	[mol N-Eq.]	1.67E-01	0.00E+00	5.39E-04	9.94E-04	1.18E-04	-3.77E-02
POCP	[kg NMVOC-Eq.]	4.41E-02	0.00E+00	9.59E-05	1.60E-04	3.35E-05	-1.29E-02
ADPE	[kg Sb-Eq.]	1.45E-04	0.00E+00	1.95E-09	2.15E-09	4.82E-10	-8.70E-05
ADPF	[MJ]	2.85E+02	0.00E+00	3.75E-01	3.83E-01	1.16E-01	-7.83E+01
WDP	[m^3 world-Eq deprived]	5.05E+00	0.00E+00	1.34E-04	1.79E-01	8.29E-04	-1.25E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-2" (7.47 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.05E+02	0.00E+00	2.83E-02	1.03E-01	1.89E-02	-7.63E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.06E+02	0.00E+00	2.83E-02	1.03E-01	1.89E-02	-7.63E+00
PENRE	[MJ]	2.60E+02	0.00E+00	3.75E-01	2.47E+01	1.16E-01	-7.83E+01
PENRM	[MJ]	2.49E+01	0.00E+00	0.00E+00	-2.43E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.85E+02	0.00E+00	3.75E-01	3.83E-01	1.16E-01	-7.83E+01
SM	[kg]	4.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.63E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.53E-01	0.00E+00	1.40E-05	4.20E-03	2.44E-05	-4.32E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-2" (7.47 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.10E-07	0.00E+00	1.51E-11	2.03E-10	2.51E-11	-2.52E-04
NHWD	[kg]	2.76E+00	0.00E+00	5.24E-05	7.39E-02	3.34E-01	4.85E-01
RWD	[kg]	6.15E-03	0.00E+00	7.09E-07	1.88E-05	1.61E-06	-1.10E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.84E+00	0.00E+00	0.00E+00	6.34E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.25E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.83E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1325 MM: UNI SPER 400-2" (7.47 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.203 UNI SHUT-OFF SADDLE PN16 STRAP L 1480 MM: UNI SPER 450-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1480 MM: UNI SPER 450-2" (7.62 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.23E+01	0.00E+00	2.97E-02	2.25E+00	7.22E-03	-6.83E+00
GWP-fossil	[kg CO_2-Eq.]	2.20E+01	0.00E+00	2.93E-02	2.25E+00	7.18E-03	-6.85E+00
GWP-biogenic	[kg CO_2-Eq.]	1.78E-01	0.00E+00	5.47E-05	8.36E-05	2.21E-05	2.97E-02
GWP-luluc	[kg CO_2-Eq.]	5.21E-02	0.00E+00	3.08E-04	6.65E-05	2.26E-05	-7.30E-03
ODP	[kg CFC11-Eq.]	2.45E-10	0.00E+00	4.96E-15	1.97E-13	2.32E-14	-1.76E-12
AP	[mol H^+-Eq.]	7.97E-02	0.00E+00	1.07E-04	2.29E-04	4.48E-05	-2.38E-02
EP-freshwater	[kg P-Eq.]	9.83E-05	0.00E+00	8.06E-08	4.97E-08	1.01E-08	-4.72E-06
EP-marine	[kg N-Eq.]	1.57E-02	0.00E+00	5.08E-05	6.13E-05	1.09E-05	-3.71E-03
EP-terrestrial	[mol N-Eq.]	1.71E-01	0.00E+00	5.49E-04	1.08E-03	1.19E-04	-3.74E-02
POCP	[kg NMVOC-Eq.]	4.57E-02	0.00E+00	9.78E-05	1.74E-04	3.38E-05	-1.28E-02
ADPE	[kg Sb-Eq.]	1.45E-04	0.00E+00	1.99E-09	2.32E-09	4.87E-10	-8.48E-05
ADPF	[MJ]	2.99E+02	0.00E+00	3.83E-01	4.12E-01	1.17E-01	-7.92E+01
WDP	[m^3 world-Eq deprived]	5.14E+00	0.00E+00	1.37E-04	1.95E-01	8.39E-04	-1.22E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1480 MM: UNI SPER 450-2" (7.62 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.08E+02	0.00E+00	2.89E-02	1.11E-01	1.91E-02	-7.72E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.09E+02	0.00E+00	2.89E-02	1.11E-01	1.91E-02	-7.72E+00
PENRE	[MJ]	2.72E+02	0.00E+00	3.83E-01	2.74E+01	1.17E-01	-7.92E+01
PENRM	[MJ]	2.75E+01	0.00E+00	0.00E+00	-2.70E+01	0.00E+00	0.00E+00
PENRT	[MJ]	2.99E+02	0.00E+00	3.83E-01	4.12E-01	1.17E-01	-7.92E+01
SM	[kg]	4.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.67E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	4.93E-01	0.00E+00	1.43E-05	4.58E-03	2.47E-05	-4.42E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1480 MM: UNI SPER 450-2" (7.62 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.12E-07	0.00E+00	1.54E-11	2.18E-10	2.54E-11	-2.41E-04
NHWD	[kg]	2.77E+00	0.00E+00	5.35E-05	7.94E-02	3.38E-01	4.96E-01
RWD	[kg]	6.24E-03	0.00E+00	7.23E-07	2.04E-05	1.63E-06	-1.17E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.84E+00	0.00E+00	0.00E+00	6.41E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.54E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.35E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1480 MM: UNI SPER 450-2" (7.62 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.204 UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-1" (8.30 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.37E+01	0.00E+00	3.23E-02	2.49E+00	7.85E-03	-7.42E+00
GWP-fossil	[kg CO_2-Eq.]	2.34E+01	0.00E+00	3.19E-02	2.49E+00	7.80E-03	-7.44E+00
GWP-biogenic	[kg CO_2-Eq.]	1.88E-01	0.00E+00	5.96E-05	9.25E-05	2.40E-05	3.22E-02
GWP-luluc	[kg CO_2-Eq.]	5.58E-02	0.00E+00	3.35E-04	7.27E-05	2.45E-05	-7.72E-03
ODP	[kg CFC11-Eq.]	2.60E-10	0.00E+00	5.40E-15	2.16E-13	2.53E-14	-1.94E-12
AP	[mol H^+-Eq.]	8.30E-02	0.00E+00	1.16E-04	2.53E-04	4.87E-05	-2.55E-02
EP-freshwater	[kg P-Eq.]	1.02E-04	0.00E+00	8.78E-08	5.48E-08	1.10E-08	-5.03E-06
EP-marine	[kg N-Eq.]	1.65E-02	0.00E+00	5.53E-05	6.76E-05	1.19E-05	-3.99E-03
EP-terrestrial	[mol N-Eq.]	1.79E-01	0.00E+00	5.99E-04	1.19E-03	1.29E-04	-4.01E-02
POCP	[kg NMVOC-Eq.]	4.82E-02	0.00E+00	1.07E-04	1.92E-04	3.68E-05	-1.38E-02
ADPE	[kg Sb-Eq.]	1.48E-04	0.00E+00	2.17E-09	2.54E-09	5.30E-10	-9.00E-05
ADPF	[MJ]	3.20E+02	0.00E+00	4.17E-01	4.51E-01	1.28E-01	-8.59E+01
WDP	[m^3 world-Eq deprived]	5.27E+00	0.00E+00	1.49E-04	2.15E-01	9.12E-04	-1.30E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-1" (8.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.21E+02	0.00E+00	3.14E-02	1.21E-01	2.08E-02	-8.24E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.22E+02	0.00E+00	3.14E-02	1.21E-01	2.08E-02	-8.24E+00
PENRE	[MJ]	2.90E+02	0.00E+00	4.17E-01	3.04E+01	1.28E-01	-8.59E+01
PENRM	[MJ]	3.00E+01	0.00E+00	0.00E+00	-3.00E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.20E+02	0.00E+00	4.17E-01	4.51E-01	1.28E-01	-8.59E+01
SM	[kg]	4.60E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.93E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.38E-01	0.00E+00	1.55E-05	5.06E-03	2.69E-05	-4.86E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-1" (8.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.22E-07	0.00E+00	1.67E-11	2.39E-10	2.76E-11	-2.52E-04
NHWD	[kg]	2.83E+00	0.00E+00	5.82E-05	8.67E-02	3.67E-01	5.46E-01
RWD	[kg]	6.57E-03	0.00E+00	7.87E-07	2.24E-05	1.77E-06	-1.28E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.93E+00	0.00E+00	0.00E+00	6.97E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.91E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.01E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-1" (8.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.205 UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-5/4" (8.25 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.35E+01	0.00E+00	3.21E-02	2.51E+00	7.79E-03	-7.55E+00
GWP-fossil	[kg CO_2-Eq.]	2.33E+01	0.00E+00	3.17E-02	2.51E+00	7.74E-03	-7.57E+00
GWP-biogenic	[kg CO_2-Eq.]	1.85E-01	0.00E+00	5.93E-05	9.32E-05	2.38E-05	3.29E-02
GWP-luluc	[kg CO_2-Eq.]	5.53E-02	0.00E+00	3.33E-04	7.32E-05	2.43E-05	-7.83E-03
ODP	[kg CFC11-Eq.]	2.57E-10	0.00E+00	5.37E-15	2.17E-13	2.51E-14	-1.87E-12
AP	[mol H^+-Eq.]	8.28E-02	0.00E+00	1.16E-04	2.54E-04	4.83E-05	-2.59E-02
EP-freshwater	[kg P-Eq.]	1.02E-04	0.00E+00	8.72E-08	5.52E-08	1.09E-08	-5.10E-06
EP-marine	[kg N-Eq.]	1.64E-02	0.00E+00	5.50E-05	6.80E-05	1.18E-05	-4.06E-03
EP-terrestrial	[mol N-Eq.]	1.79E-01	0.00E+00	5.95E-04	1.20E-03	1.28E-04	-4.08E-02
POCP	[kg NMVOC-Eq.]	4.80E-02	0.00E+00	1.06E-04	1.93E-04	3.65E-05	-1.40E-02
ADPE	[kg Sb-Eq.]	1.47E-04	0.00E+00	2.15E-09	2.56E-09	5.26E-10	-9.14E-05
ADPF	[MJ]	3.18E+02	0.00E+00	4.15E-01	4.54E-01	1.27E-01	-8.74E+01
WDP	[m^3 world-Eq deprived]	5.27E+00	0.00E+00	1.48E-04	2.17E-01	9.05E-04	-1.32E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-5/4" (8.25 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.19E+02	0.00E+00	3.13E-02	1.22E-01	2.06E-02	-8.30E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.20E+02	0.00E+00	3.13E-02	1.22E-01	2.06E-02	-8.30E+00
PENRE	[MJ]	2.88E+02	0.00E+00	4.15E-01	8.70E+00	1.27E-01	-8.74E+01
PENRM	[MJ]	3.00E+01	0.00E+00	0.00E+00	-8.25E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.18E+02	0.00E+00	4.15E-01	4.54E-01	1.27E-01	-8.74E+01
SM	[kg]	4.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.99E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.37E-01	0.00E+00	1.54E-05	5.10E-03	2.67E-05	-4.96E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-5/4" (8.25 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.20E-07	0.00E+00	1.66E-11	2.41E-10	2.74E-11	-2.56E-04
NHWD	[kg]	2.83E+00	0.00E+00	5.79E-05	8.73E-02	3.65E-01	5.58E-01
RWD	[kg]	6.49E-03	0.00E+00	7.83E-07	2.26E-05	1.76E-06	-1.29E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.93E+00	0.00E+00	0.00E+00	6.92E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.94E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.06E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-5/4" (8.25 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.206 UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-6/4" (8.15 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.34E+01	0.00E+00	3.17E-02	2.51E+00	7.68E-03	-7.56E+00
GWP-fossil	[kg CO_2-Eq.]	2.31E+01	0.00E+00	3.13E-02	2.51E+00	7.64E-03	-7.58E+00
GWP-biogenic	[kg CO_2-Eq.]	1.82E-01	0.00E+00	5.85E-05	9.31E-05	2.35E-05	3.29E-02
GWP-luluc	[kg CO_2-Eq.]	5.46E-02	0.00E+00	3.29E-04	7.31E-05	2.40E-05	-7.81E-03
ODP	[kg CFC11-Eq.]	2.54E-10	0.00E+00	5.30E-15	2.17E-13	2.47E-14	-1.85E-12
AP	[mol H^+-Eq.]	8.26E-02	0.00E+00	1.14E-04	2.54E-04	4.76E-05	-2.59E-02
EP-freshwater	[kg P-Eq.]	1.01E-04	0.00E+00	8.62E-08	5.52E-08	1.08E-08	-5.09E-06
EP-marine	[kg N-Eq.]	1.64E-02	0.00E+00	5.43E-05	6.80E-05	1.16E-05	-4.06E-03
EP-terrestrial	[mol N-Eq.]	1.78E-01	0.00E+00	5.88E-04	1.20E-03	1.27E-04	-4.07E-02
POCP	[kg NMVOC-Eq.]	4.78E-02	0.00E+00	1.05E-04	1.93E-04	3.60E-05	-1.41E-02
ADPE	[kg Sb-Eq.]	1.46E-04	0.00E+00	2.13E-09	2.56E-09	5.18E-10	-9.12E-05
ADPF	[MJ]	3.16E+02	0.00E+00	4.10E-01	4.53E-01	1.25E-01	-8.74E+01
WDP	[m^3 world-Eq deprived]	5.27E+00	0.00E+00	1.46E-04	2.17E-01	8.92E-04	-1.32E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-6/4" (8.15 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.17E+02	0.00E+00	3.09E-02	1.22E-01	2.04E-02	-8.28E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.18E+02	0.00E+00	3.09E-02	1.22E-01	2.04E-02	-8.28E+00
PENRE	[MJ]	2.86E+02	0.00E+00	4.10E-01	2.99E+01	1.25E-01	-8.74E+01
PENRM	[MJ]	3.00E+01	0.00E+00	0.00E+00	-2.95E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.16E+02	0.00E+00	4.10E-01	4.53E-01	1.25E-01	-8.74E+01
SM	[kg]	4.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.35E-01	0.00E+00	1.53E-05	5.10E-03	2.63E-05	-4.97E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-6/4" (8.15 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.18E-07	0.00E+00	1.64E-11	2.41E-10	2.70E-11	-2.55E-04
NHWD	[kg]	2.83E+00	0.00E+00	5.72E-05	8.72E-02	3.60E-01	5.59E-01
RWD	[kg]	6.41E-03	0.00E+00	7.73E-07	2.26E-05	1.73E-06	-1.29E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.93E+00	0.00E+00	0.00E+00	6.83E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.94E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.06E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-6/4" (8.15 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.207 UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-2" (7.96 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.31E+01	0.00E+00	3.10E-02	2.49E+00	7.49E-03	-7.30E+00
GWP-fossil	[kg CO_2-Eq.]	2.29E+01	0.00E+00	3.06E-02	2.49E+00	7.44E-03	-7.33E+00
GWP-biogenic	[kg CO_2-Eq.]	1.78E-01	0.00E+00	5.72E-05	9.24E-05	2.29E-05	3.16E-02
GWP-luluc	[kg CO_2-Eq.]	5.36E-02	0.00E+00	3.21E-04	7.25E-05	2.34E-05	-7.57E-03
ODP	[kg CFC11-Eq.]	2.50E-10	0.00E+00	5.18E-15	2.15E-13	2.41E-14	-2.02E-12
AP	[mol H^+-Eq.]	8.18E-02	0.00E+00	1.12E-04	2.52E-04	4.64E-05	-2.50E-02
EP-freshwater	[kg P-Eq.]	9.97E-05	0.00E+00	8.42E-08	5.48E-08	1.05E-08	-4.94E-06
EP-marine	[kg N-Eq.]	1.61E-02	0.00E+00	5.31E-05	6.75E-05	1.13E-05	-3.92E-03
EP-terrestrial	[mol N-Eq.]	1.76E-01	0.00E+00	5.74E-04	1.19E-03	1.23E-04	-3.94E-02
POCP	[kg NMVOC-Eq.]	4.73E-02	0.00E+00	1.02E-04	1.92E-04	3.51E-05	-1.36E-02
ADPE	[kg Sb-Eq.]	1.46E-04	0.00E+00	2.08E-09	2.54E-09	5.05E-10	-8.81E-05
ADPF	[MJ]	3.13E+02	0.00E+00	4.00E-01	4.50E-01	1.22E-01	-8.46E+01
WDP	[m^3 world-Eq deprived]	5.23E+00	0.00E+00	1.43E-04	2.15E-01	8.69E-04	-1.27E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-2" (7.96 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.12E+02	0.00E+00	3.02E-02	1.21E-01	1.98E-02	-8.13E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.14E+02	0.00E+00	3.02E-02	1.21E-01	1.98E-02	-8.13E+00
PENRE	[MJ]	2.83E+02	0.00E+00	4.00E-01	8.41E+00	1.22E-01	-8.46E+01
PENRM	[MJ]	3.01E+01	0.00E+00	0.00E+00	-7.96E+00	0.00E+00	0.00E+00
PENRT	[MJ]	3.13E+02	0.00E+00	4.00E-01	4.50E-01	1.22E-01	-8.46E+01
SM	[kg]	4.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.88E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	5.33E-01	0.00E+00	1.49E-05	5.06E-03	2.56E-05	-4.78E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-2" (7.96 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.14E-07	0.00E+00	1.60E-11	2.39E-10	2.63E-11	-2.46E-04
NHWD	[kg]	2.78E+00	0.00E+00	5.59E-05	8.65E-02	3.50E-01	5.38E-01
RWD	[kg]	6.32E-03	0.00E+00	7.55E-07	2.24E-05	1.69E-06	-1.28E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.84E+00	0.00E+00	0.00E+00	6.65E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.91E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1630 MM: UNI SPER 500-2" (7.96 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.208 UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-1" (8.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.50E+01	0.00E+00	3.35E-02	2.86E+00	8.02E-03	-7.76E+00
GWP-fossil	[kg CO_2-Eq.]	2.47E+01	0.00E+00	3.31E-02	2.86E+00	7.97E-03	-7.79E+00
GWP-biogenic	[kg CO_2-Eq.]	1.83E-01	0.00E+00	6.18E-05	1.06E-04	2.46E-05	3.31E-02
GWP-luluc	[kg CO_2-Eq.]	5.70E-02	0.00E+00	3.47E-04	8.16E-05	2.51E-05	-7.65E-03
ODP	[kg CFC11-Eq.]	2.63E-10	0.00E+00	5.60E-15	2.42E-13	2.58E-14	-2.63E-12
AP	[mol H^+-Eq.]	8.56E-02	0.00E+00	1.21E-04	2.88E-04	4.97E-05	-2.58E-02
EP-freshwater	[kg P-Eq.]	1.03E-04	0.00E+00	9.09E-08	6.25E-08	1.13E-08	-5.06E-06
EP-marine	[kg N-Eq.]	1.70E-02	0.00E+00	5.73E-05	7.71E-05	1.21E-05	-4.07E-03
EP-terrestrial	[mol N-Eq.]	1.85E-01	0.00E+00	6.20E-04	1.36E-03	1.32E-04	-4.07E-02
POCP	[kg NMVOC-Eq.]	5.04E-02	0.00E+00	1.10E-04	2.19E-04	3.76E-05	-1.42E-02
ADPE	[kg Sb-Eq.]	1.46E-04	0.00E+00	2.24E-09	2.86E-09	5.41E-10	-8.88E-05
ADPF	[MJ]	3.43E+02	0.00E+00	4.32E-01	5.06E-01	1.30E-01	-9.00E+01
WDP	[m^3 world-Eq deprived]	5.36E+00	0.00E+00	1.54E-04	2.47E-01	9.32E-04	-1.29E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-1" (8.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.24E+02	0.00E+00	3.26E-02	1.36E-01	2.13E-02	-8.55E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.25E+02	0.00E+00	3.26E-02	1.36E-01	2.13E-02	-8.55E+00
PENRE	[MJ]	3.08E+02	0.00E+00	4.32E-01	3.47E+01	1.30E-01	-9.00E+01
PENRM	[MJ]	3.47E+01	0.00E+00	0.00E+00	-3.42E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.43E+02	0.00E+00	4.32E-01	5.06E-01	1.30E-01	-9.00E+01
SM	[kg]	4.58E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.10E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.09E-01	0.00E+00	1.61E-05	5.79E-03	2.75E-05	-5.18E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-1" (8.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.22E-07	0.00E+00	1.73E-11	2.69E-10	2.82E-11	-2.41E-04
NHWD	[kg]	2.80E+00	0.00E+00	6.03E-05	9.71E-02	3.76E-01	5.84E-01
RWD	[kg]	6.61E-03	0.00E+00	8.16E-07	2.55E-05	1.81E-06	-1.43E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.85E+00	0.00E+00	0.00E+00	7.13E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.48E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.02E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-1" (8.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.209 UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-6/4" (8.75 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.52E+01	0.00E+00	3.41E-02	2.97E+00	8.13E-03	-8.31E+00
GWP-fossil	[kg CO_2-Eq.]	2.49E+01	0.00E+00	3.36E-02	2.97E+00	8.08E-03	-8.34E+00
GWP-biogenic	[kg CO_2-Eq.]	1.80E-01	0.00E+00	6.28E-05	1.11E-04	2.49E-05	3.57E-02
GWP-luluc	[kg CO_2-Eq.]	5.73E-02	0.00E+00	3.53E-04	8.50E-05	2.54E-05	-8.13E-03
ODP	[kg CFC11-Eq.]	2.64E-10	0.00E+00	5.70E-15	2.52E-13	2.62E-14	-2.50E-12
AP	[mol H^+-Eq.]	8.69E-02	0.00E+00	1.23E-04	3.00E-04	5.04E-05	-2.76E-02
EP-freshwater	[kg P-Eq.]	1.04E-04	0.00E+00	9.25E-08	6.51E-08	1.14E-08	-5.39E-06
EP-marine	[kg N-Eq.]	1.72E-02	0.00E+00	5.83E-05	8.03E-05	1.23E-05	-4.35E-03
EP-terrestrial	[mol N-Eq.]	1.87E-01	0.00E+00	6.31E-04	1.42E-03	1.34E-04	-4.35E-02
POCP	[kg NMVOC-Eq.]	5.11E-02	0.00E+00	1.12E-04	2.28E-04	3.81E-05	-1.52E-02
ADPE	[kg Sb-Eq.]	1.47E-04	0.00E+00	2.28E-09	2.98E-09	5.49E-10	-9.50E-05
ADPF	[MJ]	3.46E+02	0.00E+00	4.40E-01	5.27E-01	1.32E-01	-9.62E+01
WDP	[m^3 world-Eq deprived]	5.46E+00	0.00E+00	1.57E-04	2.57E-01	9.45E-04	-1.38E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-6/4" (8.75 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.25E+02	0.00E+00	3.31E-02	1.42E-01	2.16E-02	-8.96E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.26E+02	0.00E+00	3.31E-02	1.42E-01	2.16E-02	-8.96E+00
PENRE	[MJ]	3.10E+02	0.00E+00	4.40E-01	3.54E+01	1.32E-01	-9.62E+01
PENRM	[MJ]	3.54E+01	0.00E+00	0.00E+00	-3.49E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.46E+02	0.00E+00	4.40E-01	5.27E-01	1.32E-01	-9.62E+01
SM	[kg]	4.45E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.34E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.19E-01	0.00E+00	1.64E-05	6.03E-03	2.78E-05	-5.58E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-6/4" (8.75 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.22E-07	0.00E+00	1.76E-11	2.80E-10	2.86E-11	-2.57E-04
NHWD	[kg]	2.85E+00	0.00E+00	6.14E-05	1.01E-01	3.81E-01	6.30E-01
RWD	[kg]	6.57E-03	0.00E+00	8.30E-07	2.65E-05	1.83E-06	-1.50E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.93E+00	0.00E+00	0.00E+00	7.23E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.66E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.35E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-6/4" (8.75 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.210 UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-2" (8.56 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.49E+01	0.00E+00	3.33E-02	2.95E+00	7.94E-03	-8.07E+00
GWP-fossil	[kg CO_2-Eq.]	2.47E+01	0.00E+00	3.29E-02	2.95E+00	7.89E-03	-8.09E+00
GWP-biogenic	[kg CO_2-Eq.]	1.76E-01	0.00E+00	6.15E-05	1.10E-04	2.43E-05	3.44E-02
GWP-luluc	[kg CO_2-Eq.]	5.62E-02	0.00E+00	3.46E-04	8.43E-05	2.48E-05	-7.91E-03
ODP	[kg CFC11-Eq.]	2.59E-10	0.00E+00	5.57E-15	2.50E-13	2.56E-14	-2.65E-12
AP	[mol H^+-Eq.]	8.62E-02	0.00E+00	1.20E-04	2.98E-04	4.92E-05	-2.68E-02
EP-freshwater	[kg P-Eq.]	1.03E-04	0.00E+00	9.05E-08	6.46E-08	1.12E-08	-5.24E-06
EP-marine	[kg N-Eq.]	1.70E-02	0.00E+00	5.71E-05	7.97E-05	1.20E-05	-4.22E-03
EP-terrestrial	[mol N-Eq.]	1.85E-01	0.00E+00	6.17E-04	1.41E-03	1.31E-04	-4.22E-02
POCP	[kg NMVOC-Eq.]	5.06E-02	0.00E+00	1.10E-04	2.26E-04	3.72E-05	-1.47E-02
ADPE	[kg Sb-Eq.]	1.47E-04	0.00E+00	2.23E-09	2.95E-09	5.36E-10	-9.20E-05
ADPF	[MJ]	3.43E+02	0.00E+00	4.30E-01	5.23E-01	1.29E-01	-9.35E+01
WDP	[m^3 world-Eq deprived]	5.43E+00	0.00E+00	1.54E-04	2.55E-01	9.22E-04	-1.34E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-2" (8.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2.21E+02	0.00E+00	3.24E-02	1.41E-01	2.10E-02	-8.82E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.22E+02	0.00E+00	3.24E-02	1.41E-01	2.10E-02	-8.82E+00
PENRE	[MJ]	3.08E+02	0.00E+00	4.30E-01	3.55E+01	1.29E-01	-9.35E+01
PENRM	[MJ]	3.55E+01	0.00E+00	0.00E+00	-3.49E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.43E+02	0.00E+00	4.30E-01	5.23E-01	1.29E-01	-9.35E+01
SM	[kg]	4.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.23E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	6.16E-01	0.00E+00	1.60E-05	5.99E-03	2.72E-05	-5.40E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-2" (8.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2.18E-07	0.00E+00	1.73E-11	2.78E-10	2.79E-11	-2.48E-04
NHWD	[kg]	2.80E+00	0.00E+00	6.01E-05	1.00E-01	3.72E-01	6.08E-01
RWD	[kg]	6.48E-03	0.00E+00	8.12E-07	2.63E-05	1.79E-06	-1.48E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	3.84E+00	0.00E+00	0.00E+00	7.05E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.63E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.29E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1945 MM: UNI SPER 600-2" (8.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.211 UNI SHUT-OFF SADDLE PN16 STRAP L 2550 MM: UNI SPER 800-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 2550 MM: UNI SPER 800-2" (12.7 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.60E+01	0.00E+00	4.96E-02	3.34E+00	1.23E-02	-9.95E+00
GWP-fossil	[kg CO_2-Eq.]	3.55E+01	0.00E+00	4.90E-02	3.34E+00	1.22E-02	-9.99E+00
GWP-biogenic	[kg CO_2-Eq.]	3.32E-01	0.00E+00	9.15E-05	1.24E-04	3.75E-05	4.41E-02
GWP-luluc	[kg CO_2-Eq.]	8.86E-02	0.00E+00	5.14E-04	9.27E-05	3.83E-05	-8.42E-03
ODP	[kg CFC11-Eq.]	4.18E-10	0.00E+00	8.29E-15	2.75E-13	3.94E-14	-1.52E-12
AP	[mol H^+-Eq.]	1.15E-01	0.00E+00	1.79E-04	3.35E-04	7.60E-05	-3.14E-02
EP-freshwater	[kg P-Eq.]	1.52E-04	0.00E+00	1.35E-07	7.26E-08	1.72E-08	-5.82E-06
EP-marine	[kg N-Eq.]	2.58E-02	0.00E+00	8.49E-05	8.95E-05	1.85E-05	-4.98E-03
EP-terrestrial	[mol N-Eq.]	2.81E-01	0.00E+00	9.19E-04	1.59E-03	2.02E-04	-4.92E-02
POCP	[kg NMVOC-Eq.]	7.33E-02	0.00E+00	1.64E-04	2.54E-04	5.74E-05	-1.77E-02
ADPE	[kg Sb-Eq.]	1.39E-04	0.00E+00	3.32E-09	3.26E-09	8.27E-10	-1.03E-04
ADPF	[MJ]	4.76E+02	0.00E+00	6.40E-01	5.75E-01	1.99E-01	-1.13E+02
WDP	[m^3 world-Eq deprived]	6.51E+00	0.00E+00	2.28E-04	2.87E-01	1.42E-03	-1.48E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 2550 MM: UNI SPER 800-2" (12.7 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.64E+02	0.00E+00	4.83E-02	1.56E-01	3.25E-02	-8.96E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.65E+02	0.00E+00	4.83E-02	1.56E-01	3.25E-02	-8.96E+00
PENRE	[MJ]	4.34E+02	0.00E+00	6.40E-01	4.24E+01	1.99E-01	-1.13E+02
PENRM	[MJ]	4.24E+01	0.00E+00	0.00E+00	-4.19E+01	0.00E+00	0.00E+00
PENRT	[MJ]	4.76E+02	0.00E+00	6.40E-01	5.75E-01	1.99E-01	-1.13E+02
SM	[kg]	7.59E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.23E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	7.55E-01	0.00E+00	2.39E-05	6.75E-03	4.19E-05	-7.15E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 2550 MM: UNI SPER 800-2" (12.7 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.70E-07	0.00E+00	2.57E-11	3.07E-10	4.30E-11	-2.53E-04
NHWD	[kg]	4.65E+00	0.00E+00	8.94E-05	1.10E-01	5.74E-01	8.15E-01
RWD	[kg]	1.04E-02	0.00E+00	1.21E-06	2.94E-05	2.76E-06	-1.65E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	7.11E+00	0.00E+00	0.00E+00	1.09E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.21E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.34E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 2550 MM: UNI SPER 800-2" (12.7 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.212 UNI SHUT-OFF SADDLE PN16 STRAP L 3210 MM: UNI SPER 1000-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 3210 MM: UNI SPER 1000-2" (14.0 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.96E+01	0.00E+00	5.45E-02	4.22E+00	1.32E-02	-1.15E+01
GWP-fossil	[kg CO_2-Eq.]	3.91E+01	0.00E+00	5.38E-02	4.22E+00	1.32E-02	-1.16E+01
GWP-biogenic	[kg CO_2-Eq.]	3.33E-01	0.00E+00	1.01E-04	1.57E-04	4.05E-05	5.03E-02
GWP-luluc	[kg CO_2-Eq.]	9.43E-02	0.00E+00	5.65E-04	1.15E-04	4.14E-05	-9.24E-03
ODP	[kg CFC11-Eq.]	4.39E-10	0.00E+00	9.11E-15	3.42E-13	4.26E-14	-2.62E-12
AP	[mol H^+-Eq.]	1.23E-01	0.00E+00	1.96E-04	4.22E-04	8.21E-05	-3.53E-02
EP-freshwater	[kg P-Eq.]	1.58E-04	0.00E+00	1.48E-07	9.14E-08	1.86E-08	-6.50E-06
EP-marine	[kg N-Eq.]	2.77E-02	0.00E+00	9.33E-05	1.13E-04	2.00E-05	-5.64E-03
EP-terrestrial	[mol N-Eq.]	3.01E-01	0.00E+00	1.01E-03	2.00E-03	2.18E-04	-5.55E-02
POCP	[kg NMVOC-Eq.]	7.99E-02	0.00E+00	1.80E-04	3.20E-04	6.20E-05	-2.02E-02
ADPE	[kg Sb-Eq.]	1.42E-04	0.00E+00	3.65E-09	4.06E-09	8.93E-10	-1.13E-04
ADPF	[MJ]	5.34E+02	0.00E+00	7.04E-01	7.15E-01	2.15E-01	-1.32E+02
WDP	[m^3 world-Eq deprived]	6.92E+00	0.00E+00	2.51E-04	3.63E-01	1.54E-03	-1.64E+00

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 3210 MM: UNI SPER 1000-2" (14.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3.83E+02	0.00E+00	5.30E-02	1.94E-01	3.51E-02	-1.04E+01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.84E+02	0.00E+00	5.30E-02	1.94E-01	3.51E-02	-1.04E+01
PENRE	[MJ]	4.82E+02	0.00E+00	7.04E-01	5.27E+01	2.15E-01	-1.32E+02
PENRM	[MJ]	5.25E+01	0.00E+00	0.00E+00	-5.20E+01	0.00E+00	0.00E+00
PENRT	[MJ]	5.34E+02	0.00E+00	7.04E-01	7.15E-01	2.15E-01	-1.32E+02
SM	[kg]	7.79E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.13E-01	0.00E+00	2.62E-05	8.53E-03	4.53E-05	-8.41E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 3210 MM: UNI SPER 1000-2" (14.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	3.81E-07	0.00E+00	2.82E-11	3.82E-10	4.65E-11	-2.64E-04
NHWD	[kg]	4.73E+00	0.00E+00	9.82E-05	1.37E-01	6.20E-01	9.60E-01
RWD	[kg]	1.08E-02	0.00E+00	1.33E-06	3.69E-05	2.98E-06	-2.04E-03
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	7.17E+00	0.00E+00	0.00E+00	1.18E+01	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	6.58E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.18E+01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 3210 MM: UNI SPER 1000-2" (14.0 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.213 UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-1" (2.38 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.22E+00	0.00E+00	9.26E-03	4.76E-01	2.35E-03	-1.95E+00
GWP-fossil	[kg CO_2-Eq.]	7.13E+00	0.00E+00	9.15E-03	4.76E-01	2.33E-03	-1.96E+00
GWP-biogenic	[kg CO_2-Eq.]	7.35E-02	0.00E+00	1.71E-05	1.70E-05	7.18E-06	8.54E-03
GWP-luluc	[kg CO_2-Eq.]	1.82E-02	0.00E+00	9.61E-05	1.99E-05	7.33E-06	-3.19E-03
ODP	[kg CFC11-Eq.]	8.87E-11	0.00E+00	1.55E-15	5.90E-14	7.55E-15	-5.83E-13
AP	[mol H^+-Eq.]	3.04E-02	0.00E+00	3.34E-05	5.21E-05	1.46E-05	-8.58E-03
EP-freshwater	[kg P-Eq.]	4.61E-05	0.00E+00	2.52E-08	1.16E-08	3.30E-09	-1.87E-06
EP-marine	[kg N-Eq.]	5.46E-03	0.00E+00	1.59E-05	1.41E-05	3.55E-06	-1.29E-03
EP-terrestrial	[mol N-Eq.]	5.98E-02	0.00E+00	1.72E-04	2.44E-04	3.87E-05	-1.35E-02
POCP	[kg NMVOC-Eq.]	1.53E-02	0.00E+00	3.06E-05	4.01E-05	1.10E-05	-4.21E-03
ADPE	[kg Sb-Eq.]	7.55E-05	0.00E+00	6.21E-10	6.70E-10	1.58E-10	-3.53E-05
ADPF	[MJ]	9.34E+01	0.00E+00	1.20E-01	1.23E-01	3.82E-02	-2.34E+01
WDP	[m^3 world-Eq deprived]	2.90E+00	0.00E+00	4.27E-05	4.23E-02	2.73E-04	-5.06E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-1" (2.38 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.34E+01	0.00E+00	9.02E-03	3.14E-02	6.22E-03	-3.14E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.46E+01	0.00E+00	9.02E-03	3.14E-02	6.22E-03	-3.14E+00
PENRE	[MJ]	8.75E+01	0.00E+00	1.20E-01	5.51E+00	3.82E-02	-2.34E+01
PENRM	[MJ]	5.89E+00	0.00E+00	0.00E+00	-5.38E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.34E+01	0.00E+00	1.20E-01	1.23E-01	3.82E-02	-2.34E+01
SM	[kg]	1.66E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.13E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.16E-01	0.00E+00	4.46E-06	9.98E-04	8.03E-06	-9.28E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-1" (2.38 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.09E-08	0.00E+00	4.80E-12	6.29E-11	8.24E-12	-1.21E-04
NHWD	[kg]	1.11E+00	0.00E+00	1.67E-05	2.43E-02	1.10E-01	9.85E-02
RWD	[kg]	2.44E-03	0.00E+00	2.26E-07	5.12E-06	5.29E-07	-3.06E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.47E+00	0.00E+00	0.00E+00	2.08E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.82E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.40E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-1" (2.38 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.214 UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-5/4" (2.44 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.32E+00	0.00E+00	9.50E-03	4.86E-01	2.41E-03	-2.03E+00
GWP-fossil	[kg CO_2-Eq.]	7.22E+00	0.00E+00	9.38E-03	4.86E-01	2.39E-03	-2.04E+00
GWP-biogenic	[kg CO_2-Eq.]	7.50E-02	0.00E+00	1.75E-05	1.73E-05	7.37E-06	8.95E-03
GWP-luluc	[kg CO_2-Eq.]	1.85E-02	0.00E+00	9.85E-05	2.02E-05	7.52E-06	-3.29E-03
ODP	[kg CFC11-Eq.]	9.04E-11	0.00E+00	1.59E-15	6.00E-14	7.75E-15	-5.53E-13
AP	[mol H^+-Eq.]	3.07E-02	0.00E+00	3.42E-05	5.31E-05	1.49E-05	-8.90E-03
EP-freshwater	[kg P-Eq.]	4.66E-05	0.00E+00	2.58E-08	1.18E-08	3.38E-09	-1.93E-06
EP-marine	[kg N-Eq.]	5.54E-03	0.00E+00	1.63E-05	1.44E-05	3.64E-06	-1.34E-03
EP-terrestrial	[mol N-Eq.]	6.07E-02	0.00E+00	1.76E-04	2.49E-04	3.97E-05	-1.40E-02
POCP	[kg NMVOC-Eq.]	1.55E-02	0.00E+00	3.13E-05	4.09E-05	1.13E-05	-4.37E-03
ADPE	[kg Sb-Eq.]	7.56E-05	0.00E+00	6.37E-10	6.81E-10	1.62E-10	-3.65E-05
ADPF	[MJ]	9.46E+01	0.00E+00	1.23E-01	1.25E-01	3.91E-02	-2.43E+01
WDP	[m^3 world-Eq deprived]	2.91E+00	0.00E+00	4.38E-05	4.32E-02	2.80E-04	-5.22E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-5/4" (2.44 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.50E+01	0.00E+00	9.25E-03	3.20E-02	6.38E-03	-3.22E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.62E+01	0.00E+00	9.25E-03	3.20E-02	6.38E-03	-3.22E+00
PENRE	[MJ]	8.86E+01	0.00E+00	1.23E-01	5.58E+00	3.91E-02	-2.43E+01
PENRM	[MJ]	5.97E+00	0.00E+00	0.00E+00	-5.46E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.46E+01	0.00E+00	1.23E-01	1.25E-01	3.91E-02	-2.43E+01
SM	[kg]	1.69E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.45E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.16E-01	0.00E+00	4.57E-06	1.02E-03	8.24E-06	-9.80E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-5/4" (2.44 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.24E-08	0.00E+00	4.92E-12	6.40E-11	8.46E-12	-2.59E-04
NHWD	[kg]	1.13E+00	0.00E+00	1.71E-05	2.47E-02	1.13E-01	4.64E-01
RWD	[kg]	2.48E-03	0.00E+00	2.32E-07	5.21E-06	5.43E-07	-9.92E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.50E+00	0.00E+00	0.00E+00	2.14E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.97E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.43E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-5/4" (2.44 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.215 UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-6/4" (2.56 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.67E+00	0.00E+00	9.96E-03	5.06E-01	2.53E-03	-2.08E+00
GWP-fossil	[kg CO_2-Eq.]	7.57E+00	0.00E+00	9.84E-03	5.06E-01	2.51E-03	-2.09E+00
GWP-biogenic	[kg CO_2-Eq.]	8.00E-02	0.00E+00	1.84E-05	1.80E-05	7.73E-06	9.15E-03
GWP-luluc	[kg CO_2-Eq.]	1.95E-02	0.00E+00	1.03E-04	2.21E-05	7.89E-06	-3.31E-03
ODP	[kg CFC11-Eq.]	9.53E-11	0.00E+00	1.67E-15	6.56E-14	8.13E-15	-5.78E-13
AP	[mol H^+-Eq.]	3.17E-02	0.00E+00	3.59E-05	5.61E-05	1.57E-05	-9.01E-03
EP-freshwater	[kg P-Eq.]	5.16E-05	0.00E+00	2.71E-08	1.25E-08	3.55E-09	-1.95E-06
EP-marine	[kg N-Eq.]	5.83E-03	0.00E+00	1.71E-05	1.52E-05	3.82E-06	-1.36E-03
EP-terrestrial	[mol N-Eq.]	6.38E-02	0.00E+00	1.85E-04	2.62E-04	4.16E-05	-1.41E-02
POCP	[kg NMVOC-Eq.]	1.63E-02	0.00E+00	3.29E-05	4.32E-05	1.18E-05	-4.44E-03
ADPE	[kg Sb-Eq.]	7.58E-05	0.00E+00	6.68E-10	7.42E-10	1.70E-10	-3.67E-05
ADPF	[MJ]	9.88E+01	0.00E+00	1.29E-01	1.37E-01	4.11E-02	-2.49E+01
WDP	[m^3 world-Eq deprived]	3.29E+00	0.00E+00	4.59E-05	4.52E-02	2.93E-04	-5.26E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-6/4" (2.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.93E+01	0.00E+00	9.70E-03	3.47E-02	6.70E-03	-3.25E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.05E+01	0.00E+00	9.70E-03	3.47E-02	6.70E-03	-3.25E+00
PENRE	[MJ]	9.27E+01	0.00E+00	1.29E-01	5.75E+00	4.11E-02	-2.49E+01
PENRM	[MJ]	6.13E+00	0.00E+00	0.00E+00	-5.62E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.88E+01	0.00E+00	1.29E-01	1.37E-01	4.11E-02	-2.49E+01
SM	[kg]	1.78E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.69E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.27E-01	0.00E+00	4.79E-06	1.07E-03	8.65E-06	-1.02E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-6/4" (2.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.72E-08	0.00E+00	5.16E-12	6.97E-11	8.87E-12	-1.24E-04
NHWD	[kg]	1.19E+00	0.00E+00	1.80E-05	2.71E-02	1.18E-01	1.09E-01
RWD	[kg]	2.60E-03	0.00E+00	2.43E-07	5.58E-06	5.69E-07	-3.24E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.61E+00	0.00E+00	0.00E+00	2.24E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.37E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.50E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-6/4" (2.56 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.216 UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-2" (2.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.01E+00	0.00E+00	1.05E-02	5.21E-01	2.67E-03	-2.18E+00
GWP-fossil	[kg CO_2-Eq.]	7.90E+00	0.00E+00	1.04E-02	5.21E-01	2.65E-03	-2.18E+00
GWP-biogenic	[kg CO_2-Eq.]	8.53E-02	0.00E+00	1.94E-05	1.85E-05	8.17E-06	9.63E-03
GWP-luluc	[kg CO_2-Eq.]	2.06E-02	0.00E+00	1.09E-04	2.25E-05	8.34E-06	-3.38E-03
ODP	[kg CFC11-Eq.]	1.01E-10	0.00E+00	1.76E-15	6.68E-14	8.59E-15	-5.32E-13
AP	[mol H^+-Eq.]	3.27E-02	0.00E+00	3.79E-05	5.75E-05	1.66E-05	-9.32E-03
EP-freshwater	[kg P-Eq.]	5.34E-05	0.00E+00	2.85E-08	1.28E-08	3.75E-09	-2.00E-06
EP-marine	[kg N-Eq.]	6.12E-03	0.00E+00	1.80E-05	1.56E-05	4.03E-06	-1.41E-03
EP-terrestrial	[mol N-Eq.]	6.70E-02	0.00E+00	1.95E-04	2.69E-04	4.40E-05	-1.46E-02
POCP	[kg NMVOC-Eq.]	1.70E-02	0.00E+00	3.47E-05	4.44E-05	1.25E-05	-4.62E-03
ADPE	[kg Sb-Eq.]	7.59E-05	0.00E+00	7.04E-10	7.57E-10	1.80E-10	-3.77E-05
ADPF	[MJ]	1.03E+02	0.00E+00	1.36E-01	1.39E-01	4.34E-02	-2.59E+01
WDP	[m^3 world-Eq deprived]	3.34E+00	0.00E+00	4.84E-05	4.65E-02	3.10E-04	-5.40E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-2" (2.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.40E+01	0.00E+00	1.02E-02	3.54E-02	7.08E-03	-3.30E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.52E+01	0.00E+00	1.02E-02	3.54E-02	7.08E-03	-3.30E+00
PENRE	[MJ]	9.66E+01	0.00E+00	1.36E-01	5.97E+00	4.34E-02	-2.59E+01
PENRM	[MJ]	6.34E+00	0.00E+00	0.00E+00	-5.83E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.03E+02	0.00E+00	1.36E-01	1.39E-01	4.34E-02	-2.59E+01
SM	[kg]	1.88E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.12E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.29E-01	0.00E+00	5.06E-06	1.10E-03	9.14E-06	-1.09E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-2" (2.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.24E-08	0.00E+00	5.44E-12	7.11E-11	9.38E-12	-1.27E-04
NHWD	[kg]	1.26E+00	0.00E+00	1.89E-05	2.76E-02	1.25E-01	1.18E-01
RWD	[kg]	2.73E-03	0.00E+00	2.56E-07	5.71E-06	6.02E-07	-3.33E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.73E+00	0.00E+00	0.00E+00	2.37E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.60E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.54E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 410 MM: UNI SPER 80-2" (2.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.217 UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-1" (2.42 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.35E+00	0.00E+00	9.42E-03	5.09E-01	2.38E-03	-2.00E+00
GWP-fossil	[kg CO_2-Eq.]	7.26E+00	0.00E+00	9.30E-03	5.09E-01	2.36E-03	-2.01E+00
GWP-biogenic	[kg CO_2-Eq.]	7.34E-02	0.00E+00	1.74E-05	1.82E-05	7.27E-06	8.70E-03
GWP-luluc	[kg CO_2-Eq.]	1.83E-02	0.00E+00	9.77E-05	2.07E-05	7.42E-06	-3.20E-03
ODP	[kg CFC11-Eq.]	8.94E-11	0.00E+00	1.58E-15	6.14E-14	7.65E-15	-6.32E-13
AP	[mol H^+-Eq.]	3.07E-02	0.00E+00	3.40E-05	5.53E-05	1.47E-05	-8.67E-03
EP-freshwater	[kg P-Eq.]	4.63E-05	0.00E+00	2.56E-08	1.23E-08	3.34E-09	-1.89E-06
EP-marine	[kg N-Eq.]	5.52E-03	0.00E+00	1.61E-05	1.50E-05	3.59E-06	-1.31E-03
EP-terrestrial	[mol N-Eq.]	6.05E-02	0.00E+00	1.75E-04	2.59E-04	3.92E-05	-1.36E-02
POCP	[kg NMVOC-Eq.]	1.56E-02	0.00E+00	3.11E-05	4.26E-05	1.11E-05	-4.27E-03
ADPE	[kg Sb-Eq.]	7.56E-05	0.00E+00	6.31E-10	6.99E-10	1.60E-10	-3.54E-05
ADPF	[MJ]	9.55E+01	0.00E+00	1.22E-01	1.28E-01	3.86E-02	-2.39E+01
WDP	[m^3 world-Eq deprived]	2.91E+00	0.00E+00	4.34E-05	4.51E-02	2.76E-04	-5.08E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-1" (2.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.40E+01	0.00E+00	9.17E-03	3.28E-02	6.30E-03	-3.18E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.52E+01	0.00E+00	9.17E-03	3.28E-02	6.30E-03	-3.18E+00
PENRE	[MJ]	8.92E+01	0.00E+00	1.22E-01	5.90E+00	3.86E-02	-2.39E+01
PENRM	[MJ]	6.28E+00	0.00E+00	0.00E+00	-5.77E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.55E+01	0.00E+00	1.22E-01	1.28E-01	3.86E-02	-2.39E+01
SM	[kg]	1.67E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.35E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.22E-01	0.00E+00	4.53E-06	1.06E-03	8.14E-06	-9.67E-02

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-1" (2.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.12E-08	0.00E+00	4.88E-12	6.57E-11	8.35E-12	-1.20E-04
NHWD	[kg]	1.11E+00	0.00E+00	1.70E-05	2.53E-02	1.11E-01	1.03E-01
RWD	[kg]	2.45E-03	0.00E+00	2.30E-07	5.39E-06	5.36E-07	-3.20E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.47E+00	0.00E+00	0.00E+00	2.11E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.32E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.49E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-1" (2.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.218 UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-5/4" (2.50 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.45E+00	0.00E+00	9.73E-03	5.23E-01	2.46E-03	-2.13E+00
GWP-fossil	[kg CO_2-Eq.]	7.35E+00	0.00E+00	9.61E-03	5.23E-01	2.44E-03	-2.13E+00
GWP-biogenic	[kg CO_2-Eq.]	7.49E-02	0.00E+00	1.80E-05	1.87E-05	7.52E-06	9.33E-03
GWP-luluc	[kg CO_2-Eq.]	1.88E-02	0.00E+00	1.01E-04	2.12E-05	7.67E-06	-3.36E-03
ODP	[kg CFC11-Eq.]	9.12E-11	0.00E+00	1.63E-15	6.29E-14	7.90E-15	-5.86E-13
AP	[mol H^+-Eq.]	3.10E-02	0.00E+00	3.51E-05	5.68E-05	1.52E-05	-9.17E-03
EP-freshwater	[kg P-Eq.]	4.69E-05	0.00E+00	2.64E-08	1.26E-08	3.45E-09	-1.99E-06
EP-marine	[kg N-Eq.]	5.61E-03	0.00E+00	1.67E-05	1.54E-05	3.71E-06	-1.38E-03
EP-terrestrial	[mol N-Eq.]	6.14E-02	0.00E+00	1.80E-04	2.67E-04	4.05E-05	-1.44E-02
POCP	[kg NMVOC-Eq.]	1.58E-02	0.00E+00	3.21E-05	4.37E-05	1.15E-05	-4.53E-03
ADPE	[kg Sb-Eq.]	7.57E-05	0.00E+00	6.52E-10	7.16E-10	1.66E-10	-3.73E-05
ADPF	[MJ]	9.67E+01	0.00E+00	1.26E-01	1.31E-01	3.99E-02	-2.53E+01
WDP	[m^3 world-Eq deprived]	2.92E+00	0.00E+00	4.48E-05	4.64E-02	2.85E-04	-5.35E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-5/4" (2.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.57E+01	0.00E+00	9.47E-03	3.36E-02	6.51E-03	-3.30E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.69E+01	0.00E+00	9.47E-03	3.36E-02	6.51E-03	-3.30E+00
PENRE	[MJ]	9.03E+01	0.00E+00	1.26E-01	5.97E+00	3.99E-02	-2.53E+01
PENRM	[MJ]	6.36E+00	0.00E+00	0.00E+00	-5.84E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.67E+01	0.00E+00	1.26E-01	1.31E-01	3.99E-02	-2.53E+01
SM	[kg]	1.69E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.84E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.22E-01	0.00E+00	4.68E-06	1.09E-03	8.41E-06	-1.05E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-5/4" (2.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.28E-08	0.00E+00	5.04E-12	6.73E-11	8.62E-12	-1.26E-04
NHWD	[kg]	1.13E+00	0.00E+00	1.75E-05	2.59E-02	1.15E-01	1.12E-01
RWD	[kg]	2.49E-03	0.00E+00	2.37E-07	5.53E-06	5.54E-07	-3.31E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.50E+00	0.00E+00	0.00E+00	2.18E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.55E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.53E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-5/4" (2.50 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.219 UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-6/4" (2.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.80E+00	0.00E+00	1.01E-02	5.40E-01	2.56E-03	-2.13E+00
GWP-fossil	[kg CO_2-Eq.]	7.70E+00	0.00E+00	9.99E-03	5.40E-01	2.54E-03	-2.14E+00
GWP-biogenic	[kg CO_2-Eq.]	7.99E-02	0.00E+00	1.87E-05	1.92E-05	7.82E-06	9.30E-03
GWP-luluc	[kg CO_2-Eq.]	1.97E-02	0.00E+00	1.05E-04	2.29E-05	7.98E-06	-3.32E-03
ODP	[kg CFC11-Eq.]	9.59E-11	0.00E+00	1.69E-15	6.80E-14	8.22E-15	-6.28E-13
AP	[mol H^+-Eq.]	3.20E-02	0.00E+00	3.65E-05	5.93E-05	1.58E-05	-9.09E-03
EP-freshwater	[kg P-Eq.]	5.18E-05	0.00E+00	2.75E-08	1.32E-08	3.59E-09	-1.96E-06
EP-marine	[kg N-Eq.]	5.89E-03	0.00E+00	1.73E-05	1.61E-05	3.86E-06	-1.37E-03
EP-terrestrial	[mol N-Eq.]	6.45E-02	0.00E+00	1.87E-04	2.78E-04	4.21E-05	-1.43E-02
POCP	[kg NMVOC-Eq.]	1.65E-02	0.00E+00	3.34E-05	4.57E-05	1.20E-05	-4.50E-03
ADPE	[kg Sb-Eq.]	7.58E-05	0.00E+00	6.78E-10	7.71E-10	1.72E-10	-3.68E-05
ADPF	[MJ]	1.01E+02	0.00E+00	1.31E-01	1.42E-01	4.15E-02	-2.54E+01
WDP	[m^3 world-Eq deprived]	3.30E+00	0.00E+00	4.66E-05	4.80E-02	2.97E-04	-5.28E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-6/4" (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.99E+01	0.00E+00	9.85E-03	3.61E-02	6.77E-03	-3.29E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.11E+01	0.00E+00	9.85E-03	3.61E-02	6.77E-03	-3.29E+00
PENRE	[MJ]	9.44E+01	0.00E+00	1.31E-01	6.14E+00	4.15E-02	-2.54E+01
PENRM	[MJ]	6.51E+00	0.00E+00	0.00E+00	-6.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.01E+02	0.00E+00	1.31E-01	1.42E-01	4.15E-02	-2.54E+01
SM	[kg]	1.79E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.91E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.33E-01	0.00E+00	4.87E-06	1.13E-03	8.75E-06	-1.06E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-6/4" (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.75E-08	0.00E+00	5.24E-12	7.24E-11	8.97E-12	-1.24E-04
NHWD	[kg]	1.20E+00	0.00E+00	1.82E-05	2.81E-02	1.20E-01	1.14E-01
RWD	[kg]	2.61E-03	0.00E+00	2.47E-07	5.85E-06	5.76E-07	-3.39E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.61E+00	0.00E+00	0.00E+00	2.27E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	8.88E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.59E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 455 MM: UNI SPER 100-6/4" (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.220 UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-1" (2.63 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.84E+00	0.00E+00	1.02E-02	5.63E-01	2.57E-03	-2.20E+00
GWP-fossil	[kg CO_2-Eq.]	7.74E+00	0.00E+00	1.01E-02	5.63E-01	2.56E-03	-2.21E+00
GWP-biogenic	[kg CO_2-Eq.]	7.81E-02	0.00E+00	1.89E-05	2.03E-05	7.88E-06	9.66E-03
GWP-luluc	[kg CO_2-Eq.]	1.96E-02	0.00E+00	1.06E-04	2.21E-05	8.04E-06	-3.35E-03
ODP	[kg CFC11-Eq.]	9.53E-11	0.00E+00	1.71E-15	6.58E-14	8.28E-15	-6.06E-13
AP	[mol H^+-Eq.]	3.21E-02	0.00E+00	3.68E-05	6.08E-05	1.60E-05	-9.29E-03
EP-freshwater	[kg P-Eq.]	4.82E-05	0.00E+00	2.78E-08	1.35E-08	3.61E-09	-2.00E-06
EP-marine	[kg N-Eq.]	5.88E-03	0.00E+00	1.75E-05	1.64E-05	3.89E-06	-1.41E-03
EP-terrestrial	[mol N-Eq.]	6.44E-02	0.00E+00	1.89E-04	2.85E-04	4.24E-05	-1.46E-02
POCP	[kg NMVOC-Eq.]	1.66E-02	0.00E+00	3.37E-05	4.67E-05	1.21E-05	-4.63E-03
ADPE	[kg Sb-Eq.]	7.59E-05	0.00E+00	6.85E-10	7.51E-10	1.74E-10	-3.74E-05
ADPF	[MJ]	1.02E+02	0.00E+00	1.32E-01	1.37E-01	4.18E-02	-2.62E+01
WDP	[m^3 world-Eq deprived]	2.97E+00	0.00E+00	4.71E-05	4.98E-02	2.99E-04	-5.36E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-1" (2.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.94E+01	0.00E+00	9.94E-03	3.53E-02	6.82E-03	-3.32E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.06E+01	0.00E+00	9.94E-03	3.53E-02	6.82E-03	-3.32E+00
PENRE	[MJ]	9.51E+01	0.00E+00	1.32E-01	6.53E+00	4.18E-02	-2.62E+01
PENRM	[MJ]	6.90E+00	0.00E+00	0.00E+00	-6.39E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.02E+02	0.00E+00	1.32E-01	1.37E-01	4.18E-02	-2.62E+01
SM	[kg]	1.76E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.26E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.33E-01	0.00E+00	4.91E-06	1.17E-03	8.81E-06	-1.12E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-1" (2.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.64E-08	0.00E+00	5.29E-12	7.06E-11	9.04E-12	-1.25E-04
NHWD	[kg]	1.18E+00	0.00E+00	1.84E-05	2.70E-02	1.20E-01	1.21E-01
RWD	[kg]	2.59E-03	0.00E+00	2.49E-07	5.87E-06	5.80E-07	-3.47E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.58E+00	0.00E+00	0.00E+00	2.29E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.17E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.64E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-1" (2.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.221 UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-5/4" (2.77 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.23E+00	0.00E+00	1.08E-02	5.69E-01	2.73E-03	-2.27E+00
GWP-fossil	[kg CO_2-Eq.]	8.13E+00	0.00E+00	1.06E-02	5.69E-01	2.71E-03	-2.28E+00
GWP-biogenic	[kg CO_2-Eq.]	8.41E-02	0.00E+00	1.99E-05	2.05E-05	8.35E-06	1.00E-02
GWP-luluc	[kg CO_2-Eq.]	2.08E-02	0.00E+00	1.12E-04	2.23E-05	8.52E-06	-3.38E-03
ODP	[kg CFC11-Eq.]	1.01E-10	0.00E+00	1.80E-15	6.62E-14	8.77E-15	-5.44E-13
AP	[mol H^+-Eq.]	3.32E-02	0.00E+00	3.89E-05	6.13E-05	1.69E-05	-9.49E-03
EP-freshwater	[kg P-Eq.]	5.03E-05	0.00E+00	2.93E-08	1.36E-08	3.83E-09	-2.02E-06
EP-marine	[kg N-Eq.]	6.22E-03	0.00E+00	1.85E-05	1.66E-05	4.12E-06	-1.44E-03
EP-terrestrial	[mol N-Eq.]	6.81E-02	0.00E+00	2.00E-04	2.88E-04	4.49E-05	-1.49E-02
POCP	[kg NMVOC-Eq.]	1.74E-02	0.00E+00	3.56E-05	4.71E-05	1.28E-05	-4.74E-03
ADPE	[kg Sb-Eq.]	7.61E-05	0.00E+00	7.23E-10	7.56E-10	1.84E-10	-3.79E-05
ADPF	[MJ]	1.06E+02	0.00E+00	1.39E-01	1.38E-01	4.43E-02	-2.69E+01
WDP	[m^3 world-Eq deprived]	3.02E+00	0.00E+00	4.97E-05	5.03E-02	3.17E-04	-5.43E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-5/4" (2.77 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.47E+01	0.00E+00	1.05E-02	3.55E-02	7.22E-03	-3.32E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.59E+01	0.00E+00	1.05E-02	3.55E-02	7.22E-03	-3.32E+00
PENRE	[MJ]	9.94E+01	0.00E+00	1.39E-01	6.67E+00	4.43E-02	-2.69E+01
PENRM	[MJ]	7.04E+00	0.00E+00	0.00E+00	-6.53E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.06E+02	0.00E+00	1.39E-01	1.38E-01	4.43E-02	-2.69E+01
SM	[kg]	1.88E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.62E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.35E-01	0.00E+00	5.19E-06	1.19E-03	9.33E-06	-1.18E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-5/4" (2.77 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.24E-08	0.00E+00	5.59E-12	7.11E-11	9.57E-12	-1.26E-04
NHWD	[kg]	1.26E+00	0.00E+00	1.94E-05	2.72E-02	1.28E-01	1.28E-01
RWD	[kg]	2.74E-03	0.00E+00	2.63E-07	5.92E-06	6.14E-07	-3.50E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.71E+00	0.00E+00	0.00E+00	2.42E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.26E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.66E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-5/4" (2.77 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.222 UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-6/4" (2.78 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.27E+00	0.00E+00	1.08E-02	5.90E-01	2.73E-03	-2.28E+00
GWP-fossil	[kg CO_2-Eq.]	8.17E+00	0.00E+00	1.07E-02	5.90E-01	2.71E-03	-2.29E+00
GWP-biogenic	[kg CO_2-Eq.]	8.43E-02	0.00E+00	2.00E-05	2.11E-05	8.35E-06	1.00E-02
GWP-luluc	[kg CO_2-Eq.]	2.09E-02	0.00E+00	1.12E-04	2.42E-05	8.52E-06	-3.40E-03
ODP	[kg CFC11-Eq.]	1.01E-10	0.00E+00	1.81E-15	7.18E-14	8.78E-15	-6.22E-13
AP	[mol H^+-Eq.]	3.33E-02	0.00E+00	3.90E-05	6.43E-05	1.69E-05	-9.51E-03
EP-freshwater	[kg P-Eq.]	5.37E-05	0.00E+00	2.94E-08	1.43E-08	3.83E-09	-2.03E-06
EP-marine	[kg N-Eq.]	6.23E-03	0.00E+00	1.85E-05	1.74E-05	4.12E-06	-1.44E-03
EP-terrestrial	[mol N-Eq.]	6.82E-02	0.00E+00	2.00E-04	3.01E-04	4.49E-05	-1.49E-02
POCP	[kg NMVOC-Eq.]	1.75E-02	0.00E+00	3.57E-05	4.95E-05	1.28E-05	-4.76E-03
ADPE	[kg Sb-Eq.]	7.61E-05	0.00E+00	7.25E-10	8.17E-10	1.84E-10	-3.80E-05
ADPF	[MJ]	1.07E+02	0.00E+00	1.40E-01	1.50E-01	4.43E-02	-2.71E+01
WDP	[m^3 world-Eq deprived]	3.36E+00	0.00E+00	4.99E-05	5.24E-02	3.17E-04	-5.45E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-6/4" (2.78 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.48E+01	0.00E+00	1.05E-02	3.83E-02	7.23E-03	-3.37E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.60E+01	0.00E+00	1.05E-02	3.83E-02	7.23E-03	-3.37E+00
PENRE	[MJ]	1.00E+02	0.00E+00	1.40E-01	6.77E+00	4.43E-02	-2.71E+01
PENRM	[MJ]	7.13E+00	0.00E+00	0.00E+00	-6.62E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.07E+02	0.00E+00	1.40E-01	1.50E-01	4.43E-02	-2.71E+01
SM	[kg]	1.88E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.63E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.43E-01	0.00E+00	5.21E-06	1.24E-03	9.34E-06	-1.19E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-6/4" (2.78 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.24E-08	0.00E+00	5.61E-12	7.68E-11	9.58E-12	-1.26E-04
NHWD	[kg]	1.26E+00	0.00E+00	1.95E-05	2.96E-02	1.28E-01	1.28E-01
RWD	[kg]	2.74E-03	0.00E+00	2.64E-07	6.28E-06	6.15E-07	-3.62E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.71E+00	0.00E+00	0.00E+00	2.42E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.66E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.73E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-6/4" (2.78 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.223 UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-2" (2.89 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.61E+00	0.00E+00	1.12E-02	5.99E-01	2.84E-03	-2.31E+00
GWP-fossil	[kg CO_2-Eq.]	8.50E+00	0.00E+00	1.11E-02	5.99E-01	2.82E-03	-2.31E+00
GWP-biogenic	[kg CO_2-Eq.]	8.95E-02	0.00E+00	2.08E-05	2.15E-05	8.70E-06	1.01E-02
GWP-luluc	[kg CO_2-Eq.]	2.18E-02	0.00E+00	1.17E-04	2.44E-05	8.88E-06	-3.39E-03
ODP	[kg CFC11-Eq.]	1.07E-10	0.00E+00	1.88E-15	7.24E-14	9.14E-15	-6.10E-13
AP	[mol H^+-Eq.]	3.43E-02	0.00E+00	4.05E-05	6.52E-05	1.76E-05	-9.54E-03
EP-freshwater	[kg P-Eq.]	5.54E-05	0.00E+00	3.06E-08	1.45E-08	3.99E-09	-2.03E-06
EP-marine	[kg N-Eq.]	6.52E-03	0.00E+00	1.93E-05	1.76E-05	4.29E-06	-1.45E-03
EP-terrestrial	[mol N-Eq.]	7.14E-02	0.00E+00	2.08E-04	3.06E-04	4.68E-05	-1.50E-02
POCP	[kg NMVOC-Eq.]	1.82E-02	0.00E+00	3.71E-05	5.01E-05	1.33E-05	-4.79E-03
ADPE	[kg Sb-Eq.]	7.63E-05	0.00E+00	7.54E-10	8.24E-10	1.92E-10	-3.79E-05
ADPF	[MJ]	1.11E+02	0.00E+00	1.45E-01	1.51E-01	4.62E-02	-2.73E+01
WDP	[m^3 world-Eq deprived]	3.41E+00	0.00E+00	5.18E-05	5.32E-02	3.30E-04	-5.44E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-2" (2.89 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.93E+01	0.00E+00	1.09E-02	3.87E-02	7.53E-03	-3.36E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.05E+01	0.00E+00	1.09E-02	3.87E-02	7.53E-03	-3.36E+00
PENRE	[MJ]	1.04E+02	0.00E+00	1.45E-01	6.98E+00	4.62E-02	-2.73E+01
PENRM	[MJ]	7.34E+00	0.00E+00	0.00E+00	-6.83E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.11E+02	0.00E+00	1.45E-01	1.51E-01	4.62E-02	-2.73E+01
SM	[kg]	1.98E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.79E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.46E-01	0.00E+00	5.41E-06	1.25E-03	9.73E-06	-1.22E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-2" (2.89 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.74E-08	0.00E+00	5.83E-12	7.75E-11	9.98E-12	-1.25E-04
NHWD	[kg]	1.32E+00	0.00E+00	2.03E-05	2.98E-02	1.33E-01	1.32E-01
RWD	[kg]	2.87E-03	0.00E+00	2.74E-07	6.36E-06	6.40E-07	-3.65E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.83E+00	0.00E+00	0.00E+00	2.52E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.81E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.76E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 520 MM: UNI SPER 125-2" (2.89 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.224 UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-3/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-3/4" (2.82 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.40E+00	0.00E+00	1.10E-02	6.19E-01	2.76E-03	-2.34E+00
GWP-fossil	[kg CO_2-Eq.]	8.29E+00	0.00E+00	1.08E-02	6.19E-01	2.74E-03	-2.35E+00
GWP-biogenic	[kg CO_2-Eq.]	8.32E-02	0.00E+00	2.03E-05	2.23E-05	8.45E-06	1.03E-02
GWP-luluc	[kg CO_2-Eq.]	2.10E-02	0.00E+00	1.14E-04	2.35E-05	8.62E-06	-3.41E-03
ODP	[kg CFC11-Eq.]	1.02E-10	0.00E+00	1.84E-15	6.99E-14	8.88E-15	-6.16E-13
AP	[mol H^+-Eq.]	3.36E-02	0.00E+00	3.96E-05	6.63E-05	1.71E-05	-9.63E-03
EP-freshwater	[kg P-Eq.]	5.03E-05	0.00E+00	2.98E-08	1.47E-08	3.88E-09	-2.05E-06
EP-marine	[kg N-Eq.]	6.28E-03	0.00E+00	1.88E-05	1.79E-05	4.17E-06	-1.46E-03
EP-terrestrial	[mol N-Eq.]	6.87E-02	0.00E+00	2.03E-04	3.11E-04	4.55E-05	-1.51E-02
POCP	[kg NMVOC-Eq.]	1.77E-02	0.00E+00	3.62E-05	5.08E-05	1.29E-05	-4.85E-03
ADPE	[kg Sb-Eq.]	7.62E-05	0.00E+00	7.36E-10	8.01E-10	1.86E-10	-3.82E-05
ADPF	[MJ]	1.09E+02	0.00E+00	1.42E-01	1.46E-01	4.48E-02	-2.78E+01
WDP	[m^3 world-Eq deprived]	3.04E+00	0.00E+00	5.06E-05	5.46E-02	3.20E-04	-5.47E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-3/4" (2.82 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.50E+01	0.00E+00	1.07E-02	3.77E-02	7.31E-03	-3.38E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.62E+01	0.00E+00	1.07E-02	3.77E-02	7.31E-03	-3.38E+00
PENRE	[MJ]	1.02E+02	0.00E+00	1.42E-01	7.25E+00	4.48E-02	-2.78E+01
PENRM	[MJ]	7.62E+00	0.00E+00	0.00E+00	-7.11E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.09E+02	0.00E+00	1.42E-01	1.46E-01	4.48E-02	-2.78E+01
SM	[kg]	1.87E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.96E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.45E-01	0.00E+00	5.28E-06	1.29E-03	9.44E-06	-1.25E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-3/4" (2.82 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.21E-08	0.00E+00	5.69E-12	7.53E-11	9.69E-12	-1.25E-04
NHWD	[kg]	1.25E+00	0.00E+00	1.98E-05	2.87E-02	1.29E-01	1.35E-01
RWD	[kg]	2.74E-03	0.00E+00	2.68E-07	6.34E-06	6.22E-07	-3.72E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.70E+00	0.00E+00	0.00E+00	2.45E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.80E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-3/4" (2.82 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.225 UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-1" (2.60 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.95E+00	0.00E+00	1.01E-02	6.05E-01	2.53E-03	-2.13E+00
GWP-fossil	[kg CO_2-Eq.]	7.86E+00	0.00E+00	9.99E-03	6.05E-01	2.51E-03	-2.14E+00
GWP-biogenic	[kg CO_2-Eq.]	7.63E-02	0.00E+00	1.87E-05	2.19E-05	7.74E-06	9.16E-03
GWP-luluc	[kg CO_2-Eq.]	1.95E-02	0.00E+00	1.05E-04	2.30E-05	7.90E-06	-3.19E-03
ODP	[kg CFC11-Eq.]	9.44E-11	0.00E+00	1.69E-15	6.84E-14	8.14E-15	-7.59E-13
AP	[mol H^+-Eq.]	3.23E-02	0.00E+00	3.65E-05	6.48E-05	1.57E-05	-8.85E-03
EP-freshwater	[kg P-Eq.]	4.79E-05	0.00E+00	2.75E-08	1.43E-08	3.55E-09	-1.91E-06
EP-marine	[kg N-Eq.]	5.90E-03	0.00E+00	1.73E-05	1.75E-05	3.82E-06	-1.34E-03
EP-terrestrial	[mol N-Eq.]	6.45E-02	0.00E+00	1.87E-04	3.05E-04	4.17E-05	-1.39E-02
POCP	[kg NMVOC-Eq.]	1.67E-02	0.00E+00	3.34E-05	4.97E-05	1.19E-05	-4.43E-03
ADPE	[kg Sb-Eq.]	7.60E-05	0.00E+00	6.78E-10	7.83E-10	1.71E-10	-3.53E-05
ADPF	[MJ]	1.04E+02	0.00E+00	1.31E-01	1.43E-01	4.11E-02	-2.54E+01
WDP	[m^3 world-Eq deprived]	2.98E+00	0.00E+00	4.66E-05	5.34E-02	2.94E-04	-5.08E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-1" (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	7.84E+01	0.00E+00	9.85E-03	3.69E-02	6.70E-03	-3.25E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	7.96E+01	0.00E+00	9.85E-03	3.69E-02	6.70E-03	-3.25E+00
PENRE	[MJ]	9.69E+01	0.00E+00	1.31E-01	7.15E+00	4.11E-02	-2.54E+01
PENRM	[MJ]	7.52E+00	0.00E+00	0.00E+00	-7.01E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.04E+02	0.00E+00	1.31E-01	1.43E-01	4.11E-02	-2.54E+01
SM	[kg]	1.74E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.04E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.41E-01	0.00E+00	4.87E-06	1.26E-03	8.66E-06	-1.09E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-1" (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	8.52E-08	0.00E+00	5.24E-12	7.36E-11	8.88E-12	-1.17E-04
NHWD	[kg]	1.16E+00	0.00E+00	1.82E-05	2.80E-02	1.18E-01	1.18E-01
RWD	[kg]	2.57E-03	0.00E+00	2.47E-07	6.20E-06	5.70E-07	-3.60E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.54E+00	0.00E+00	0.00E+00	2.25E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.82E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.76E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-1" (2.60 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.226 UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-5/4" (2.84 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.45E+00	0.00E+00	1.11E-02	6.24E-01	2.78E-03	-2.36E+00
GWP-fossil	[kg CO_2-Eq.]	8.34E+00	0.00E+00	1.09E-02	6.24E-01	2.76E-03	-2.36E+00
GWP-biogenic	[kg CO_2-Eq.]	8.40E-02	0.00E+00	2.04E-05	2.25E-05	8.50E-06	1.03E-02
GWP-luluc	[kg CO_2-Eq.]	2.11E-02	0.00E+00	1.15E-04	2.37E-05	8.68E-06	-3.41E-03
ODP	[kg CFC11-Eq.]	1.03E-10	0.00E+00	1.85E-15	7.03E-14	8.94E-15	-6.22E-13
AP	[mol H^+-Eq.]	3.37E-02	0.00E+00	3.98E-05	6.68E-05	1.72E-05	-9.67E-03
EP-freshwater	[kg P-Eq.]	5.06E-05	0.00E+00	3.00E-08	1.48E-08	3.90E-09	-2.05E-06
EP-marine	[kg N-Eq.]	6.32E-03	0.00E+00	1.89E-05	1.80E-05	4.20E-06	-1.47E-03
EP-terrestrial	[mol N-Eq.]	6.92E-02	0.00E+00	2.05E-04	3.14E-04	4.58E-05	-1.52E-02
POCP	[kg NMVOC-Eq.]	1.78E-02	0.00E+00	3.65E-05	5.12E-05	1.30E-05	-4.86E-03
ADPE	[kg Sb-Eq.]	7.62E-05	0.00E+00	7.41E-10	8.05E-10	1.87E-10	-3.83E-05
ADPF	[MJ]	1.10E+02	0.00E+00	1.43E-01	1.47E-01	4.52E-02	-2.79E+01
WDP	[m^3 world-Eq deprived]	3.05E+00	0.00E+00	5.09E-05	5.50E-02	3.23E-04	-5.49E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-5/4" (2.84 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.57E+01	0.00E+00	1.08E-02	3.79E-02	7.36E-03	-3.39E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.69E+01	0.00E+00	1.08E-02	3.79E-02	7.36E-03	-3.39E+00
PENRE	[MJ]	1.02E+02	0.00E+00	1.43E-01	7.32E+00	4.52E-02	-2.79E+01
PENRM	[MJ]	7.68E+00	0.00E+00	0.00E+00	-7.17E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.10E+02	0.00E+00	1.43E-01	1.47E-01	4.52E-02	-2.79E+01
SM	[kg]	1.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.01E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.45E-01	0.00E+00	5.32E-06	1.30E-03	9.51E-06	-1.25E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-5/4" (2.84 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.29E-08	0.00E+00	5.73E-12	7.57E-11	9.76E-12	-1.25E-04
NHWD	[kg]	1.26E+00	0.00E+00	1.99E-05	2.88E-02	1.30E-01	1.36E-01
RWD	[kg]	2.76E-03	0.00E+00	2.69E-07	6.38E-06	6.26E-07	-3.74E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.71E+00	0.00E+00	0.00E+00	2.47E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.01E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.81E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-5/4" (2.84 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.227 UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-6/4" (2.85 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.49E+00	0.00E+00	1.11E-02	6.47E-01	2.78E-03	-2.37E+00
GWP-fossil	[kg CO_2-Eq.]	8.38E+00	0.00E+00	1.10E-02	6.47E-01	2.76E-03	-2.38E+00
GWP-biogenic	[kg CO_2-Eq.]	8.41E-02	0.00E+00	2.05E-05	2.32E-05	8.51E-06	1.03E-02
GWP-luluc	[kg CO_2-Eq.]	2.12E-02	0.00E+00	1.15E-04	2.56E-05	8.68E-06	-3.43E-03
ODP	[kg CFC11-Eq.]	1.03E-10	0.00E+00	1.85E-15	7.61E-14	8.94E-15	-7.05E-13
AP	[mol H^+-Eq.]	3.38E-02	0.00E+00	4.00E-05	6.99E-05	1.72E-05	-9.69E-03
EP-freshwater	[kg P-Eq.]	5.40E-05	0.00E+00	3.01E-08	1.55E-08	3.90E-09	-2.06E-06
EP-marine	[kg N-Eq.]	6.34E-03	0.00E+00	1.90E-05	1.89E-05	4.20E-06	-1.47E-03
EP-terrestrial	[mol N-Eq.]	6.94E-02	0.00E+00	2.06E-04	3.28E-04	4.58E-05	-1.52E-02
POCP	[kg NMVOC-Eq.]	1.78E-02	0.00E+00	3.66E-05	5.37E-05	1.30E-05	-4.88E-03
ADPE	[kg Sb-Eq.]	7.62E-05	0.00E+00	7.43E-10	8.69E-10	1.88E-10	-3.83E-05
ADPF	[MJ]	1.11E+02	0.00E+00	1.43E-01	1.59E-01	4.52E-02	-2.81E+01
WDP	[m^3 world-Eq deprived]	3.39E+00	0.00E+00	5.11E-05	5.72E-02	3.23E-04	-5.51E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-6/4" (2.85 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	8.58E+01	0.00E+00	1.08E-02	4.08E-02	7.36E-03	-3.45E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.70E+01	0.00E+00	1.08E-02	4.08E-02	7.36E-03	-3.45E+00
PENRE	[MJ]	1.03E+02	0.00E+00	1.43E-01	7.42E+00	4.52E-02	-2.81E+01
PENRM	[MJ]	7.77E+00	0.00E+00	0.00E+00	-7.26E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.11E+02	0.00E+00	1.43E-01	1.59E-01	4.52E-02	-2.81E+01
SM	[kg]	1.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.02E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.53E-01	0.00E+00	5.34E-06	1.35E-03	9.51E-06	-1.26E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-6/4" (2.85 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.29E-08	0.00E+00	5.75E-12	8.16E-11	9.76E-12	-1.26E-04
NHWD	[kg]	1.26E+00	0.00E+00	2.00E-05	3.13E-02	1.30E-01	1.36E-01
RWD	[kg]	2.76E-03	0.00E+00	2.70E-07	6.77E-06	6.26E-07	-3.86E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.71E+00	0.00E+00	0.00E+00	2.47E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.05E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.89E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-6/4" (2.85 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.228 UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-2" (2.96 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	8.83E+00	0.00E+00	1.15E-02	6.55E-01	2.89E-03	-2.39E+00
GWP-fossil	[kg CO_2-Eq.]	8.71E+00	0.00E+00	1.14E-02	6.55E-01	2.88E-03	-2.40E+00
GWP-biogenic	[kg CO_2-Eq.]	8.93E-02	0.00E+00	2.13E-05	2.35E-05	8.86E-06	1.04E-02
GWP-luluc	[kg CO_2-Eq.]	2.21E-02	0.00E+00	1.19E-04	2.58E-05	9.04E-06	-3.42E-03
ODP	[kg CFC11-Eq.]	1.08E-10	0.00E+00	1.93E-15	7.66E-14	9.31E-15	-6.89E-13
AP	[mol H^+-Eq.]	3.48E-02	0.00E+00	4.15E-05	7.07E-05	1.79E-05	-9.72E-03
EP-freshwater	[kg P-Eq.]	5.57E-05	0.00E+00	3.13E-08	1.57E-08	4.07E-09	-2.06E-06
EP-marine	[kg N-Eq.]	6.63E-03	0.00E+00	1.97E-05	1.91E-05	4.37E-06	-1.48E-03
EP-terrestrial	[mol N-Eq.]	7.25E-02	0.00E+00	2.13E-04	3.32E-04	4.77E-05	-1.53E-02
POCP	[kg NMVOC-Eq.]	1.86E-02	0.00E+00	3.80E-05	5.43E-05	1.36E-05	-4.91E-03
ADPE	[kg Sb-Eq.]	7.64E-05	0.00E+00	7.72E-10	8.74E-10	1.95E-10	-3.83E-05
ADPF	[MJ]	1.15E+02	0.00E+00	1.49E-01	1.60E-01	4.70E-02	-2.83E+01
WDP	[m^3 world-Eq deprived]	3.43E+00	0.00E+00	5.31E-05	5.79E-02	3.36E-04	-5.50E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-2" (2.96 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.03E+01	0.00E+00	1.12E-02	4.11E-02	7.67E-03	-3.44E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.15E+01	0.00E+00	1.12E-02	4.11E-02	7.67E-03	-3.44E+00
PENRE	[MJ]	1.07E+02	0.00E+00	1.49E-01	7.63E+00	4.70E-02	-2.83E+01
PENRM	[MJ]	7.99E+00	0.00E+00	0.00E+00	-7.47E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.15E+02	0.00E+00	1.49E-01	1.60E-01	4.70E-02	-2.83E+01
SM	[kg]	1.99E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.19E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.56E-01	0.00E+00	5.54E-06	1.37E-03	9.91E-06	-1.29E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-2" (2.96 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	9.79E-08	0.00E+00	5.97E-12	8.21E-11	1.02E-11	-1.25E-04
NHWD	[kg]	1.33E+00	0.00E+00	2.08E-05	3.15E-02	1.35E-01	1.40E-01
RWD	[kg]	2.89E-03	0.00E+00	2.81E-07	6.83E-06	6.52E-07	-3.89E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.83E+00	0.00E+00	0.00E+00	2.57E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.07E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.91E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 595 MM: UNI SPER 150-2" (2.96 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.229 UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-1" (3.09 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.15E+00	0.00E+00	1.20E-02	6.85E-01	3.02E-03	-2.53E+00
GWP-fossil	[kg CO_2-Eq.]	9.03E+00	0.00E+00	1.19E-02	6.85E-01	3.00E-03	-2.54E+00
GWP-biogenic	[kg CO_2-Eq.]	9.08E-02	0.00E+00	2.22E-05	2.48E-05	9.24E-06	1.12E-02
GWP-luluc	[kg CO_2-Eq.]	2.29E-02	0.00E+00	1.25E-04	2.52E-05	9.43E-06	-3.48E-03
ODP	[kg CFC11-Eq.]	1.11E-10	0.00E+00	2.01E-15	7.49E-14	9.71E-15	-6.10E-13
AP	[mol H^+-Eq.]	3.57E-02	0.00E+00	4.33E-05	7.28E-05	1.87E-05	-1.01E-02
EP-freshwater	[kg P-Eq.]	5.34E-05	0.00E+00	3.26E-08	1.61E-08	4.24E-09	-2.12E-06
EP-marine	[kg N-Eq.]	6.83E-03	0.00E+00	2.06E-05	1.96E-05	4.56E-06	-1.54E-03
EP-terrestrial	[mol N-Eq.]	7.48E-02	0.00E+00	2.23E-04	3.43E-04	4.97E-05	-1.58E-02
POCP	[kg NMVOC-Eq.]	1.92E-02	0.00E+00	3.96E-05	5.58E-05	1.41E-05	-5.14E-03
ADPE	[kg Sb-Eq.]	7.66E-05	0.00E+00	8.05E-10	8.61E-10	2.04E-10	-3.93E-05
ADPF	[MJ]	1.19E+02	0.00E+00	1.55E-01	1.56E-01	4.90E-02	-2.98E+01
WDP	[m^3 world-Eq deprived]	3.14E+00	0.00E+00	5.54E-05	6.03E-02	3.50E-04	-5.64E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-1" (3.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.31E+01	0.00E+00	1.17E-02	4.06E-02	8.00E-03	-3.47E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.42E+01	0.00E+00	1.17E-02	4.06E-02	8.00E-03	-3.47E+00
PENRE	[MJ]	1.11E+02	0.00E+00	1.55E-01	8.14E+00	4.90E-02	-2.98E+01
PENRM	[MJ]	8.50E+00	0.00E+00	0.00E+00	-7.98E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.19E+02	0.00E+00	1.55E-01	1.56E-01	4.90E-02	-2.98E+01
SM	[kg]	2.03E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.89E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.61E-01	0.00E+00	5.78E-06	1.42E-03	1.03E-05	-1.41E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-1" (3.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.00E-07	0.00E+00	6.22E-12	8.09E-11	1.06E-11	-1.26E-04
NHWD	[kg]	1.35E+00	0.00E+00	2.17E-05	3.07E-02	1.41E-01	1.54E-01
RWD	[kg]	2.95E-03	0.00E+00	2.93E-07	6.90E-06	6.80E-07	-4.01E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.87E+00	0.00E+00	0.00E+00	2.68E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.11E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.98E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2- optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-1" (3.09 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.230 UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-5/4" (3.17 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.33E+00	0.00E+00	1.23E-02	6.93E-01	3.10E-03	-2.60E+00
GWP-fossil	[kg CO_2-Eq.]	9.21E+00	0.00E+00	1.22E-02	6.93E-01	3.08E-03	-2.61E+00
GWP-biogenic	[kg CO_2-Eq.]	9.36E-02	0.00E+00	2.28E-05	2.51E-05	9.50E-06	1.15E-02
GWP-luluc	[kg CO_2-Eq.]	2.35E-02	0.00E+00	1.28E-04	2.54E-05	9.69E-06	-3.54E-03
ODP	[kg CFC11-Eq.]	1.14E-10	0.00E+00	2.06E-15	7.55E-14	9.99E-15	-5.73E-13
AP	[mol H^+-Eq.]	3.62E-02	0.00E+00	4.45E-05	7.36E-05	1.92E-05	-1.03E-02
EP-freshwater	[kg P-Eq.]	5.43E-05	0.00E+00	3.35E-08	1.62E-08	4.36E-09	-2.15E-06
EP-marine	[kg N-Eq.]	6.99E-03	0.00E+00	2.11E-05	1.98E-05	4.69E-06	-1.58E-03
EP-terrestrial	[mol N-Eq.]	7.65E-02	0.00E+00	2.29E-04	3.46E-04	5.11E-05	-1.62E-02
POCP	[kg NMVOC-Eq.]	1.96E-02	0.00E+00	4.07E-05	5.64E-05	1.45E-05	-5.27E-03
ADPE	[kg Sb-Eq.]	7.67E-05	0.00E+00	8.27E-10	8.68E-10	2.09E-10	-4.01E-05
ADPF	[MJ]	1.21E+02	0.00E+00	1.59E-01	1.58E-01	5.04E-02	-3.05E+01
WDP	[m^3 world-Eq deprived]	3.16E+00	0.00E+00	5.69E-05	6.09E-02	3.60E-04	-5.75E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-5/4" (3.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.57E+01	0.00E+00	1.20E-02	4.09E-02	8.22E-03	-3.50E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.69E+01	0.00E+00	1.20E-02	4.09E-02	8.22E-03	-3.50E+00
PENRE	[MJ]	1.13E+02	0.00E+00	1.59E-01	8.24E+00	5.04E-02	-3.05E+01
PENRM	[MJ]	8.59E+00	0.00E+00	0.00E+00	-8.08E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.21E+02	0.00E+00	1.59E-01	1.58E-01	5.04E-02	-3.05E+01
SM	[kg]	2.09E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.19E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.62E-01	0.00E+00	5.94E-06	1.44E-03	1.06E-05	-1.46E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-5/4" (3.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.03E-07	0.00E+00	6.39E-12	8.16E-11	1.09E-11	-1.28E-04
NHWD	[kg]	1.39E+00	0.00E+00	2.22E-05	3.09E-02	1.45E-01	1.60E-01
RWD	[kg]	3.02E-03	0.00E+00	3.01E-07	6.97E-06	6.99E-07	-4.06E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.93E+00	0.00E+00	0.00E+00	2.76E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.12E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-5/4" (3.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.231 UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-6/4" (3.20 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.30E+00	0.00E+00	1.25E-02	7.27E-01	3.12E-03	-2.71E+00
GWP-fossil	[kg CO_2-Eq.]	9.18E+00	0.00E+00	1.23E-02	7.27E-01	3.10E-03	-2.72E+00
GWP-biogenic	[kg CO_2-Eq.]	9.26E-02	0.00E+00	2.30E-05	2.62E-05	9.55E-06	1.20E-02
GWP-luluc	[kg CO_2-Eq.]	2.34E-02	0.00E+00	1.29E-04	2.78E-05	9.75E-06	-3.68E-03
ODP	[kg CFC11-Eq.]	1.13E-10	0.00E+00	2.08E-15	8.26E-14	1.00E-14	-6.24E-13
AP	[mol H^+-Eq.]	3.61E-02	0.00E+00	4.49E-05	7.79E-05	1.94E-05	-1.07E-02
EP-freshwater	[kg P-Eq.]	5.74E-05	0.00E+00	3.38E-08	1.73E-08	4.38E-09	-2.24E-06
EP-marine	[kg N-Eq.]	6.95E-03	0.00E+00	2.13E-05	2.10E-05	4.71E-06	-1.64E-03
EP-terrestrial	[mol N-Eq.]	7.60E-02	0.00E+00	2.31E-04	3.66E-04	5.14E-05	-1.68E-02
POCP	[kg NMVOC-Eq.]	1.95E-02	0.00E+00	4.11E-05	5.98E-05	1.46E-05	-5.48E-03
ADPE	[kg Sb-Eq.]	7.67E-05	0.00E+00	8.35E-10	9.46E-10	2.11E-10	-4.17E-05
ADPF	[MJ]	1.21E+02	0.00E+00	1.61E-01	1.72E-01	5.07E-02	-3.18E+01
WDP	[m^3 world-Eq deprived]	3.49E+00	0.00E+00	5.74E-05	6.41E-02	3.62E-04	-5.98E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-6/4" (3.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.52E+01	0.00E+00	1.21E-02	4.45E-02	8.27E-03	-3.66E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.64E+01	0.00E+00	1.21E-02	4.45E-02	8.27E-03	-3.66E+00
PENRE	[MJ]	1.13E+02	0.00E+00	1.61E-01	8.32E+00	5.07E-02	-3.18E+01
PENRM	[MJ]	8.66E+00	0.00E+00	0.00E+00	-8.15E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.21E+02	0.00E+00	1.61E-01	1.72E-01	5.07E-02	-3.18E+01
SM	[kg]	2.06E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.57E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.70E-01	0.00E+00	5.99E-06	1.51E-03	1.07E-05	-1.52E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-6/4" (3.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.02E-07	0.00E+00	6.45E-12	8.89E-11	1.10E-11	-1.33E-04
NHWD	[kg]	1.37E+00	0.00E+00	2.25E-05	3.39E-02	1.46E-01	1.67E-01
RWD	[kg]	2.99E-03	0.00E+00	3.04E-07	7.47E-06	7.03E-07	-4.27E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.91E+00	0.00E+00	0.00E+00	2.77E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.18E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.11E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-6/4" (3.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.232 UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-2" (3.25 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.65E+00	0.00E+00	1.26E-02	7.22E-01	3.18E-03	-2.59E+00
GWP-fossil	[kg CO_2-Eq.]	9.52E+00	0.00E+00	1.25E-02	7.22E-01	3.16E-03	-2.60E+00
GWP-biogenic	[kg CO_2-Eq.]	9.79E-02	0.00E+00	2.33E-05	2.61E-05	9.72E-06	1.14E-02
GWP-luluc	[kg CO_2-Eq.]	2.42E-02	0.00E+00	1.31E-04	2.75E-05	9.92E-06	-3.50E-03
ODP	[kg CFC11-Eq.]	1.18E-10	0.00E+00	2.12E-15	8.15E-14	1.02E-14	-6.74E-13
AP	[mol H^+-Eq.]	3.71E-02	0.00E+00	4.56E-05	7.73E-05	1.97E-05	-1.02E-02
EP-freshwater	[kg P-Eq.]	5.91E-05	0.00E+00	3.44E-08	1.71E-08	4.46E-09	-2.14E-06
EP-marine	[kg N-Eq.]	7.24E-03	0.00E+00	2.17E-05	2.09E-05	4.80E-06	-1.56E-03
EP-terrestrial	[mol N-Eq.]	7.92E-02	0.00E+00	2.34E-04	3.63E-04	5.23E-05	-1.60E-02
POCP	[kg NMVOC-Eq.]	2.03E-02	0.00E+00	4.17E-05	5.93E-05	1.49E-05	-5.22E-03
ADPE	[kg Sb-Eq.]	7.68E-05	0.00E+00	8.48E-10	9.34E-10	2.14E-10	-3.95E-05
ADPF	[MJ]	1.25E+02	0.00E+00	1.63E-01	1.70E-01	5.16E-02	-3.05E+01
WDP	[m^3 world-Eq deprived]	3.54E+00	0.00E+00	5.83E-05	6.36E-02	3.69E-04	-5.68E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-2" (3.25 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.92E+01	0.00E+00	1.23E-02	4.40E-02	8.42E-03	-3.52E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.00E+02	0.00E+00	1.23E-02	4.40E-02	8.42E-03	-3.52E+00
PENRE	[MJ]	1.16E+02	0.00E+00	1.63E-01	8.54E+00	5.16E-02	-3.05E+01
PENRM	[MJ]	8.88E+00	0.00E+00	0.00E+00	-8.37E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.25E+02	0.00E+00	1.63E-01	1.70E-01	5.16E-02	-3.05E+01
SM	[kg]	2.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.16E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.72E-01	0.00E+00	6.09E-06	1.50E-03	1.09E-05	-1.46E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-2" (3.25 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.07E-07	0.00E+00	6.55E-12	8.78E-11	1.12E-11	-1.26E-04
NHWD	[kg]	1.44E+00	0.00E+00	2.28E-05	3.35E-02	1.49E-01	1.60E-01
RWD	[kg]	3.13E-03	0.00E+00	3.08E-07	7.39E-06	7.16E-07	-4.19E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.03E+00	0.00E+00	0.00E+00	2.82E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 685 MM: UNI SPER 175-2" (3.25 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.233 UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-1" (3.20 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.44E+00	0.00E+00	1.25E-02	7.64E-01	3.11E-03	-2.69E+00
GWP-fossil	[kg CO_2-Eq.]	9.32E+00	0.00E+00	1.23E-02	7.64E-01	3.09E-03	-2.70E+00
GWP-biogenic	[kg CO_2-Eq.]	9.06E-02	0.00E+00	2.30E-05	2.78E-05	9.51E-06	1.18E-02
GWP-luluc	[kg CO_2-Eq.]	2.33E-02	0.00E+00	1.29E-04	2.73E-05	9.70E-06	-3.57E-03
ODP	[kg CFC11-Eq.]	1.12E-10	0.00E+00	2.08E-15	8.09E-14	9.99E-15	-6.98E-13
AP	[mol H^+-Eq.]	3.64E-02	0.00E+00	4.49E-05	8.07E-05	1.93E-05	-1.05E-02
EP-freshwater	[kg P-Eq.]	5.38E-05	0.00E+00	3.38E-08	1.78E-08	4.36E-09	-2.19E-06
EP-marine	[kg N-Eq.]	6.98E-03	0.00E+00	2.13E-05	2.17E-05	4.69E-06	-1.61E-03
EP-terrestrial	[mol N-Eq.]	7.63E-02	0.00E+00	2.31E-04	3.80E-04	5.12E-05	-1.65E-02
POCP	[kg NMVOC-Eq.]	1.98E-02	0.00E+00	4.11E-05	6.17E-05	1.46E-05	-5.40E-03
ADPE	[kg Sb-Eq.]	7.68E-05	0.00E+00	8.35E-10	9.33E-10	2.10E-10	-4.04E-05
ADPF	[MJ]	1.24E+02	0.00E+00	1.61E-01	1.69E-01	5.05E-02	-3.16E+01
WDP	[m^3 world-Eq deprived]	3.17E+00	0.00E+00	5.74E-05	6.70E-02	3.61E-04	-5.81E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-1" (3.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.46E+01	0.00E+00	1.21E-02	4.40E-02	8.23E-03	-3.61E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.58E+01	0.00E+00	1.21E-02	4.40E-02	8.23E-03	-3.61E+00
PENRE	[MJ]	1.14E+02	0.00E+00	1.61E-01	9.10E+00	5.05E-02	-3.16E+01
PENRM	[MJ]	9.35E+00	0.00E+00	0.00E+00	-8.93E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.24E+02	0.00E+00	1.61E-01	1.69E-01	5.05E-02	-3.16E+01
SM	[kg]	2.04E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.59E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.74E-01	0.00E+00	5.99E-06	1.58E-03	1.06E-05	-1.53E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-1" (3.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.01E-07	0.00E+00	6.45E-12	8.77E-11	1.09E-11	-1.28E-04
NHWD	[kg]	1.36E+00	0.00E+00	2.25E-05	3.31E-02	1.45E-01	1.68E-01
RWD	[kg]	2.98E-03	0.00E+00	3.04E-07	7.57E-06	7.00E-07	-4.37E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.87E+00	0.00E+00	0.00E+00	2.76E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-1" (3.20 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.234 UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-5/4" (3.27 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.62E+00	0.00E+00	1.27E-02	7.69E-01	3.18E-03	-2.73E+00
GWP-fossil	[kg CO_2-Eq.]	9.50E+00	0.00E+00	1.26E-02	7.69E-01	3.16E-03	-2.74E+00
GWP-biogenic	[kg CO_2-Eq.]	9.34E-02	0.00E+00	2.35E-05	2.80E-05	9.73E-06	1.20E-02
GWP-luluc	[kg CO_2-Eq.]	2.39E-02	0.00E+00	1.32E-04	2.74E-05	9.93E-06	-3.60E-03
ODP	[kg CFC11-Eq.]	1.15E-10	0.00E+00	2.13E-15	8.12E-14	1.02E-14	-6.73E-13
AP	[mol H^+-Eq.]	3.69E-02	0.00E+00	4.59E-05	8.11E-05	1.97E-05	-1.06E-02
EP-freshwater	[kg P-Eq.]	5.48E-05	0.00E+00	3.46E-08	1.79E-08	4.47E-09	-2.21E-06
EP-marine	[kg N-Eq.]	7.13E-03	0.00E+00	2.18E-05	2.18E-05	4.80E-06	-1.63E-03
EP-terrestrial	[mol N-Eq.]	7.80E-02	0.00E+00	2.36E-04	3.82E-04	5.24E-05	-1.67E-02
POCP	[kg NMVOC-Eq.]	2.01E-02	0.00E+00	4.20E-05	6.21E-05	1.49E-05	-5.46E-03
ADPE	[kg Sb-Eq.]	7.68E-05	0.00E+00	8.53E-10	9.36E-10	2.14E-10	-4.08E-05
ADPF	[MJ]	1.26E+02	0.00E+00	1.64E-01	1.69E-01	5.17E-02	-3.20E+01
WDP	[m^3 world-Eq deprived]	3.19E+00	0.00E+00	5.86E-05	6.74E-02	3.69E-04	-5.86E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-5/4" (3.27 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.71E+01	0.00E+00	1.24E-02	4.42E-02	8.42E-03	-3.62E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.83E+01	0.00E+00	1.24E-02	4.42E-02	8.42E-03	-3.62E+00
PENRE	[MJ]	1.17E+02	0.00E+00	1.64E-01	9.10E+00	5.17E-02	-3.20E+01
PENRM	[MJ]	9.45E+00	0.00E+00	0.00E+00	-8.93E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.26E+02	0.00E+00	1.64E-01	1.69E-01	5.17E-02	-3.20E+01
SM	[kg]	2.10E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.78E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.75E-01	0.00E+00	6.12E-06	1.59E-03	1.09E-05	-1.56E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-5/4" (3.27 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.04E-07	0.00E+00	6.59E-12	8.80E-11	1.12E-11	-1.29E-04
NHWD	[kg]	1.39E+00	0.00E+00	2.29E-05	3.32E-02	1.49E-01	1.72E-01
RWD	[kg]	3.05E-03	0.00E+00	3.10E-07	7.61E-06	7.16E-07	-4.40E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.93E+00	0.00E+00	0.00E+00	2.82E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.24E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.21E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-5/4" (3.27 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.235 UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-6/4" (3.30 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.58E+00	0.00E+00	1.28E-02	8.03E-01	3.20E-03	-2.84E+00
GWP-fossil	[kg CO_2-Eq.]	9.47E+00	0.00E+00	1.27E-02	8.03E-01	3.18E-03	-2.84E+00
GWP-biogenic	[kg CO_2-Eq.]	9.24E-02	0.00E+00	2.37E-05	2.91E-05	9.78E-06	1.24E-02
GWP-luluc	[kg CO_2-Eq.]	2.38E-02	0.00E+00	1.33E-04	2.98E-05	9.98E-06	-3.74E-03
ODP	[kg CFC11-Eq.]	1.15E-10	0.00E+00	2.15E-15	8.84E-14	1.03E-14	-7.26E-13
AP	[mol H^+-Eq.]	3.68E-02	0.00E+00	4.63E-05	8.55E-05	1.98E-05	-1.10E-02
EP-freshwater	[kg P-Eq.]	5.79E-05	0.00E+00	3.49E-08	1.89E-08	4.49E-09	-2.29E-06
EP-marine	[kg N-Eq.]	7.09E-03	0.00E+00	2.20E-05	2.31E-05	4.83E-06	-1.69E-03
EP-terrestrial	[mol N-Eq.]	7.75E-02	0.00E+00	2.38E-04	4.02E-04	5.27E-05	-1.73E-02
POCP	[kg NMVOC-Eq.]	2.00E-02	0.00E+00	4.24E-05	6.55E-05	1.50E-05	-5.67E-03
ADPE	[kg Sb-Eq.]	7.68E-05	0.00E+00	8.61E-10	1.01E-09	2.16E-10	-4.23E-05
ADPF	[MJ]	1.26E+02	0.00E+00	1.66E-01	1.84E-01	5.20E-02	-3.33E+01
WDP	[m^3 world-Eq deprived]	3.52E+00	0.00E+00	5.92E-05	7.07E-02	3.71E-04	-6.08E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-6/4" (3.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.66E+01	0.00E+00	1.25E-02	4.78E-02	8.47E-03	-3.77E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.77E+01	0.00E+00	1.25E-02	4.78E-02	8.47E-03	-3.77E+00
PENRE	[MJ]	1.16E+02	0.00E+00	1.66E-01	9.19E+00	5.20E-02	-3.33E+01
PENRM	[MJ]	9.52E+00	0.00E+00	0.00E+00	-9.01E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.26E+02	0.00E+00	1.66E-01	1.84E-01	5.20E-02	-3.33E+01
SM	[kg]	2.07E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.83E-01	0.00E+00	6.18E-06	1.67E-03	1.09E-05	-1.62E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-6/4" (3.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.03E-07	0.00E+00	6.65E-12	9.54E-11	1.12E-11	-1.33E-04
NHWD	[kg]	1.38E+00	0.00E+00	2.32E-05	3.62E-02	1.50E-01	1.79E-01
RWD	[kg]	3.02E-03	0.00E+00	3.13E-07	8.11E-06	7.20E-07	-4.61E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.91E+00	0.00E+00	0.00E+00	2.84E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.30E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.32E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-6/4" (3.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.236 UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-2" (3.36 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.94E+00	0.00E+00	1.31E-02	7.98E-01	3.26E-03	-2.74E+00
GWP-fossil	[kg CO_2-Eq.]	9.81E+00	0.00E+00	1.29E-02	7.98E-01	3.24E-03	-2.75E+00
GWP-biogenic	[kg CO_2-Eq.]	9.77E-02	0.00E+00	2.41E-05	2.89E-05	9.99E-06	1.20E-02
GWP-luluc	[kg CO_2-Eq.]	2.47E-02	0.00E+00	1.36E-04	2.94E-05	1.02E-05	-3.58E-03
ODP	[kg CFC11-Eq.]	1.19E-10	0.00E+00	2.19E-15	8.73E-14	1.05E-14	-7.59E-13
AP	[mol H^+-Eq.]	3.78E-02	0.00E+00	4.71E-05	8.48E-05	2.02E-05	-1.06E-02
EP-freshwater	[kg P-Eq.]	5.95E-05	0.00E+00	3.55E-08	1.87E-08	4.58E-09	-2.20E-06
EP-marine	[kg N-Eq.]	7.38E-03	0.00E+00	2.24E-05	2.29E-05	4.93E-06	-1.63E-03
EP-terrestrial	[mol N-Eq.]	8.07E-02	0.00E+00	2.42E-04	3.99E-04	5.38E-05	-1.67E-02
POCP	[kg NMVOC-Eq.]	2.08E-02	0.00E+00	4.31E-05	6.50E-05	1.53E-05	-5.46E-03
ADPE	[kg Sb-Eq.]	7.70E-05	0.00E+00	8.76E-10	1.00E-09	2.20E-10	-4.05E-05
ADPF	[MJ]	1.30E+02	0.00E+00	1.69E-01	1.82E-01	5.30E-02	-3.22E+01
WDP	[m^3 world-Eq deprived]	3.57E+00	0.00E+00	6.03E-05	7.02E-02	3.79E-04	-5.83E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-2" (3.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.01E+02	0.00E+00	1.27E-02	4.73E-02	8.64E-03	-3.65E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.02E+02	0.00E+00	1.27E-02	4.73E-02	8.64E-03	-3.65E+00
PENRE	[MJ]	1.20E+02	0.00E+00	1.69E-01	9.40E+00	5.30E-02	-3.22E+01
PENRM	[MJ]	9.73E+00	0.00E+00	0.00E+00	-9.22E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.30E+02	0.00E+00	1.69E-01	1.82E-01	5.30E-02	-3.22E+01
SM	[kg]	2.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.83E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.85E-01	0.00E+00	6.29E-06	1.65E-03	1.12E-05	-1.58E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-2" (3.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.08E-07	0.00E+00	6.77E-12	9.43E-11	1.15E-11	-1.27E-04
NHWD	[kg]	1.45E+00	0.00E+00	2.36E-05	3.57E-02	1.53E-01	1.73E-01
RWD	[kg]	3.15E-03	0.00E+00	3.19E-07	8.04E-06	7.35E-07	-4.54E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.03E+00	0.00E+00	0.00E+00	2.90E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.29E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.31E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 785 MM: UNI SPER 200-2" (3.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.237 UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-6/4" (3.30 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.66E+00	0.00E+00	1.28E-02	8.16E-01	3.19E-03	-2.81E+00
GWP-fossil	[kg CO_2-Eq.]	9.54E+00	0.00E+00	1.27E-02	8.16E-01	3.17E-03	-2.82E+00
GWP-biogenic	[kg CO_2-Eq.]	9.23E-02	0.00E+00	2.37E-05	2.96E-05	9.77E-06	1.23E-02
GWP-luluc	[kg CO_2-Eq.]	2.39E-02	0.00E+00	1.33E-04	3.00E-05	9.97E-06	-3.68E-03
ODP	[kg CFC11-Eq.]	1.15E-10	0.00E+00	2.15E-15	8.91E-14	1.03E-14	-7.74E-13
AP	[mol H^+-Eq.]	3.69E-02	0.00E+00	4.63E-05	8.67E-05	1.98E-05	-1.09E-02
EP-freshwater	[kg P-Eq.]	5.79E-05	0.00E+00	3.49E-08	1.91E-08	4.48E-09	-2.26E-06
EP-marine	[kg N-Eq.]	7.12E-03	0.00E+00	2.20E-05	2.34E-05	4.82E-06	-1.67E-03
EP-terrestrial	[mol N-Eq.]	7.78E-02	0.00E+00	2.38E-04	4.08E-04	5.26E-05	-1.71E-02
POCP	[kg NMVOC-Eq.]	2.02E-02	0.00E+00	4.24E-05	6.64E-05	1.50E-05	-5.61E-03
ADPE	[kg Sb-Eq.]	7.69E-05	0.00E+00	8.61E-10	1.02E-09	2.15E-10	-4.17E-05
ADPF	[MJ]	1.27E+02	0.00E+00	1.66E-01	1.86E-01	5.19E-02	-3.31E+01
WDP	[m^3 world-Eq deprived]	3.53E+00	0.00E+00	5.92E-05	7.18E-02	3.71E-04	-6.00E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-6/4" (3.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.67E+01	0.00E+00	1.25E-02	4.83E-02	8.46E-03	-3.75E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.79E+01	0.00E+00	1.25E-02	4.83E-02	8.46E-03	-3.75E+00
PENRE	[MJ]	1.17E+02	0.00E+00	1.66E-01	9.40E+00	5.19E-02	-3.31E+01
PENRM	[MJ]	9.73E+00	0.00E+00	0.00E+00	-9.22E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.27E+02	0.00E+00	1.66E-01	1.86E-01	5.19E-02	-3.31E+01
SM	[kg]	2.08E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.86E-01	0.00E+00	6.18E-06	1.69E-03	1.09E-05	-1.61E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-6/4" (3.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.03E-07	0.00E+00	6.65E-12	9.63E-11	1.12E-11	-1.31E-04
NHWD	[kg]	1.38E+00	0.00E+00	2.32E-05	3.65E-02	1.49E-01	1.78E-01
RWD	[kg]	3.02E-03	0.00E+00	3.13E-07	8.21E-06	7.19E-07	-4.64E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	1.91E+00	0.00E+00	0.00E+00	2.83E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.32E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.36E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-6/4" (3.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.238 UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-2" (4.32 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.24E+01	0.00E+00	1.68E-02	8.27E-01	4.28E-03	-3.30E+00
GWP-fossil	[kg CO_2-Eq.]	1.22E+01	0.00E+00	1.66E-02	8.27E-01	4.25E-03	-3.31E+00
GWP-biogenic	[kg CO_2-Eq.]	1.35E-01	0.00E+00	3.10E-05	3.00E-05	1.31E-05	1.51E-02
GWP-luluc	[kg CO_2-Eq.]	3.22E-02	0.00E+00	1.74E-04	3.03E-05	1.34E-05	-3.91E-03
ODP	[kg CFC11-Eq.]	1.57E-10	0.00E+00	2.81E-15	8.98E-14	1.38E-14	-2.34E-13
AP	[mol H^+-Eq.]	4.50E-02	0.00E+00	6.06E-05	8.78E-05	2.65E-05	-1.23E-02
EP-freshwater	[kg P-Eq.]	7.23E-05	0.00E+00	4.57E-08	1.94E-08	6.01E-09	-2.46E-06
EP-marine	[kg N-Eq.]	9.48E-03	0.00E+00	2.88E-05	2.37E-05	6.46E-06	-1.89E-03
EP-terrestrial	[mol N-Eq.]	1.04E-01	0.00E+00	3.12E-04	4.13E-04	7.05E-05	-1.92E-02
POCP	[kg NMVOC-Eq.]	2.61E-02	0.00E+00	5.55E-05	6.72E-05	2.00E-05	-6.46E-03
ADPE	[kg Sb-Eq.]	7.82E-05	0.00E+00	1.13E-09	1.03E-09	2.89E-10	-4.59E-05
ADPF	[MJ]	1.58E+02	0.00E+00	2.17E-01	1.87E-01	6.95E-02	-3.81E+01
WDP	[m^3 world-Eq deprived]	3.91E+00	0.00E+00	7.75E-05	7.27E-02	4.97E-04	-6.54E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-2" (4.32 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.34E+02	0.00E+00	1.64E-02	4.87E-02	1.13E-02	-3.74E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.36E+02	0.00E+00	1.64E-02	4.87E-02	1.13E-02	-3.74E+00
PENRE	[MJ]	1.48E+02	0.00E+00	2.17E-01	1.07E+01	6.95E-02	-3.81E+01
PENRM	[MJ]	1.05E+01	0.00E+00	0.00E+00	-1.05E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.58E+02	0.00E+00	2.17E-01	1.87E-01	6.95E-02	-3.81E+01
SM	[kg]	2.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.07E-01	0.00E+00	8.09E-06	1.71E-03	1.46E-05	-2.05E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-2" (4.32 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.45E-07	0.00E+00	8.71E-12	9.71E-11	1.50E-11	-1.38E-04
NHWD	[kg]	1.93E+00	0.00E+00	3.03E-05	3.68E-02	2.00E-01	2.30E-01
RWD	[kg]	4.08E-03	0.00E+00	4.10E-07	8.30E-06	9.64E-07	-4.74E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.87E+00	0.00E+00	0.00E+00	3.80E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.33E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.39E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 810 MM: UNI SPER 225-2" (4.32 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.239 UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-1" (3.63 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.07E+01	0.00E+00	1.41E-02	8.49E-01	3.53E-03	-2.95E+00
GWP-fossil	[kg CO_2-Eq.]	1.05E+01	0.00E+00	1.39E-02	8.49E-01	3.50E-03	-2.96E+00
GWP-biogenic	[kg CO_2-Eq.]	1.04E-01	0.00E+00	2.60E-05	3.10E-05	1.08E-05	1.30E-02
GWP-luluc	[kg CO_2-Eq.]	2.65E-02	0.00E+00	1.46E-04	2.93E-05	1.10E-05	-3.66E-03
ODP	[kg CFC11-Eq.]	1.28E-10	0.00E+00	2.36E-15	8.71E-14	1.13E-14	-6.56E-13
AP	[mol H^+-Eq.]	3.98E-02	0.00E+00	5.09E-05	8.90E-05	2.19E-05	-1.11E-02
EP-freshwater	[kg P-Eq.]	5.90E-05	0.00E+00	3.83E-08	1.95E-08	4.95E-09	-2.28E-06
EP-marine	[kg N-Eq.]	7.91E-03	0.00E+00	2.42E-05	2.39E-05	5.33E-06	-1.71E-03
EP-terrestrial	[mol N-Eq.]	8.65E-02	0.00E+00	2.61E-04	4.19E-04	5.81E-05	-1.75E-02
POCP	[kg NMVOC-Eq.]	2.23E-02	0.00E+00	4.65E-05	6.80E-05	1.65E-05	-5.80E-03
ADPE	[kg Sb-Eq.]	7.74E-05	0.00E+00	9.46E-10	1.01E-09	2.38E-10	-4.19E-05
ADPF	[MJ]	1.39E+02	0.00E+00	1.82E-01	1.82E-01	5.73E-02	-3.45E+01
WDP	[m^3 world-Eq deprived]	3.33E+00	0.00E+00	6.50E-05	7.43E-02	4.09E-04	-6.02E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-1" (3.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.08E+02	0.00E+00	1.37E-02	4.76E-02	9.34E-03	-3.69E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.09E+02	0.00E+00	1.37E-02	4.76E-02	9.34E-03	-3.69E+00
PENRE	[MJ]	1.29E+02	0.00E+00	1.82E-01	3.81E+00	5.73E-02	-3.45E+01
PENRM	[MJ]	1.06E+01	0.00E+00	0.00E+00	-3.63E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.39E+02	0.00E+00	1.82E-01	1.82E-01	5.73E-02	-3.45E+01
SM	[kg]	2.32E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.96E-01	0.00E+00	6.79E-06	1.75E-03	1.21E-05	-1.76E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-1" (3.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.15E-07	0.00E+00	7.31E-12	9.47E-11	1.24E-11	-1.29E-04
NHWD	[kg]	1.54E+00	0.00E+00	2.54E-05	3.55E-02	1.65E-01	1.95E-01
RWD	[kg]	3.35E-03	0.00E+00	3.44E-07	8.28E-06	7.95E-07	-4.74E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.18E+00	0.00E+00	0.00E+00	3.13E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.36E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.43E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-1" (3.63 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.240 UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-5/4" (3.47 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.01E+01	0.00E+00	1.35E-02	8.63E-01	3.35E-03	-2.94E+00
GWP-fossil	[kg CO_2-Eq.]	1.00E+01	0.00E+00	1.33E-02	8.63E-01	3.33E-03	-2.95E+00
GWP-biogenic	[kg CO_2-Eq.]	9.60E-02	0.00E+00	2.49E-05	3.15E-05	1.03E-05	1.29E-02
GWP-luluc	[kg CO_2-Eq.]	2.50E-02	0.00E+00	1.40E-04	2.98E-05	1.05E-05	-3.71E-03
ODP	[kg CFC11-Eq.]	1.20E-10	0.00E+00	2.26E-15	8.84E-14	1.08E-14	-7.42E-13
AP	[mol H^+-Eq.]	3.83E-02	0.00E+00	4.87E-05	9.04E-05	2.08E-05	-1.12E-02
EP-freshwater	[kg P-Eq.]	5.63E-05	0.00E+00	3.67E-08	1.99E-08	4.71E-09	-2.30E-06
EP-marine	[kg N-Eq.]	7.46E-03	0.00E+00	2.31E-05	2.43E-05	5.07E-06	-1.72E-03
EP-terrestrial	[mol N-Eq.]	8.16E-02	0.00E+00	2.50E-04	4.26E-04	5.53E-05	-1.76E-02
POCP	[kg NMVOC-Eq.]	2.12E-02	0.00E+00	4.46E-05	6.91E-05	1.57E-05	-5.81E-03
ADPE	[kg Sb-Eq.]	7.72E-05	0.00E+00	9.05E-10	1.02E-09	2.26E-10	-4.23E-05
ADPF	[MJ]	1.34E+02	0.00E+00	1.74E-01	1.84E-01	5.45E-02	-3.45E+01
WDP	[m^3 world-Eq deprived]	3.25E+00	0.00E+00	6.22E-05	7.55E-02	3.90E-04	-6.08E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-5/4" (3.47 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.01E+02	0.00E+00	1.31E-02	4.83E-02	8.89E-03	-3.78E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.03E+02	0.00E+00	1.31E-02	4.83E-02	8.89E-03	-3.78E+00
PENRE	[MJ]	1.23E+02	0.00E+00	1.74E-01	1.02E+01	5.45E-02	-3.45E+01
PENRM	[MJ]	1.05E+01	0.00E+00	0.00E+00	-1.00E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.34E+02	0.00E+00	1.74E-01	1.84E-01	5.45E-02	-3.45E+01
SM	[kg]	2.17E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.93E-01	0.00E+00	6.50E-06	1.78E-03	1.15E-05	-1.73E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-5/4" (3.47 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.08E-07	0.00E+00	7.00E-12	9.61E-11	1.18E-11	-1.31E-04
NHWD	[kg]	1.43E+00	0.00E+00	2.43E-05	3.60E-02	1.57E-01	1.92E-01
RWD	[kg]	3.15E-03	0.00E+00	3.29E-07	8.41E-06	7.56E-07	-4.82E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.00E+00	0.00E+00	0.00E+00	2.98E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.38E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.47E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-5/4" (3.47 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.241 UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-6/4" (3.53 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.04E+01	0.00E+00	1.37E-02	8.77E-01	3.41E-03	-2.93E+00
GWP-fossil	[kg CO_2-Eq.]	1.03E+01	0.00E+00	1.36E-02	8.77E-01	3.39E-03	-2.94E+00
GWP-biogenic	[kg CO_2-Eq.]	9.94E-02	0.00E+00	2.54E-05	3.19E-05	1.04E-05	1.28E-02
GWP-luluc	[kg CO_2-Eq.]	2.56E-02	0.00E+00	1.43E-04	3.14E-05	1.07E-05	-3.68E-03
ODP	[kg CFC11-Eq.]	1.23E-10	0.00E+00	2.30E-15	9.33E-14	1.10E-14	-8.05E-13
AP	[mol H^+-Eq.]	3.90E-02	0.00E+00	4.95E-05	9.27E-05	2.12E-05	-1.11E-02
EP-freshwater	[kg P-Eq.]	6.07E-05	0.00E+00	3.73E-08	2.04E-08	4.79E-09	-2.28E-06
EP-marine	[kg N-Eq.]	7.66E-03	0.00E+00	2.35E-05	2.50E-05	5.15E-06	-1.71E-03
EP-terrestrial	[mol N-Eq.]	8.37E-02	0.00E+00	2.55E-04	4.36E-04	5.62E-05	-1.74E-02
POCP	[kg NMVOC-Eq.]	2.17E-02	0.00E+00	4.53E-05	7.10E-05	1.60E-05	-5.76E-03
ADPE	[kg Sb-Eq.]	7.73E-05	0.00E+00	9.21E-10	1.08E-09	2.30E-10	-4.18E-05
ADPF	[MJ]	1.37E+02	0.00E+00	1.77E-01	1.95E-01	5.54E-02	-3.44E+01
WDP	[m^3 world-Eq deprived]	3.62E+00	0.00E+00	6.33E-05	7.70E-02	3.96E-04	-6.02E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-6/4" (3.53 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.04E+02	0.00E+00	1.34E-02	5.08E-02	9.04E-03	-3.78E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.05E+02	0.00E+00	1.34E-02	5.08E-02	9.04E-03	-3.78E+00
PENRE	[MJ]	1.26E+02	0.00E+00	1.77E-01	3.72E+00	5.54E-02	-3.44E+01
PENRM	[MJ]	1.06E+01	0.00E+00	0.00E+00	-3.53E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.37E+02	0.00E+00	1.77E-01	1.95E-01	5.54E-02	-3.44E+01
SM	[kg]	2.23E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.02E-01	0.00E+00	6.61E-06	1.81E-03	1.17E-05	-1.73E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-6/4" (3.53 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.11E-07	0.00E+00	7.12E-12	1.01E-10	1.20E-11	-1.29E-04
NHWD	[kg]	1.48E+00	0.00E+00	2.48E-05	3.81E-02	1.60E-01	1.91E-01
RWD	[kg]	3.23E-03	0.00E+00	3.35E-07	8.72E-06	7.69E-07	-4.90E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.07E+00	0.00E+00	0.00E+00	3.03E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.41E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.53E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-6/4" (3.53 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.242 UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-2" (3.80 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.11E+01	0.00E+00	1.48E-02	8.93E-01	3.69E-03	-3.08E+00
GWP-fossil	[kg CO_2-Eq.]	1.10E+01	0.00E+00	1.46E-02	8.93E-01	3.67E-03	-3.09E+00
GWP-biogenic	[kg CO_2-Eq.]	1.10E-01	0.00E+00	2.73E-05	3.25E-05	1.13E-05	1.35E-02
GWP-luluc	[kg CO_2-Eq.]	2.78E-02	0.00E+00	1.53E-04	3.19E-05	1.15E-05	-3.76E-03
ODP	[kg CFC11-Eq.]	1.34E-10	0.00E+00	2.47E-15	9.46E-14	1.19E-14	-6.95E-13
AP	[mol H^+-Eq.]	4.10E-02	0.00E+00	5.33E-05	9.42E-05	2.29E-05	-1.15E-02
EP-freshwater	[kg P-Eq.]	6.44E-05	0.00E+00	4.02E-08	2.07E-08	5.19E-09	-2.35E-06
EP-marine	[kg N-Eq.]	8.26E-03	0.00E+00	2.53E-05	2.54E-05	5.58E-06	-1.78E-03
EP-terrestrial	[mol N-Eq.]	9.04E-02	0.00E+00	2.74E-04	4.43E-04	6.09E-05	-1.81E-02
POCP	[kg NMVOC-Eq.]	2.32E-02	0.00E+00	4.88E-05	7.21E-05	1.73E-05	-6.02E-03
ADPE	[kg Sb-Eq.]	7.76E-05	0.00E+00	9.91E-10	1.09E-09	2.49E-10	-4.32E-05
ADPF	[MJ]	1.45E+02	0.00E+00	1.91E-01	1.97E-01	6.01E-02	-3.59E+01
WDP	[m^3 world-Eq deprived]	3.72E+00	0.00E+00	6.82E-05	7.83E-02	4.29E-04	-6.20E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-2" (3.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.14E+02	0.00E+00	1.44E-02	5.15E-02	9.79E-03	-3.82E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.15E+02	0.00E+00	1.44E-02	5.15E-02	9.79E-03	-3.82E+00
PENRE	[MJ]	1.34E+02	0.00E+00	1.91E-01	1.06E+01	6.01E-02	-3.59E+01
PENRM	[MJ]	1.09E+01	0.00E+00	0.00E+00	-1.04E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.45E+02	0.00E+00	1.91E-01	1.97E-01	6.01E-02	-3.59E+01
SM	[kg]	2.44E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.07E-01	0.00E+00	7.11E-06	1.84E-03	1.26E-05	-1.85E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-2" (3.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.21E-07	0.00E+00	7.66E-12	1.02E-10	1.30E-11	-1.32E-04
NHWD	[kg]	1.62E+00	0.00E+00	2.67E-05	3.86E-02	1.73E-01	2.06E-01
RWD	[kg]	3.50E-03	0.00E+00	3.60E-07	8.85E-06	8.33E-07	-4.98E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.32E+00	0.00E+00	0.00E+00	3.28E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.44E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.57E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 905 MM: UNI SPER 250-2" (3.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.243 UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-1" (3.81 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.11E+01	0.00E+00	1.48E-02	9.70E-01	3.67E-03	-3.22E+00
GWP-fossil	[kg CO_2-Eq.]	1.10E+01	0.00E+00	1.46E-02	9.70E-01	3.65E-03	-3.23E+00
GWP-biogenic	[kg CO_2-Eq.]	1.04E-01	0.00E+00	2.74E-05	3.55E-05	1.12E-05	1.41E-02
GWP-luluc	[kg CO_2-Eq.]	2.73E-02	0.00E+00	1.54E-04	3.25E-05	1.15E-05	-3.83E-03
ODP	[kg CFC11-Eq.]	1.30E-10	0.00E+00	2.48E-15	9.64E-14	1.18E-14	-7.69E-13
AP	[mol H^+-Eq.]	4.08E-02	0.00E+00	5.35E-05	1.01E-04	2.28E-05	-1.19E-02
EP-freshwater	[kg P-Eq.]	5.98E-05	0.00E+00	4.03E-08	2.21E-08	5.16E-09	-2.41E-06
EP-marine	[kg N-Eq.]	8.13E-03	0.00E+00	2.54E-05	2.71E-05	5.55E-06	-1.84E-03
EP-terrestrial	[mol N-Eq.]	8.88E-02	0.00E+00	2.75E-04	4.76E-04	6.05E-05	-1.86E-02
POCP	[kg NMVOC-Eq.]	2.31E-02	0.00E+00	4.89E-05	7.71E-05	1.72E-05	-6.24E-03
ADPE	[kg Sb-Eq.]	7.77E-05	0.00E+00	9.94E-10	1.12E-09	2.48E-10	-4.40E-05
ADPF	[MJ]	1.46E+02	0.00E+00	1.91E-01	2.01E-01	5.97E-02	-3.75E+01
WDP	[m^3 world-Eq deprived]	3.37E+00	0.00E+00	6.83E-05	8.46E-02	4.27E-04	-6.34E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-1" (3.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.11E+02	0.00E+00	1.44E-02	5.29E-02	9.74E-03	-3.93E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.12E+02	0.00E+00	1.44E-02	5.29E-02	9.74E-03	-3.93E+00
PENRE	[MJ]	1.35E+02	0.00E+00	1.91E-01	1.15E+01	5.97E-02	-3.75E+01
PENRM	[MJ]	1.19E+01	0.00E+00	0.00E+00	-1.13E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.46E+02	0.00E+00	1.91E-01	2.01E-01	5.97E-02	-3.75E+01
SM	[kg]	2.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.16E-01	0.00E+00	7.13E-06	1.99E-03	1.26E-05	-1.97E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-1" (3.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.17E-07	0.00E+00	7.68E-12	1.05E-10	1.29E-11	-1.33E-04
NHWD	[kg]	1.55E+00	0.00E+00	2.67E-05	3.92E-02	1.72E-01	2.19E-01
RWD	[kg]	3.39E-03	0.00E+00	3.61E-07	9.32E-06	8.28E-07	-5.30E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.18E+00	0.00E+00	0.00E+00	3.26E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.55E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.77E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-1" (3.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.244 UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-5/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-5/4" (3.64 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.06E+01	0.00E+00	1.42E-02	9.82E-01	3.49E-03	-3.18E+00
GWP-fossil	[kg CO_2-Eq.]	1.05E+01	0.00E+00	1.40E-02	9.82E-01	3.47E-03	-3.19E+00
GWP-biogenic	[kg CO_2-Eq.]	9.58E-02	0.00E+00	2.61E-05	3.60E-05	1.07E-05	1.38E-02
GWP-luluc	[kg CO_2-Eq.]	2.57E-02	0.00E+00	1.47E-04	3.29E-05	1.09E-05	-3.85E-03
ODP	[kg CFC11-Eq.]	1.22E-10	0.00E+00	2.37E-15	9.75E-14	1.12E-14	-8.77E-13
AP	[mol H^+-Eq.]	3.93E-02	0.00E+00	5.11E-05	1.02E-04	2.16E-05	-1.18E-02
EP-freshwater	[kg P-Eq.]	5.70E-05	0.00E+00	3.85E-08	2.24E-08	4.90E-09	-2.41E-06
EP-marine	[kg N-Eq.]	7.68E-03	0.00E+00	2.43E-05	2.75E-05	5.27E-06	-1.82E-03
EP-terrestrial	[mol N-Eq.]	8.39E-02	0.00E+00	2.62E-04	4.82E-04	5.75E-05	-1.85E-02
POCP	[kg NMVOC-Eq.]	2.20E-02	0.00E+00	4.67E-05	7.81E-05	1.63E-05	-6.18E-03
ADPE	[kg Sb-Eq.]	7.74E-05	0.00E+00	9.49E-10	1.13E-09	2.35E-10	-4.39E-05
ADPF	[MJ]	1.41E+02	0.00E+00	1.83E-01	2.04E-01	5.67E-02	-3.72E+01
WDP	[m^3 world-Eq deprived]	3.30E+00	0.00E+00	6.53E-05	8.57E-02	4.05E-04	-6.33E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-5/4" (3.64 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.04E+02	0.00E+00	1.38E-02	5.36E-02	9.24E-03	-3.99E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.05E+02	0.00E+00	1.38E-02	5.36E-02	9.24E-03	-3.99E+00
PENRE	[MJ]	1.29E+02	0.00E+00	1.83E-01	1.15E+01	5.67E-02	-3.72E+01
PENRM	[MJ]	1.18E+01	0.00E+00	0.00E+00	-1.13E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.41E+02	0.00E+00	1.83E-01	2.04E-01	5.67E-02	-3.72E+01
SM	[kg]	2.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.13E-01	0.00E+00	6.82E-06	2.02E-03	1.19E-05	-1.92E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-5/4" (3.64 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.09E-07	0.00E+00	7.34E-12	1.06E-10	1.22E-11	-1.33E-04
NHWD	[kg]	1.44E+00	0.00E+00	2.55E-05	3.97E-02	1.63E-01	2.13E-01
RWD	[kg]	3.19E-03	0.00E+00	3.45E-07	9.43E-06	7.86E-07	-5.36E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.00E+00	0.00E+00	0.00E+00	3.10E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.57E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.81E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-5/4" (3.64 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.245 UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-6/4"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-6/4" (3.70 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.08E+01	0.00E+00	1.44E-02	9.96E-01	3.54E-03	-3.17E+00
GWP-fossil	[kg CO_2-Eq.]	1.07E+01	0.00E+00	1.42E-02	9.96E-01	3.52E-03	-3.18E+00
GWP-biogenic	[kg CO_2-Eq.]	9.91E-02	0.00E+00	2.66E-05	3.64E-05	1.09E-05	1.37E-02
GWP-luluc	[kg CO_2-Eq.]	2.63E-02	0.00E+00	1.49E-04	3.45E-05	1.11E-05	-3.82E-03
ODP	[kg CFC11-Eq.]	1.26E-10	0.00E+00	2.41E-15	1.02E-13	1.14E-14	-9.37E-13
AP	[mol H^+-Eq.]	4.00E-02	0.00E+00	5.19E-05	1.04E-04	2.20E-05	-1.17E-02
EP-freshwater	[kg P-Eq.]	6.15E-05	0.00E+00	3.91E-08	2.30E-08	4.98E-09	-2.39E-06
EP-marine	[kg N-Eq.]	7.87E-03	0.00E+00	2.47E-05	2.81E-05	5.36E-06	-1.81E-03
EP-terrestrial	[mol N-Eq.]	8.60E-02	0.00E+00	2.67E-04	4.92E-04	5.84E-05	-1.84E-02
POCP	[kg NMVOC-Eq.]	2.25E-02	0.00E+00	4.75E-05	7.99E-05	1.66E-05	-6.15E-03
ADPE	[kg Sb-Eq.]	7.75E-05	0.00E+00	9.65E-10	1.18E-09	2.39E-10	-4.35E-05
ADPF	[MJ]	1.44E+02	0.00E+00	1.86E-01	2.14E-01	5.76E-02	-3.71E+01
WDP	[m^3 world-Eq deprived]	3.67E+00	0.00E+00	6.64E-05	8.72E-02	4.12E-04	-6.27E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-6/4" (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.06E+02	0.00E+00	1.40E-02	5.60E-02	9.39E-03	-3.99E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.08E+02	0.00E+00	1.40E-02	5.60E-02	9.39E-03	-3.99E+00
PENRE	[MJ]	1.32E+02	0.00E+00	1.86E-01	1.16E+01	5.76E-02	-3.71E+01
PENRM	[MJ]	1.19E+01	0.00E+00	0.00E+00	-1.14E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.44E+02	0.00E+00	1.86E-01	2.14E-01	5.76E-02	-3.71E+01
SM	[kg]	2.25E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.22E-01	0.00E+00	6.93E-06	2.05E-03	1.21E-05	-1.91E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-6/4" (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.12E-07	0.00E+00	7.46E-12	1.11E-10	1.24E-11	-1.32E-04
NHWD	[kg]	1.48E+00	0.00E+00	2.60E-05	4.18E-02	1.66E-01	2.13E-01
RWD	[kg]	3.27E-03	0.00E+00	3.51E-07	9.73E-06	7.99E-07	-5.43E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.07E+00	0.00E+00	0.00E+00	3.15E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.60E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.86E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-6/4" (3.70 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.246 UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-2"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-2" (3.94 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.15E+01	0.00E+00	1.53E-02	1.00E+00	3.79E-03	-3.24E+00
GWP-fossil	[kg CO_2-Eq.]	1.14E+01	0.00E+00	1.51E-02	1.00E+00	3.77E-03	-3.25E+00
GWP-biogenic	[kg CO_2-Eq.]	1.10E-01	0.00E+00	2.83E-05	3.66E-05	1.16E-05	1.41E-02
GWP-luluc	[kg CO_2-Eq.]	2.84E-02	0.00E+00	1.59E-04	3.46E-05	1.19E-05	-3.82E-03
ODP	[kg CFC11-Eq.]	1.36E-10	0.00E+00	2.56E-15	1.03E-13	1.22E-14	-8.56E-13
AP	[mol H^+-Eq.]	4.21E-02	0.00E+00	5.52E-05	1.05E-04	2.35E-05	-1.19E-02
EP-freshwater	[kg P-Eq.]	6.51E-05	0.00E+00	4.16E-08	2.31E-08	5.33E-09	-2.41E-06
EP-marine	[kg N-Eq.]	8.47E-03	0.00E+00	2.62E-05	2.82E-05	5.73E-06	-1.84E-03
EP-terrestrial	[mol N-Eq.]	9.26E-02	0.00E+00	2.84E-04	4.94E-04	6.25E-05	-1.86E-02
POCP	[kg NMVOC-Eq.]	2.40E-02	0.00E+00	5.05E-05	8.02E-05	1.78E-05	-6.25E-03
ADPE	[kg Sb-Eq.]	7.79E-05	0.00E+00	1.03E-09	1.19E-09	2.56E-10	-4.38E-05
ADPF	[MJ]	1.52E+02	0.00E+00	1.98E-01	2.14E-01	6.17E-02	-3.78E+01
WDP	[m^3 world-Eq deprived]	3.77E+00	0.00E+00	7.06E-05	8.76E-02	4.41E-04	-6.31E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-2" (3.94 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.16E+02	0.00E+00	1.49E-02	5.61E-02	1.01E-02	-3.96E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.17E+02	0.00E+00	1.49E-02	5.61E-02	1.01E-02	-3.96E+00
PENRE	[MJ]	1.40E+02	0.00E+00	1.98E-01	1.19E+01	6.17E-02	-3.78E+01
PENRM	[MJ]	1.22E+01	0.00E+00	0.00E+00	-1.17E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.52E+02	0.00E+00	1.98E-01	2.14E-01	6.17E-02	-3.78E+01
SM	[kg]	2.45E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.22E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.27E-01	0.00E+00	7.37E-06	2.06E-03	1.30E-05	-1.99E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-2" (3.94 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.22E-07	0.00E+00	7.93E-12	1.12E-10	1.33E-11	-1.31E-04
NHWD	[kg]	1.62E+00	0.00E+00	2.76E-05	4.19E-02	1.78E-01	2.21E-01
RWD	[kg]	3.54E-03	0.00E+00	3.73E-07	9.77E-06	8.55E-07	-5.45E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.32E+00	0.00E+00	0.00E+00	3.37E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.60E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.87E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNI SHUT-OFF SADDLE PN16 STRAP L 1055 MM: UNI SPER 300-2" (3.94 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.247 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK34

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK34 (3.30 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	9.81E+00	0.00E+00	1.28E-02	5.94E-01	3.27E-03	-2.60E+00
GWP-fossil	[kg CO_2-Eq.]	9.67E+00	0.00E+00	1.27E-02	5.94E-01	3.25E-03	-2.61E+00
GWP-biogenic	[kg CO_2-Eq.]	1.08E-01	0.00E+00	2.37E-05	3.35E-05	1.00E-05	1.16E-02
GWP-luluc	[kg CO_2-Eq.]	2.51E-02	0.00E+00	1.33E-04	2.17E-05	1.02E-05	-3.76E-03
ODP	[kg CFC11-Eq.]	1.24E-10	0.00E+00	2.15E-15	7.62E-14	1.05E-14	-4.81E-13
AP	[mol H^+-Eq.]	3.77E-02	0.00E+00	4.63E-05	2.98E-04	2.03E-05	-1.07E-02
EP-freshwater	[kg P-Eq.]	5.84E-05	0.00E+00	3.49E-08	1.48E-08	4.60E-09	-2.26E-06
EP-marine	[kg N-Eq.]	7.52E-03	0.00E+00	2.20E-05	1.41E-04	4.95E-06	-1.63E-03
EP-terrestrial	[mol N-Eq.]	8.23E-02	0.00E+00	2.38E-04	1.65E-03	5.40E-05	-1.68E-02
POCP	[kg NMVOC-Eq.]	2.08E-02	0.00E+00	4.24E-05	3.64E-04	1.53E-05	-5.39E-03
ADPE	[kg Sb-Eq.]	7.90E-05	0.00E+00	8.61E-10	9.05E-10	2.21E-10	-4.25E-05
ADPF	[MJ]	1.25E+02	0.00E+00	1.66E-01	1.92E-01	5.32E-02	-3.06E+01
WDP	[m^3 world-Eq deprived]	3.24E+00	0.00E+00	5.92E-05	5.48E-02	3.80E-04	-6.08E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK34 (3.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.04E+02	0.00E+00	1.25E-02	4.03E-02	8.68E-03	-3.64E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.06E+02	0.00E+00	1.25E-02	4.03E-02	8.68E-03	-3.64E+00
PENRE	[MJ]	1.17E+02	0.00E+00	1.66E-01	7.60E+00	5.32E-02	-3.06E+01
PENRM	[MJ]	7.92E+00	0.00E+00	0.00E+00	-7.40E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.25E+02	0.00E+00	1.66E-01	1.92E-01	5.32E-02	-3.06E+01
SM	[kg]	2.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.93E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.35E-01	0.00E+00	6.18E-06	1.29E-03	1.12E-05	-1.40E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK34 (3.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.15E-07	0.00E+00	6.65E-12	8.20E-11	1.15E-11	-1.39E-04
NHWD	[kg]	1.54E+00	0.00E+00	2.32E-05	2.49E-02	1.53E-01	1.52E-01
RWD	[kg]	3.34E-03	0.00E+00	3.13E-07	6.59E-06	7.38E-07	-3.87E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.20E+00	0.00E+00	0.00E+00	2.91E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.02E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.83E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK34 (3.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.248 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK46

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK46 (3.69 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.10E+01	0.00E+00	1.44E-02	5.91E-01	3.69E-03	-2.67E+00
GWP-fossil	[kg CO_2-Eq.]	1.08E+01	0.00E+00	1.42E-02	5.91E-01	3.67E-03	-2.68E+00
GWP-biogenic	[kg CO_2-Eq.]	1.27E-01	0.00E+00	2.65E-05	3.28E-05	1.13E-05	1.21E-02
GWP-luluc	[kg CO_2-Eq.]	2.86E-02	0.00E+00	1.49E-04	2.27E-05	1.15E-05	-3.66E-03
ODP	[kg CFC11-Eq.]	1.42E-10	0.00E+00	2.40E-15	7.88E-14	1.19E-14	-3.18E-13
AP	[mol H^+-Eq.]	4.10E-02	0.00E+00	5.18E-05	2.90E-04	2.29E-05	-1.07E-02
EP-freshwater	[kg P-Eq.]	6.76E-05	0.00E+00	3.90E-08	1.49E-08	5.19E-09	-2.22E-06
EP-marine	[kg N-Eq.]	8.54E-03	0.00E+00	2.46E-05	1.36E-04	5.58E-06	-1.63E-03
EP-terrestrial	[mol N-Eq.]	9.36E-02	0.00E+00	2.66E-04	1.60E-03	6.09E-05	-1.68E-02
POCP	[kg NMVOC-Eq.]	2.34E-02	0.00E+00	4.74E-05	3.52E-04	1.73E-05	-5.46E-03
ADPE	[kg Sb-Eq.]	7.79E-05	0.00E+00	9.63E-10	9.30E-10	2.49E-10	-4.19E-05
ADPF	[MJ]	1.38E+02	0.00E+00	1.85E-01	1.96E-01	6.00E-02	-3.13E+01
WDP	[m^3 world-Eq deprived]	3.69E+00	0.00E+00	6.62E-05	5.46E-02	4.29E-04	-5.97E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK46 (3.69 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.20E+02	0.00E+00	1.40E-02	4.15E-02	9.79E-03	-3.49E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.22E+02	0.00E+00	1.40E-02	4.15E-02	9.79E-03	-3.49E+00
PENRE	[MJ]	1.30E+02	0.00E+00	1.85E-01	7.80E+00	6.00E-02	-3.13E+01
PENRM	[MJ]	8.11E+00	0.00E+00	0.00E+00	-7.60E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.38E+02	0.00E+00	1.85E-01	1.96E-01	6.00E-02	-3.13E+01
SM	[kg]	2.65E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.53E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.50E-01	0.00E+00	6.91E-06	1.29E-03	1.26E-05	-1.51E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK46 (3.69 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.33E-07	0.00E+00	7.44E-12	8.44E-11	1.30E-11	-1.28E-04
NHWD	[kg]	1.79E+00	0.00E+00	2.59E-05	2.63E-02	1.73E-01	1.68E-01
RWD	[kg]	3.79E-03	0.00E+00	3.50E-07	6.69E-06	8.32E-07	-4.37E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.63E+00	0.00E+00	0.00E+00	3.28E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.02E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.82E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 410 MM: UNI SPER-H 80-ZAK46 (3.69 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.249 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK34

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK34 (3.38 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.00E+01	0.00E+00	1.32E-02	7.35E-01	3.30E-03	-2.70E+00
GWP-fossil	[kg CO_2-Eq.]	9.91E+00	0.00E+00	1.30E-02	7.35E-01	3.28E-03	-2.70E+00
GWP-biogenic	[kg CO_2-Eq.]	1.09E-01	0.00E+00	2.43E-05	3.87E-05	1.01E-05	1.17E-02
GWP-luluc	[kg CO_2-Eq.]	2.55E-02	0.00E+00	1.36E-04	2.52E-05	1.03E-05	-3.84E-03
ODP	[kg CFC11-Eq.]	1.26E-10	0.00E+00	2.20E-15	8.67E-14	1.06E-14	-8.52E-13
AP	[mol H^+-Eq.]	3.81E-02	0.00E+00	4.74E-05	3.11E-04	2.05E-05	-1.09E-02
EP-freshwater	[kg P-Eq.]	5.88E-05	0.00E+00	3.57E-08	1.78E-08	4.64E-09	-2.32E-06
EP-marine	[kg N-Eq.]	7.62E-03	0.00E+00	2.25E-05	1.44E-04	4.99E-06	-1.66E-03
EP-terrestrial	[mol N-Eq.]	8.35E-02	0.00E+00	2.44E-04	1.71E-03	5.44E-05	-1.72E-02
POCP	[kg NMVOC-Eq.]	2.12E-02	0.00E+00	4.34E-05	3.73E-04	1.55E-05	-5.52E-03
ADPE	[kg Sb-Eq.]	7.88E-05	0.00E+00	8.82E-10	1.03E-09	2.23E-10	-4.29E-05
ADPF	[MJ]	1.30E+02	0.00E+00	1.70E-01	2.14E-01	5.37E-02	-3.20E+01
WDP	[m^3 world-Eq deprived]	3.26E+00	0.00E+00	6.06E-05	6.68E-02	3.83E-04	-6.17E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK34 (3.38 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.06E+02	0.00E+00	1.28E-02	4.64E-02	8.75E-03	-3.90E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.07E+02	0.00E+00	1.28E-02	4.64E-02	8.75E-03	-3.90E+00
PENRE	[MJ]	1.21E+02	0.00E+00	1.70E-01	9.15E+00	5.37E-02	-3.20E+01
PENRM	[MJ]	9.45E+00	0.00E+00	0.00E+00	-8.94E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.30E+02	0.00E+00	1.70E-01	2.14E-01	5.37E-02	-3.20E+01
SM	[kg]	2.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.20E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.41E-01	0.00E+00	6.33E-06	1.58E-03	1.13E-05	-1.45E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK34 (3.38 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.16E-07	0.00E+00	6.81E-12	9.38E-11	1.16E-11	-1.40E-04
NHWD	[kg]	1.54E+00	0.00E+00	2.37E-05	2.91E-02	1.55E-01	1.57E-01
RWD	[kg]	3.38E-03	0.00E+00	3.21E-07	7.78E-06	7.44E-07	-4.49E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.19E+00	0.00E+00	0.00E+00	2.93E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.24E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.22E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK34 (3.38 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.250 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK46

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK46 (3.77 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.47E-02	7.26E-01	3.72E-03	-2.76E+00
GWP-fossil	[kg CO_2-Eq.]	1.11E+01	0.00E+00	1.45E-02	7.26E-01	3.70E-03	-2.77E+00
GWP-biogenic	[kg CO_2-Eq.]	1.28E-01	0.00E+00	2.71E-05	3.78E-05	1.14E-05	1.21E-02
GWP-luluc	[kg CO_2-Eq.]	2.90E-02	0.00E+00	1.52E-04	2.61E-05	1.16E-05	-3.73E-03
ODP	[kg CFC11-Eq.]	1.44E-10	0.00E+00	2.45E-15	8.89E-14	1.20E-14	-6.83E-13
AP	[mol H^+-Eq.]	4.15E-02	0.00E+00	5.29E-05	3.02E-04	2.31E-05	-1.09E-02
EP-freshwater	[kg P-Eq.]	6.81E-05	0.00E+00	3.99E-08	1.78E-08	5.23E-09	-2.27E-06
EP-marine	[kg N-Eq.]	8.66E-03	0.00E+00	2.51E-05	1.40E-04	5.62E-06	-1.66E-03
EP-terrestrial	[mol N-Eq.]	9.49E-02	0.00E+00	2.72E-04	1.65E-03	6.13E-05	-1.71E-02
POCP	[kg NMVOC-Eq.]	2.38E-02	0.00E+00	4.84E-05	3.61E-04	1.74E-05	-5.57E-03
ADPE	[kg Sb-Eq.]	7.80E-05	0.00E+00	9.83E-10	1.05E-09	2.51E-10	-4.21E-05
ADPF	[MJ]	1.44E+02	0.00E+00	1.89E-01	2.17E-01	6.05E-02	-3.25E+01
WDP	[m^3 world-Eq deprived]	3.72E+00	0.00E+00	6.76E-05	6.62E-02	4.32E-04	-6.05E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK46 (3.77 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.22E+02	0.00E+00	1.43E-02	4.74E-02	9.86E-03	-3.73E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.23E+02	0.00E+00	1.43E-02	4.74E-02	9.86E-03	-3.73E+00
PENRE	[MJ]	1.34E+02	0.00E+00	1.89E-01	9.34E+00	6.05E-02	-3.25E+01
PENRM	[MJ]	9.64E+00	0.00E+00	0.00E+00	-9.12E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.44E+02	0.00E+00	1.89E-01	2.17E-01	6.05E-02	-3.25E+01
SM	[kg]	2.65E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.77E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.56E-01	0.00E+00	7.06E-06	1.56E-03	1.27E-05	-1.55E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK46 (3.77 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.34E-07	0.00E+00	7.60E-12	9.59E-11	1.31E-11	-1.34E-04
NHWD	[kg]	1.79E+00	0.00E+00	2.65E-05	3.04E-02	1.74E-01	1.70E-01
RWD	[kg]	3.84E-03	0.00E+00	3.58E-07	7.84E-06	8.39E-07	-4.42E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.63E+00	0.00E+00	0.00E+00	3.31E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.23E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.20E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 455 MM: UNI SPER-H 100-ZAK46 (3.77 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.251 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK34

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK34 (3.42 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.01E+01	0.00E+00	1.33E-02	7.56E-01	3.34E-03	-2.76E+00
GWP-fossil	[kg CO_2-Eq.]	1.00E+01	0.00E+00	1.31E-02	7.56E-01	3.32E-03	-2.77E+00
GWP-biogenic	[kg CO_2-Eq.]	1.08E-01	0.00E+00	2.46E-05	3.95E-05	1.02E-05	1.20E-02
GWP-luluc	[kg CO_2-Eq.]	2.56E-02	0.00E+00	1.38E-04	2.58E-05	1.04E-05	-3.85E-03
ODP	[kg CFC11-Eq.]	1.26E-10	0.00E+00	2.23E-15	8.82E-14	1.07E-14	-8.33E-13
AP	[mol H^+-Eq.]	3.83E-02	0.00E+00	4.80E-05	3.12E-04	2.07E-05	-1.11E-02
EP-freshwater	[kg P-Eq.]	5.87E-05	0.00E+00	3.62E-08	1.82E-08	4.69E-09	-2.33E-06
EP-marine	[kg N-Eq.]	7.66E-03	0.00E+00	2.28E-05	1.44E-04	5.04E-06	-1.69E-03
EP-terrestrial	[mol N-Eq.]	8.38E-02	0.00E+00	2.47E-04	1.71E-03	5.50E-05	-1.74E-02
POCP	[kg NMVOC-Eq.]	2.14E-02	0.00E+00	4.39E-05	3.73E-04	1.56E-05	-5.62E-03
ADPE	[kg Sb-Eq.]	7.85E-05	0.00E+00	8.92E-10	1.05E-09	2.25E-10	-4.31E-05
ADPF	[MJ]	1.32E+02	0.00E+00	1.72E-01	2.17E-01	5.42E-02	-3.27E+01
WDP	[m^3 world-Eq deprived]	3.25E+00	0.00E+00	6.13E-05	6.87E-02	3.87E-04	-6.21E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK34 (3.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.06E+02	0.00E+00	1.30E-02	4.73E-02	8.84E-03	-3.91E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.07E+02	0.00E+00	1.30E-02	4.73E-02	8.84E-03	-3.91E+00
PENRE	[MJ]	1.22E+02	0.00E+00	1.72E-01	9.38E+00	5.42E-02	-3.27E+01
PENRM	[MJ]	9.67E+00	0.00E+00	0.00E+00	-9.16E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.32E+02	0.00E+00	1.72E-01	2.17E-01	5.42E-02	-3.27E+01
SM	[kg]	2.28E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.57E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.49E-01	0.00E+00	6.40E-06	1.62E-03	1.14E-05	-1.51E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK34 (3.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.16E-07	0.00E+00	6.90E-12	9.56E-11	1.17E-11	-1.39E-04
NHWD	[kg]	1.53E+00	0.00E+00	2.40E-05	2.97E-02	1.56E-01	1.65E-01
RWD	[kg]	3.37E-03	0.00E+00	3.24E-07	7.96E-06	7.52E-07	-4.58E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.18E+00	0.00E+00	0.00E+00	2.96E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.27E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.28E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK34 (3.42 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.252 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK46

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK46 (3.81 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.14E+01	0.00E+00	1.48E-02	7.47E-01	3.76E-03	-2.80E+00
GWP-fossil	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.46E-02	7.47E-01	3.73E-03	-2.81E+00
GWP-biogenic	[kg CO_2-Eq.]	1.28E-01	0.00E+00	2.74E-05	3.86E-05	1.15E-05	1.23E-02
GWP-luluc	[kg CO_2-Eq.]	2.92E-02	0.00E+00	1.54E-04	2.66E-05	1.17E-05	-3.72E-03
ODP	[kg CFC11-Eq.]	1.45E-10	0.00E+00	2.48E-15	9.04E-14	1.21E-14	-6.87E-13
AP	[mol H^+-Eq.]	4.19E-02	0.00E+00	5.35E-05	3.04E-04	2.33E-05	-1.10E-02
EP-freshwater	[kg P-Eq.]	6.83E-05	0.00E+00	4.03E-08	1.82E-08	5.28E-09	-2.28E-06
EP-marine	[kg N-Eq.]	8.74E-03	0.00E+00	2.54E-05	1.40E-04	5.68E-06	-1.68E-03
EP-terrestrial	[mol N-Eq.]	9.57E-02	0.00E+00	2.75E-04	1.66E-03	6.19E-05	-1.72E-02
POCP	[kg NMVOC-Eq.]	2.41E-02	0.00E+00	4.89E-05	3.62E-04	1.76E-05	-5.62E-03
ADPE	[kg Sb-Eq.]	7.81E-05	0.00E+00	9.94E-10	1.07E-09	2.53E-10	-4.21E-05
ADPF	[MJ]	1.46E+02	0.00E+00	1.91E-01	2.20E-01	6.11E-02	-3.29E+01
WDP	[m^3 world-Eq deprived]	3.74E+00	0.00E+00	6.83E-05	6.80E-02	4.36E-04	-6.05E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK46 (3.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.22E+02	0.00E+00	1.44E-02	4.82E-02	9.96E-03	-3.73E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.24E+02	0.00E+00	1.44E-02	4.82E-02	9.96E-03	-3.73E+00
PENRE	[MJ]	1.36E+02	0.00E+00	1.91E-01	9.61E+00	6.11E-02	-3.29E+01
PENRM	[MJ]	9.91E+00	0.00E+00	0.00E+00	-9.40E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.46E+02	0.00E+00	1.91E-01	2.20E-01	6.11E-02	-3.29E+01
SM	[kg]	2.66E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.65E-01	0.00E+00	7.13E-06	1.60E-03	1.29E-05	-1.60E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK46 (3.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.35E-07	0.00E+00	7.68E-12	9.75E-11	1.32E-11	-1.33E-04
NHWD	[kg]	1.79E+00	0.00E+00	2.67E-05	3.09E-02	1.76E-01	1.76E-01
RWD	[kg]	3.85E-03	0.00E+00	3.61E-07	8.01E-06	8.47E-07	-4.50E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.63E+00	0.00E+00	0.00E+00	3.34E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.26E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.26E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2- optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 520 MM: UNI SPER-H 125-ZAK46 (3.81 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.253 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK34

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK34 (3.49 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.03E+01	0.00E+00	1.36E-02	8.13E-01	3.39E-03	-2.86E+00
GWP-fossil	[kg CO_2-Eq.]	1.02E+01	0.00E+00	1.34E-02	8.13E-01	3.37E-03	-2.87E+00
GWP-biogenic	[kg CO_2-Eq.]	1.07E-01	0.00E+00	2.51E-05	4.16E-05	1.04E-05	1.24E-02
GWP-luluc	[kg CO_2-Eq.]	2.58E-02	0.00E+00	1.41E-04	2.72E-05	1.06E-05	-3.89E-03
ODP	[kg CFC11-Eq.]	1.27E-10	0.00E+00	2.27E-15	9.24E-14	1.09E-14	-9.05E-13
AP	[mol H^+-Eq.]	3.87E-02	0.00E+00	4.90E-05	3.17E-04	2.10E-05	-1.13E-02
EP-freshwater	[kg P-Eq.]	5.89E-05	0.00E+00	3.69E-08	1.94E-08	4.76E-09	-2.37E-06
EP-marine	[kg N-Eq.]	7.75E-03	0.00E+00	2.33E-05	1.46E-04	5.12E-06	-1.73E-03
EP-terrestrial	[mol N-Eq.]	8.47E-02	0.00E+00	2.52E-04	1.73E-03	5.58E-05	-1.77E-02
POCP	[kg NMVOC-Eq.]	2.17E-02	0.00E+00	4.48E-05	3.77E-04	1.59E-05	-5.76E-03
ADPE	[kg Sb-Eq.]	7.84E-05	0.00E+00	9.10E-10	1.10E-09	2.29E-10	-4.36E-05
ADPF	[MJ]	1.35E+02	0.00E+00	1.75E-01	2.25E-01	5.51E-02	-3.38E+01
WDP	[m^3 world-Eq deprived]	3.27E+00	0.00E+00	6.26E-05	7.35E-02	3.93E-04	-6.29E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK34 (3.49 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.06E+02	0.00E+00	1.32E-02	4.97E-02	8.98E-03	-3.99E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.08E+02	0.00E+00	1.32E-02	4.97E-02	8.98E-03	-3.99E+00
PENRE	[MJ]	1.25E+02	0.00E+00	1.75E-01	1.00E+01	5.51E-02	-3.38E+01
PENRM	[MJ]	1.03E+01	0.00E+00	0.00E+00	-9.78E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.35E+02	0.00E+00	1.75E-01	2.25E-01	5.51E-02	-3.38E+01
SM	[kg]	2.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.59E-01	0.00E+00	6.53E-06	1.73E-03	1.16E-05	-1.59E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK34 (3.49 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.16E-07	0.00E+00	7.04E-12	1.00E-10	1.19E-11	-1.39E-04
NHWD	[kg]	1.53E+00	0.00E+00	2.45E-05	3.14E-02	1.59E-01	1.74E-01
RWD	[kg]	3.38E-03	0.00E+00	3.31E-07	8.44E-06	7.64E-07	-4.83E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.17E+00	0.00E+00	0.00E+00	3.01E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.36E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.43E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK34 (3.49 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.254 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK46

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK46 (3.88 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.16E+01	0.00E+00	1.51E-02	8.03E-01	3.81E-03	-2.89E+00
GWP-fossil	[kg CO_2-Eq.]	1.15E+01	0.00E+00	1.49E-02	8.03E-01	3.79E-03	-2.90E+00
GWP-biogenic	[kg CO_2-Eq.]	1.28E-01	0.00E+00	2.79E-05	4.07E-05	1.17E-05	1.26E-02
GWP-luluc	[kg CO_2-Eq.]	2.95E-02	0.00E+00	1.57E-04	2.81E-05	1.19E-05	-3.75E-03
ODP	[kg CFC11-Eq.]	1.46E-10	0.00E+00	2.53E-15	9.46E-14	1.23E-14	-7.67E-13
AP	[mol H^+-Eq.]	4.24E-02	0.00E+00	5.44E-05	3.09E-04	2.36E-05	-1.11E-02
EP-freshwater	[kg P-Eq.]	6.86E-05	0.00E+00	4.10E-08	1.94E-08	5.35E-09	-2.31E-06
EP-marine	[kg N-Eq.]	8.85E-03	0.00E+00	2.59E-05	1.41E-04	5.75E-06	-1.71E-03
EP-terrestrial	[mol N-Eq.]	9.68E-02	0.00E+00	2.80E-04	1.69E-03	6.28E-05	-1.75E-02
POCP	[kg NMVOC-Eq.]	2.45E-02	0.00E+00	4.98E-05	3.66E-04	1.79E-05	-5.75E-03
ADPE	[kg Sb-Eq.]	7.82E-05	0.00E+00	1.01E-09	1.12E-09	2.57E-10	-4.25E-05
ADPF	[MJ]	1.50E+02	0.00E+00	1.95E-01	2.29E-01	6.19E-02	-3.39E+01
WDP	[m^3 world-Eq deprived]	3.76E+00	0.00E+00	6.96E-05	7.28E-02	4.42E-04	-6.11E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK46 (3.88 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.23E+02	0.00E+00	1.47E-02	5.06E-02	1.01E-02	-3.81E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.25E+02	0.00E+00	1.47E-02	5.06E-02	1.01E-02	-3.81E+00
PENRE	[MJ]	1.39E+02	0.00E+00	1.95E-01	1.03E+01	6.19E-02	-3.39E+01
PENRM	[MJ]	1.05E+01	0.00E+00	0.00E+00	-1.00E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.50E+02	0.00E+00	1.95E-01	2.29E-01	6.19E-02	-3.39E+01
SM	[kg]	2.67E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.75E-01	0.00E+00	7.26E-06	1.72E-03	1.30E-05	-1.67E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK46 (3.88 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.35E-07	0.00E+00	7.82E-12	1.02E-10	1.34E-11	-1.33E-04
NHWD	[kg]	1.79E+00	0.00E+00	2.72E-05	3.26E-02	1.78E-01	1.84E-01
RWD	[kg]	3.87E-03	0.00E+00	3.68E-07	8.48E-06	8.59E-07	-4.75E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.63E+00	0.00E+00	0.00E+00	3.38E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.35E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.41E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 595 MM: UNI SPER-H 150-ZAK46 (3.88 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.255 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK34

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK34 (3.62 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.09E+01	0.00E+00	1.41E-02	9.14E-01	3.48E-03	-3.05E+00
GWP-fossil	[kg CO_2-Eq.]	1.07E+01	0.00E+00	1.39E-02	9.14E-01	3.46E-03	-3.06E+00
GWP-biogenic	[kg CO_2-Eq.]	1.08E-01	0.00E+00	2.60E-05	4.46E-05	1.07E-05	1.30E-02
GWP-luluc	[kg CO_2-Eq.]	2.63E-02	0.00E+00	1.46E-04	3.56E-05	1.09E-05	-3.97E-03
ODP	[kg CFC11-Eq.]	1.28E-10	0.00E+00	2.36E-15	1.17E-13	1.12E-14	-1.09E-12
AP	[mol H^+-Eq.]	3.98E-02	0.00E+00	5.08E-05	3.30E-04	2.16E-05	-1.17E-02
EP-freshwater	[kg P-Eq.]	5.95E-05	0.00E+00	3.83E-08	2.27E-08	4.89E-09	-2.45E-06
EP-marine	[kg N-Eq.]	8.04E-03	0.00E+00	2.41E-05	1.49E-04	5.26E-06	-1.80E-03
EP-terrestrial	[mol N-Eq.]	8.77E-02	0.00E+00	2.61E-04	1.79E-03	5.74E-05	-1.84E-02
POCP	[kg NMVOC-Eq.]	2.28E-02	0.00E+00	4.65E-05	3.86E-04	1.63E-05	-6.04E-03
ADPE	[kg Sb-Eq.]	7.83E-05	0.00E+00	9.44E-10	1.37E-09	2.35E-10	-4.46E-05
ADPF	[MJ]	1.44E+02	0.00E+00	1.82E-01	2.77E-01	5.66E-02	-3.60E+01
WDP	[m^3 world-Eq deprived]	3.29E+00	0.00E+00	6.49E-05	8.33E-02	4.05E-04	-6.44E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK34 (3.62 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.08E+02	0.00E+00	1.37E-02	6.21E-02	9.23E-03	-4.17E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.09E+02	0.00E+00	1.37E-02	6.21E-02	9.23E-03	-4.17E+00
PENRE	[MJ]	1.32E+02	0.00E+00	1.82E-01	1.17E+01	5.66E-02	-3.60E+01
PENRM	[MJ]	1.19E+01	0.00E+00	0.00E+00	-1.14E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.44E+02	0.00E+00	1.82E-01	2.77E-01	5.66E-02	-3.60E+01
SM	[kg]	2.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.77E-01	0.00E+00	6.78E-06	1.97E-03	1.19E-05	-1.74E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK34 (3.62 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.16E-07	0.00E+00	7.30E-12	1.26E-10	1.22E-11	-1.40E-04
NHWD	[kg]	1.54E+00	0.00E+00	2.54E-05	4.20E-02	1.63E-01	1.91E-01
RWD	[kg]	3.40E-03	0.00E+00	3.43E-07	1.01E-05	7.85E-07	-5.36E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.16E+00	0.00E+00	0.00E+00	3.09E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.55E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.77E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK34 (3.62 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.256 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK46

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK46 (4.01 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.22E+01	0.00E+00	1.56E-02	9.01E-01	3.91E-03	-3.05E+00
GWP-fossil	[kg CO_2-Eq.]	1.21E+01	0.00E+00	1.54E-02	9.01E-01	3.88E-03	-3.06E+00
GWP-biogenic	[kg CO_2-Eq.]	1.29E-01	0.00E+00	2.88E-05	4.36E-05	1.20E-05	1.32E-02
GWP-luluc	[kg CO_2-Eq.]	3.00E-02	0.00E+00	1.62E-04	3.62E-05	1.22E-05	-3.82E-03
ODP	[kg CFC11-Eq.]	1.48E-10	0.00E+00	2.61E-15	1.19E-13	1.26E-14	-9.64E-13
AP	[mol H^+-Eq.]	4.36E-02	0.00E+00	5.63E-05	3.21E-04	2.42E-05	-1.15E-02
EP-freshwater	[kg P-Eq.]	6.95E-05	0.00E+00	4.24E-08	2.25E-08	5.49E-09	-2.37E-06
EP-marine	[kg N-Eq.]	9.17E-03	0.00E+00	2.67E-05	1.44E-04	5.90E-06	-1.77E-03
EP-terrestrial	[mol N-Eq.]	1.00E-01	0.00E+00	2.89E-04	1.74E-03	6.44E-05	-1.81E-02
POCP	[kg NMVOC-Eq.]	2.57E-02	0.00E+00	5.15E-05	3.74E-04	1.83E-05	-5.99E-03
ADPE	[kg Sb-Eq.]	7.85E-05	0.00E+00	1.05E-09	1.38E-09	2.64E-10	-4.32E-05
ADPF	[MJ]	1.59E+02	0.00E+00	2.02E-01	2.78E-01	6.35E-02	-3.59E+01
WDP	[m^3 world-Eq deprived]	3.80E+00	0.00E+00	7.19E-05	8.23E-02	4.54E-04	-6.24E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK46 (4.01 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.25E+02	0.00E+00	1.52E-02	6.27E-02	1.03E-02	-3.99E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.26E+02	0.00E+00	1.52E-02	6.27E-02	1.03E-02	-3.99E+00
PENRE	[MJ]	1.47E+02	0.00E+00	2.02E-01	1.20E+01	6.35E-02	-3.59E+01
PENRM	[MJ]	1.22E+01	0.00E+00	0.00E+00	-1.17E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.59E+02	0.00E+00	2.02E-01	2.78E-01	6.35E-02	-3.59E+01
SM	[kg]	2.68E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.11E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.93E-01	0.00E+00	7.51E-06	1.94E-03	1.34E-05	-1.80E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK46 (4.01 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.36E-07	0.00E+00	8.09E-12	1.27E-10	1.37E-11	-1.33E-04
NHWD	[kg]	1.80E+00	0.00E+00	2.81E-05	4.29E-02	1.83E-01	1.99E-01
RWD	[kg]	3.90E-03	0.00E+00	3.80E-07	1.01E-05	8.80E-07	-5.26E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.63E+00	0.00E+00	0.00E+00	3.47E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.53E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.74E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 735 MM: UNI SPER-H 200-ZAK46 (4.01 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.257 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK34

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK34 (3.78 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.13E+01	0.00E+00	1.47E-02	1.03E+00	3.61E-03	-3.26E+00
GWP-fossil	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.45E-02	1.03E+00	3.58E-03	-3.27E+00
GWP-biogenic	[kg CO_2-Eq.]	1.08E-01	0.00E+00	2.71E-05	4.90E-05	1.10E-05	1.38E-02
GWP-luluc	[kg CO_2-Eq.]	2.70E-02	0.00E+00	1.53E-04	3.85E-05	1.13E-05	-4.08E-03
ODP	[kg CFC11-Eq.]	1.31E-10	0.00E+00	2.46E-15	1.26E-13	1.16E-14	-1.23E-12
AP	[mol H^+-Eq.]	4.08E-02	0.00E+00	5.30E-05	3.42E-04	2.24E-05	-1.22E-02
EP-freshwater	[kg P-Eq.]	6.03E-05	0.00E+00	4.00E-08	2.51E-08	5.07E-09	-2.54E-06
EP-marine	[kg N-Eq.]	8.26E-03	0.00E+00	2.52E-05	1.52E-04	5.45E-06	-1.89E-03
EP-terrestrial	[mol N-Eq.]	9.00E-02	0.00E+00	2.73E-04	1.85E-03	5.94E-05	-1.93E-02
POCP	[kg NMVOC-Eq.]	2.36E-02	0.00E+00	4.85E-05	3.95E-04	1.69E-05	-6.36E-03
ADPE	[kg Sb-Eq.]	7.86E-05	0.00E+00	9.86E-10	1.47E-09	2.43E-10	-4.58E-05
ADPF	[MJ]	1.51E+02	0.00E+00	1.90E-01	2.95E-01	5.86E-02	-3.84E+01
WDP	[m^3 world-Eq deprived]	3.34E+00	0.00E+00	6.78E-05	9.31E-02	4.19E-04	-6.64E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK34 (3.78 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.10E+02	0.00E+00	1.43E-02	6.71E-02	9.56E-03	-4.36E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.11E+02	0.00E+00	1.43E-02	6.71E-02	9.56E-03	-4.36E+00
PENRE	[MJ]	1.38E+02	0.00E+00	1.90E-01	1.30E+01	5.86E-02	-3.84E+01
PENRM	[MJ]	1.32E+01	0.00E+00	0.00E+00	-1.27E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.51E+02	0.00E+00	1.90E-01	2.95E-01	5.86E-02	-3.84E+01
SM	[kg]	2.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.96E-01	0.00E+00	7.08E-06	2.20E-03	1.23E-05	-1.91E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK34 (3.78 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.18E-07	0.00E+00	7.62E-12	1.35E-10	1.27E-11	-1.41E-04
NHWD	[kg]	1.54E+00	0.00E+00	2.65E-05	4.55E-02	1.69E-01	2.10E-01
RWD	[kg]	3.44E-03	0.00E+00	3.59E-07	1.11E-05	8.13E-07	-5.87E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.16E+00	0.00E+00	0.00E+00	3.20E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.73E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.09E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK34 (3.78 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.258 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK46

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK46 (4.17 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.26E+01	0.00E+00	1.62E-02	1.01E+00	4.03E-03	-3.27E+00
GWP-fossil	[kg CO_2-Eq.]	1.25E+01	0.00E+00	1.60E-02	1.01E+00	4.01E-03	-3.28E+00
GWP-biogenic	[kg CO_2-Eq.]	1.29E-01	0.00E+00	2.99E-05	4.79E-05	1.23E-05	1.40E-02
GWP-luluc	[kg CO_2-Eq.]	3.07E-02	0.00E+00	1.68E-04	3.91E-05	1.26E-05	-3.94E-03
ODP	[kg CFC11-Eq.]	1.50E-10	0.00E+00	2.71E-15	1.27E-13	1.30E-14	-1.09E-12
AP	[mol H^+-Eq.]	4.46E-02	0.00E+00	5.85E-05	3.33E-04	2.50E-05	-1.21E-02
EP-freshwater	[kg P-Eq.]	7.02E-05	0.00E+00	4.41E-08	2.49E-08	5.66E-09	-2.47E-06
EP-marine	[kg N-Eq.]	9.38E-03	0.00E+00	2.78E-05	1.47E-04	6.09E-06	-1.87E-03
EP-terrestrial	[mol N-Eq.]	1.02E-01	0.00E+00	3.01E-04	1.79E-03	6.64E-05	-1.90E-02
POCP	[kg NMVOC-Eq.]	2.64E-02	0.00E+00	5.35E-05	3.84E-04	1.89E-05	-6.33E-03
ADPE	[kg Sb-Eq.]	7.87E-05	0.00E+00	1.09E-09	1.48E-09	2.72E-10	-4.47E-05
ADPF	[MJ]	1.66E+02	0.00E+00	2.10E-01	2.96E-01	6.55E-02	-3.84E+01
WDP	[m^3 world-Eq deprived]	3.84E+00	0.00E+00	7.48E-05	9.19E-02	4.68E-04	-6.47E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK46 (4.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.27E+02	0.00E+00	1.58E-02	6.76E-02	1.07E-02	-4.18E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.28E+02	0.00E+00	1.58E-02	6.76E-02	1.07E-02	-4.18E+00
PENRE	[MJ]	1.52E+02	0.00E+00	2.10E-01	1.32E+01	6.55E-02	-3.84E+01
PENRM	[MJ]	1.35E+01	0.00E+00	0.00E+00	-1.29E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.66E+02	0.00E+00	2.10E-01	2.96E-01	6.55E-02	-3.84E+01
SM	[kg]	2.70E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.12E-01	0.00E+00	7.81E-06	2.17E-03	1.38E-05	-1.97E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK46 (4.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.37E-07	0.00E+00	8.41E-12	1.36E-10	1.42E-11	-1.35E-04
NHWD	[kg]	1.81E+00	0.00E+00	2.93E-05	4.63E-02	1.89E-01	2.19E-01
RWD	[kg]	3.94E-03	0.00E+00	3.96E-07	1.10E-05	9.09E-07	-5.77E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.63E+00	0.00E+00	0.00E+00	3.58E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.71E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.05E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 880 MM: UNI SPER-H 250-ZAK46 (4.17 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.259 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK34

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK34 (3.97 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.18E+01	0.00E+00	1.54E-02	1.17E+00	3.75E-03	-3.51E+00
GWP-fossil	[kg CO_2-Eq.]	1.17E+01	0.00E+00	1.53E-02	1.17E+00	3.73E-03	-3.52E+00
GWP-biogenic	[kg CO_2-Eq.]	1.08E-01	0.00E+00	2.85E-05	5.42E-05	1.15E-05	1.48E-02
GWP-luluc	[kg CO_2-Eq.]	2.78E-02	0.00E+00	1.60E-04	4.21E-05	1.17E-05	-4.21E-03
ODP	[kg CFC11-Eq.]	1.34E-10	0.00E+00	2.58E-15	1.37E-13	1.21E-14	-1.41E-12
AP	[mol H^+-Eq.]	4.21E-02	0.00E+00	5.57E-05	3.55E-04	2.33E-05	-1.28E-02
EP-freshwater	[kg P-Eq.]	6.12E-05	0.00E+00	4.20E-08	2.81E-08	5.27E-09	-2.64E-06
EP-marine	[kg N-Eq.]	8.52E-03	0.00E+00	2.65E-05	1.55E-04	5.67E-06	-1.99E-03
EP-terrestrial	[mol N-Eq.]	9.28E-02	0.00E+00	2.86E-04	1.91E-03	6.19E-05	-2.02E-02
POCP	[kg NMVOC-Eq.]	2.46E-02	0.00E+00	5.10E-05	4.05E-04	1.76E-05	-6.75E-03
ADPE	[kg Sb-Eq.]	7.90E-05	0.00E+00	1.04E-09	1.60E-09	2.53E-10	-4.73E-05
ADPF	[MJ]	1.59E+02	0.00E+00	2.00E-01	3.17E-01	6.10E-02	-4.13E+01
WDP	[m^3 world-Eq deprived]	3.39E+00	0.00E+00	7.12E-05	1.05E-01	4.36E-04	-6.87E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK34 (3.97 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.13E+02	0.00E+00	1.50E-02	7.32E-02	9.95E-03	-4.58E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.14E+02	0.00E+00	1.50E-02	7.32E-02	9.95E-03	-4.58E+00
PENRE	[MJ]	1.45E+02	0.00E+00	2.00E-01	1.45E+01	6.10E-02	-4.13E+01
PENRM	[MJ]	1.47E+01	0.00E+00	0.00E+00	-1.42E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.59E+02	0.00E+00	2.00E-01	3.17E-01	6.10E-02	-4.13E+01
SM	[kg]	2.33E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.20E-01	0.00E+00	7.43E-06	2.48E-03	1.28E-05	-2.10E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK34 (3.97 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.19E-07	0.00E+00	8.00E-12	1.47E-10	1.32E-11	-1.43E-04
NHWD	[kg]	1.55E+00	0.00E+00	2.79E-05	4.97E-02	1.76E-01	2.33E-01
RWD	[kg]	3.49E-03	0.00E+00	3.77E-07	1.23E-05	8.46E-07	-6.49E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.17E+00	0.00E+00	0.00E+00	3.33E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.94E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.48E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK34 (3.97 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.260 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK46

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK46 (4.36 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.31E+01	0.00E+00	1.70E-02	1.15E+00	4.18E-03	-3.53E+00
GWP-fossil	[kg CO_2-Eq.]	1.30E+01	0.00E+00	1.68E-02	1.15E+00	4.15E-03	-3.54E+00
GWP-biogenic	[kg CO_2-Eq.]	1.28E-01	0.00E+00	3.13E-05	5.30E-05	1.28E-05	1.51E-02
GWP-luluc	[kg CO_2-Eq.]	3.15E-02	0.00E+00	1.76E-04	4.26E-05	1.31E-05	-4.08E-03
ODP	[kg CFC11-Eq.]	1.53E-10	0.00E+00	2.84E-15	1.38E-13	1.34E-14	-1.25E-12
AP	[mol H^+-Eq.]	4.58E-02	0.00E+00	6.12E-05	3.46E-04	2.59E-05	-1.27E-02
EP-freshwater	[kg P-Eq.]	7.10E-05	0.00E+00	4.61E-08	2.79E-08	5.87E-09	-2.59E-06
EP-marine	[kg N-Eq.]	9.63E-03	0.00E+00	2.91E-05	1.51E-04	6.31E-06	-1.98E-03
EP-terrestrial	[mol N-Eq.]	1.05E-01	0.00E+00	3.14E-04	1.86E-03	6.88E-05	-2.00E-02
POCP	[kg NMVOC-Eq.]	2.73E-02	0.00E+00	5.60E-05	3.94E-04	1.96E-05	-6.74E-03
ADPE	[kg Sb-Eq.]	7.91E-05	0.00E+00	1.14E-09	1.61E-09	2.82E-10	-4.64E-05
ADPF	[MJ]	1.74E+02	0.00E+00	2.19E-01	3.18E-01	6.79E-02	-4.14E+01
WDP	[m^3 world-Eq deprived]	3.89E+00	0.00E+00	7.82E-05	1.04E-01	4.85E-04	-6.72E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK46 (4.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.30E+02	0.00E+00	1.65E-02	7.36E-02	1.11E-02	-4.41E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.31E+02	0.00E+00	1.65E-02	7.36E-02	1.11E-02	-4.41E+00
PENRE	[MJ]	1.59E+02	0.00E+00	2.19E-01	1.48E+01	6.79E-02	-4.14E+01
PENRM	[MJ]	1.50E+01	0.00E+00	0.00E+00	-1.44E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.74E+02	0.00E+00	2.19E-01	3.18E-01	6.79E-02	-4.14E+01
SM	[kg]	2.72E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.36E-01	0.00E+00	8.16E-06	2.44E-03	1.43E-05	-2.17E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK46 (4.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.39E-07	0.00E+00	8.79E-12	1.48E-10	1.47E-11	-1.38E-04
NHWD	[kg]	1.81E+00	0.00E+00	3.06E-05	5.04E-02	1.96E-01	2.42E-01
RWD	[kg]	3.99E-03	0.00E+00	4.14E-07	1.22E-05	9.42E-07	-6.38E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.63E+00	0.00E+00	0.00E+00	3.71E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.92E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	3.43E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1055 MM: UNI SPER-H 300-ZAK46 (4.36 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.261 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK34

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK34 (4.30 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.28E+01	0.00E+00	1.67E-02	1.43E+00	4.00E-03	-3.94E+00
GWP-fossil	[kg CO_2-Eq.]	1.27E+01	0.00E+00	1.65E-02	1.43E+00	3.97E-03	-3.95E+00
GWP-biogenic	[kg CO_2-Eq.]	1.08E-01	0.00E+00	3.09E-05	6.40E-05	1.22E-05	1.63E-02
GWP-luluc	[kg CO_2-Eq.]	2.93E-02	0.00E+00	1.74E-04	5.06E-05	1.25E-05	-4.44E-03
ODP	[kg CFC11-Eq.]	1.39E-10	0.00E+00	2.80E-15	1.62E-13	1.29E-14	-1.83E-12
AP	[mol H^+-Eq.]	4.43E-02	0.00E+00	6.03E-05	3.83E-04	2.48E-05	-1.39E-02
EP-freshwater	[kg P-Eq.]	6.28E-05	0.00E+00	4.55E-08	3.41E-08	5.61E-09	-2.84E-06
EP-marine	[kg N-Eq.]	9.01E-03	0.00E+00	2.87E-05	1.63E-04	6.04E-06	-2.17E-03
EP-terrestrial	[mol N-Eq.]	9.79E-02	0.00E+00	3.10E-04	2.04E-03	6.59E-05	-2.19E-02
POCP	[kg NMVOC-Eq.]	2.63E-02	0.00E+00	5.52E-05	4.27E-04	1.87E-05	-7.41E-03
ADPE	[kg Sb-Eq.]	7.97E-05	0.00E+00	1.12E-09	1.89E-09	2.70E-10	-4.99E-05
ADPF	[MJ]	1.76E+02	0.00E+00	2.16E-01	3.70E-01	6.50E-02	-4.63E+01
WDP	[m^3 world-Eq deprived]	3.49E+00	0.00E+00	7.71E-05	1.28E-01	4.64E-04	-7.28E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK34 (4.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.17E+02	0.00E+00	1.63E-02	8.71E-02	1.06E-02	-5.03E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.19E+02	0.00E+00	1.63E-02	8.71E-02	1.06E-02	-5.03E+00
PENRE	[MJ]	1.58E+02	0.00E+00	2.16E-01	1.76E+01	6.50E-02	-4.63E+01
PENRM	[MJ]	1.78E+01	0.00E+00	0.00E+00	-1.73E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.76E+02	0.00E+00	2.16E-01	3.70E-01	6.50E-02	-4.63E+01
SM	[kg]	2.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.48E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.59E-01	0.00E+00	8.05E-06	3.02E-03	1.37E-05	-2.43E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK34 (4.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.22E-07	0.00E+00	8.67E-12	1.75E-10	1.40E-11	-1.46E-04
NHWD	[kg]	1.56E+00	0.00E+00	3.02E-05	5.98E-02	1.87E-01	2.71E-01
RWD	[kg]	3.59E-03	0.00E+00	4.08E-07	1.48E-05	9.01E-07	-7.70E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.17E+00	0.00E+00	0.00E+00	3.55E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.36E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.23E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK34 (4.30 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.262 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK46

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK46 (4.69 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.41E+01	0.00E+00	1.83E-02	1.41E+00	4.42E-03	-3.98E+00
GWP-fossil	[kg CO_2-Eq.]	1.39E+01	0.00E+00	1.80E-02	1.41E+00	4.40E-03	-3.99E+00
GWP-biogenic	[kg CO_2-Eq.]	1.29E-01	0.00E+00	3.37E-05	6.26E-05	1.35E-05	1.67E-02
GWP-luluc	[kg CO_2-Eq.]	3.29E-02	0.00E+00	1.89E-04	5.09E-05	1.38E-05	-4.33E-03
ODP	[kg CFC11-Eq.]	1.58E-10	0.00E+00	3.05E-15	1.62E-13	1.42E-14	-1.64E-12
AP	[mol H^+-Eq.]	4.80E-02	0.00E+00	6.58E-05	3.74E-04	2.74E-05	-1.38E-02
EP-freshwater	[kg P-Eq.]	7.26E-05	0.00E+00	4.96E-08	3.37E-08	6.21E-09	-2.79E-06
EP-marine	[kg N-Eq.]	1.01E-02	0.00E+00	3.13E-05	1.59E-04	6.68E-06	-2.16E-03
EP-terrestrial	[mol N-Eq.]	1.10E-01	0.00E+00	3.38E-04	1.99E-03	7.29E-05	-2.18E-02
POCP	[kg NMVOC-Eq.]	2.91E-02	0.00E+00	6.02E-05	4.16E-04	2.07E-05	-7.43E-03
ADPE	[kg Sb-Eq.]	7.96E-05	0.00E+00	1.22E-09	1.90E-09	2.98E-10	-4.92E-05
ADPF	[MJ]	1.90E+02	0.00E+00	2.36E-01	3.70E-01	7.19E-02	-4.66E+01
WDP	[m^3 world-Eq deprived]	3.99E+00	0.00E+00	8.41E-05	1.26E-01	5.14E-04	-7.17E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK46 (4.69 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.34E+02	0.00E+00	1.78E-02	8.73E-02	1.17E-02	-4.86E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.35E+02	0.00E+00	1.78E-02	8.73E-02	1.17E-02	-4.86E+00
PENRE	[MJ]	1.72E+02	0.00E+00	2.36E-01	1.78E+01	7.19E-02	-4.66E+01
PENRM	[MJ]	1.80E+01	0.00E+00	0.00E+00	-1.75E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.90E+02	0.00E+00	2.36E-01	3.70E-01	7.19E-02	-4.66E+01
SM	[kg]	2.76E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	2.75E-01	0.00E+00	8.78E-06	2.98E-03	1.51E-05	-2.51E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK46 (4.69 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.41E-07	0.00E+00	9.46E-12	1.75E-10	1.55E-11	-1.41E-04
NHWD	[kg]	1.83E+00	0.00E+00	3.29E-05	6.04E-02	2.07E-01	2.81E-01
RWD	[kg]	4.07E-03	0.00E+00	4.45E-07	1.47E-05	9.97E-07	-7.58E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.63E+00	0.00E+00	0.00E+00	3.93E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.33E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.17E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, STRAP L 1345 MM: UNI SPER-H 400-ZAK46 (4.69 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.263 UNIVERSAL SHUT-OFF SADDLE PN16 INCL. STRAP: UNI SPER-H 150-1"

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL SHUT-OFF SADDLE PN16 INCL. STRAP: UNI SPER-H 150-1" (3.49 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.05E+01	0.00E+00	1.36E-02	7.90E-01	3.40E-03	-2.75E+00
GWP-fossil	[kg CO_2-Eq.]	1.03E+01	0.00E+00	1.34E-02	7.90E-01	3.38E-03	-2.76E+00
GWP-biogenic	[kg CO_2-Eq.]	1.10E-01	0.00E+00	2.51E-05	4.04E-05	1.04E-05	1.19E-02
GWP-luluc	[kg CO_2-Eq.]	2.62E-02	0.00E+00	1.41E-04	2.64E-05	1.06E-05	-3.72E-03
ODP	[kg CFC11-Eq.]	1.29E-10	0.00E+00	2.27E-15	8.98E-14	1.09E-14	-8.90E-13
AP	[mol H^+-Eq.]	3.91E-02	0.00E+00	4.90E-05	3.09E-04	2.11E-05	-1.08E-02
EP-freshwater	[kg P-Eq.]	5.95E-05	0.00E+00	3.69E-08	1.89E-08	4.78E-09	-2.27E-06
EP-marine	[kg N-Eq.]	7.89E-03	0.00E+00	2.33E-05	1.42E-04	5.14E-06	-1.66E-03
EP-terrestrial	[mol N-Eq.]	8.63E-02	0.00E+00	2.52E-04	1.69E-03	5.61E-05	-1.70E-02
POCP	[kg NMVOC-Eq.]	2.21E-02	0.00E+00	4.49E-05	3.66E-04	1.59E-05	-5.53E-03
ADPE	[kg Sb-Eq.]	7.77E-05	0.00E+00	9.11E-10	1.07E-09	2.30E-10	-4.18E-05
ADPF	[MJ]	1.37E+02	0.00E+00	1.76E-01	2.19E-01	5.53E-02	-3.25E+01
WDP	[m^3 world-Eq deprived]	3.27E+00	0.00E+00	6.27E-05	7.15E-02	3.95E-04	-6.02E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL SHUT-OFF SADDLE PN16 INCL. STRAP: UNI SPER-H 150-1" (3.49 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.08E+02	0.00E+00	1.32E-02	4.83E-02	9.01E-03	-3.83E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.10E+02	0.00E+00	1.32E-02	4.83E-02	9.01E-03	-3.83E+00
PENRE	[MJ]	1.26E+02	0.00E+00	1.76E-01	9.95E+00	5.53E-02	-3.25E+01
PENRM	[MJ]	1.02E+01	0.00E+00	0.00E+00	-9.74E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.37E+02	0.00E+00	1.76E-01	2.19E-01	5.53E-02	-3.25E+01
SM	[kg]	2.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.65E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.59E-01	0.00E+00	6.54E-06	1.68E-03	1.16E-05	-1.54E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL SHUT-OFF SADDLE PN16 INCL. STRAP: UNI SPER-H 150-1" (3.49 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.18E-07	0.00E+00	7.04E-12	9.75E-11	1.19E-11	-1.33E-04
NHWD	[kg]	1.57E+00	0.00E+00	2.45E-05	3.05E-02	1.59E-01	1.68E-01
RWD	[kg]	3.45E-03	0.00E+00	3.31E-07	8.20E-06	7.67E-07	-4.67E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.24E+00	0.00E+00	0.00E+00	3.02E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.32E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.37E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL SHUT-OFF SADDLE PN16 INCL. STRAP: UNI SPER-H 150-1" (3.49 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.264 ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, FOR STEEL PIPES: UNI SPER-H 100-ZAK46 f_Stahl

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, FOR STEEL PIPES: UNI SPER-H 100-ZAK46 f_Stahl (3.76 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1.12E+01	0.00E+00	1.46E-02	7.15E-01	3.72E-03	-2.75E+00
GWP-fossil	[kg CO_2-Eq.]	1.10E+01	0.00E+00	1.45E-02	7.15E-01	3.69E-03	-2.76E+00
GWP-biogenic	[kg CO_2-Eq.]	1.28E-01	0.00E+00	2.70E-05	3.74E-05	1.14E-05	1.21E-02
GWP-luluc	[kg CO_2-Eq.]	2.89E-02	0.00E+00	1.52E-04	2.59E-05	1.16E-05	-3.73E-03
ODP	[kg CFC11-Eq.]	1.44E-10	0.00E+00	2.45E-15	8.82E-14	1.20E-14	-6.61E-13
AP	[mol H^+-Eq.]	4.14E-02	0.00E+00	5.28E-05	3.02E-04	2.30E-05	-1.09E-02
EP-freshwater	[kg P-Eq.]	6.80E-05	0.00E+00	3.98E-08	1.75E-08	5.22E-09	-2.27E-06
EP-marine	[kg N-Eq.]	8.64E-03	0.00E+00	2.51E-05	1.40E-04	5.61E-06	-1.66E-03
EP-terrestrial	[mol N-Eq.]	9.47E-02	0.00E+00	2.71E-04	1.65E-03	6.12E-05	-1.71E-02
POCP	[kg NMVOC-Eq.]	2.37E-02	0.00E+00	4.83E-05	3.61E-04	1.74E-05	-5.56E-03
ADPE	[kg Sb-Eq.]	7.80E-05	0.00E+00	9.81E-10	1.04E-09	2.51E-10	-4.22E-05
ADPF	[MJ]	1.43E+02	0.00E+00	1.89E-01	2.15E-01	6.04E-02	-3.24E+01
WDP	[m^3 world-Eq deprived]	3.72E+00	0.00E+00	6.74E-05	6.53E-02	4.32E-04	-6.06E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, FOR STEEL PIPES: UNI SPER-H 100-ZAK46 f_Stahl (3.76 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1.22E+02	0.00E+00	1.42E-02	4.69E-02	9.85E-03	-3.73E+00
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.23E+02	0.00E+00	1.42E-02	4.69E-02	9.85E-03	-3.73E+00
PENRE	[MJ]	1.34E+02	0.00E+00	1.89E-01	9.21E+00	6.04E-02	-3.24E+01
PENRM	[MJ]	9.51E+00	0.00E+00	0.00E+00	-9.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.43E+02	0.00E+00	1.89E-01	2.15E-01	6.04E-02	-3.24E+01
SM	[kg]	2.65E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.72E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.54E-01	0.00E+00	7.04E-06	1.54E-03	1.27E-05	-1.55E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, FOR STEEL PIPES: UNI SPER-H 100-ZAK46 f_Stahl (3.76 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.34E-07	0.00E+00	7.58E-12	9.50E-11	1.31E-11	-1.35E-04
NHWD	[kg]	1.79E+00	0.00E+00	2.64E-05	3.00E-02	1.74E-01	1.70E-01
RWD	[kg]	3.83E-03	0.00E+00	3.57E-07	7.75E-06	8.38E-07	-4.38E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.63E+00	0.00E+00	0.00E+00	3.30E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.21E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	2.17E+00	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ZAK-UNIVERSAL SHUT-OFF SADDLE PN16, FOR STEEL PIPES: UNI SPER-H 100-ZAK46 f_Stahl (3.76 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.265 UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/1" o_B

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/1" o_B (2.59 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.28E+00	0.00E+00	1.01E-02	2.47E-01	2.67E-03	-1.37E+00
GWP-fossil	[kg CO_2-Eq.]	7.16E+00	0.00E+00	9.96E-03	2.47E-01	2.65E-03	-1.38E+00
GWP-biogenic	[kg CO_2-Eq.]	1.06E-01	0.00E+00	1.86E-05	8.40E-06	8.16E-06	6.77E-03
GWP-luluc	[kg CO_2-Eq.]	2.10E-02	0.00E+00	1.05E-04	1.40E-05	8.33E-06	-1.07E-03
ODP	[kg CFC11-Eq.]	1.06E-10	0.00E+00	1.69E-15	4.15E-14	8.58E-15	4.65E-13
AP	[mol H^+-Eq.]	2.25E-02	0.00E+00	3.63E-05	2.94E-05	1.65E-05	-4.38E-03
EP-freshwater	[kg P-Eq.]	5.45E-05	0.00E+00	2.74E-08	6.72E-09	3.74E-09	-7.52E-07
EP-marine	[kg N-Eq.]	6.05E-03	0.00E+00	1.73E-05	8.06E-06	4.03E-06	-6.86E-04
EP-terrestrial	[mol N-Eq.]	6.66E-02	0.00E+00	1.87E-04	1.37E-04	4.39E-05	-6.72E-03
POCP	[kg NMVOC-Eq.]	1.56E-02	0.00E+00	3.33E-05	2.30E-05	1.25E-05	-2.47E-03
ADPE	[kg Sb-Eq.]	1.36E-05	0.00E+00	6.76E-10	4.61E-10	1.80E-10	-1.44E-05
ADPF	[MJ]	8.74E+01	0.00E+00	1.30E-01	8.64E-02	4.33E-02	-1.51E+01
WDP	[m^3 world-Eq deprived]	2.89E+00	0.00E+00	4.65E-05	2.27E-02	3.10E-04	-2.00E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/1" o_B (2.59 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.32E+01	0.00E+00	9.81E-03	2.14E-02	7.06E-03	-8.37E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.44E+01	0.00E+00	9.81E-03	2.14E-02	7.06E-03	-8.37E-01
PENRE	[MJ]	8.36E+01	0.00E+00	1.30E-01	3.44E+00	4.33E-02	-1.51E+01
PENRM	[MJ]	3.87E+00	0.00E+00	0.00E+00	-3.36E+00	0.00E+00	0.00E+00
PENRT	[MJ]	8.74E+01	0.00E+00	1.30E-01	8.64E-02	4.33E-02	-1.51E+01
SM	[kg]	2.01E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.21E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	9.64E-02	0.00E+00	4.85E-06	5.38E-04	9.12E-06	-1.05E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/1" o_B (2.59 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.04E-07	0.00E+00	5.22E-12	4.33E-11	9.36E-12	-3.43E-05
NHWD	[kg]	1.37E+00	0.00E+00	1.82E-05	1.74E-02	1.25E-01	1.21E-01
RWD	[kg]	2.68E-03	0.00E+00	2.46E-07	3.17E-06	6.01E-07	-1.44E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.30E+00	0.00E+00	0.00E+00	2.37E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	4.27E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	7.64E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/1" o_B (2.59 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

2.266 UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/6/4" o_B

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED); MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/6/4" o_B (2.80 kg/piece)

Kernindikator	Einheit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	7.65E+00	0.00E+00	1.09E-02	2.98E-01	2.87E-03	-1.60E+00
GWP-fossil	[kg CO_2-Eq.]	7.52E+00	0.00E+00	1.08E-02	2.98E-01	2.85E-03	-1.60E+00
GWP-biogenic	[kg CO_2-Eq.]	1.11E-01	0.00E+00	2.01E-05	1.01E-05	8.78E-06	7.87E-03
GWP-luluc	[kg CO_2-Eq.]	2.22E-02	0.00E+00	1.13E-04	1.69E-05	8.96E-06	-1.19E-03
ODP	[kg CFC11-Eq.]	1.11E-10	0.00E+00	1.82E-15	5.03E-14	9.23E-15	5.34E-13
AP	[mol H^+-Eq.]	2.35E-02	0.00E+00	3.93E-05	3.55E-05	1.78E-05	-5.01E-03
EP-freshwater	[kg P-Eq.]	5.96E-05	0.00E+00	2.96E-08	8.11E-09	4.03E-09	-8.50E-07
EP-marine	[kg N-Eq.]	6.34E-03	0.00E+00	1.87E-05	9.73E-06	4.33E-06	-7.87E-04
EP-terrestrial	[mol N-Eq.]	6.97E-02	0.00E+00	2.02E-04	1.65E-04	4.73E-05	-7.69E-03
POCP	[kg NMVOC-Eq.]	1.63E-02	0.00E+00	3.59E-05	2.77E-05	1.34E-05	-2.85E-03
ADPE	[kg Sb-Eq.]	1.38E-05	0.00E+00	7.30E-10	5.58E-10	1.94E-10	-1.62E-05
ADPF	[MJ]	9.22E+01	0.00E+00	1.41E-01	1.05E-01	4.66E-02	-1.76E+01
WDP	[m^3 world-Eq deprived]	3.27E+00	0.00E+00	5.02E-05	2.74E-02	3.33E-04	-2.25E-01

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/6/4" o_B (2.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	9.82E+01	0.00E+00	1.06E-02	2.59E-02	7.60E-03	-9.35E-01
PERM	[MJ]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	9.94E+01	0.00E+00	1.06E-02	2.59E-02	7.60E-03	-9.35E-01
PENRE	[MJ]	8.80E+01	0.00E+00	1.41E-01	3.82E+00	4.66E-02	-1.76E+01
PENRM	[MJ]	4.23E+00	0.00E+00	0.00E+00	-3.72E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.22E+01	0.00E+00	1.41E-01	1.05E-01	4.66E-02	-1.76E+01
SM	[kg]	2.09E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.30E-01
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	1.07E-01	0.00E+00	5.24E-06	6.48E-04	9.82E-06	-1.24E-01

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/6/4" o_B (2.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1.08E-07	0.00E+00	5.65E-12	5.24E-11	1.01E-11	-3.73E-05
NHWD	[kg]	1.43E+00	0.00E+00	1.96E-05	2.11E-02	1.34E-01	1.43E-01
RWD	[kg]	2.80E-03	0.00E+00	2.66E-07	3.83E-06	6.47E-07	-1.71E-04
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.40E+00	0.00E+00	0.00E+00	2.55E+00	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	5.15E-01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	9.21E-01	0.00E+00	0.00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece UNIVERSAL-H SHUT-OFF SADDLE WITHOUT STRAP: UNI SPER-H 65-500/6/4" o_B (2.80 kg/piece)

Indikator	Einheit	A1-A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND
IRP	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

The additional and optional impact categories according to *EN 15804+A2* are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	E. Hawle Armaturenwerke GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-HAW-20260412-IBA1-EN
Issue date	21.07.2026
Valid to	20.07.2031

Saddle

E. Hawle Armaturenwerke GmbH

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

www.ibu-epd.com | https://epd-online.com

1. General Information

E. Hawle Armaturenwerke GmbH

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-HAW-20260412-IBA1-EN

This declaration is based on the product category rules:

Fittings and connections for water supply, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

21.07.2026

Valid to

20.07.2031

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Dr. Martina Bender
(Managing Director Institut Bauen und Umwelt e.V.)

Saddle

Owner of the declaration

E. Hawle Armaturenwerke GmbH
Wagrainer Straße 13
4840 Vöcklabruck
Austria

Declared product / declared unit

1 piece saddle - type 'UNI shut-off saddle PN16 strap L 455 mm: UNI sper 100-2"'

Scope:

This Environmental Product Declaration refers to a declared unit of 1 piece saddle - type 'UNI shut-off saddle PN16 strap L 455 mm: UNI sper 100-2"' - produced at the production sites of E. Hawle Armaturenwerke GmbH in Vöcklabruck and Frankenmarkt (Austria).
In addition to the declared product, an annex to this EPD declares the results of 266 further saddles (Annex saddles).
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Angela Schindler,
(Independent verifier)

2. Product

2.1 Product description/Product definition

The universal shut-off tapping saddle is a pipe connection component used for creating controlled branch outlets on pressurized water distribution pipelines.

It combines a robust saddle body with an integrated shut-off mechanism, enabling safe drilling and sealing without interrupting service. Designed for compatibility with a wide range of pipe materials and diameters, the tapping saddle ensures secure fastening, reliable tightness, and long-term durability in potable water and utility applications.

The referred unit is traded as 'UNI shut-off saddle PN16 strap L 455 mm: UNI sper 100-2'.

Catalogue number: 3800
Internal material number: 5004056
Goods no. / Imp. code no.: 73071910
EAN/UPC code: 9007878015250
Coating standard: *EN 14901*

Function:
The saddle is clamped with staps onto an existing pressurized pipeline to create a controlled service connection.
After positioning the saddle around the pipe and tightening the fastening system, the drilling tool is inserted through the saddle body. The pipe wall is drilled under pressure, and the shut-off chamber is then closed to safely retain the cut-out section.
Once the drilling tool is removed, a valve or fitting can be connected and the shut-off chamber can be reopened to allow flow to the new branch line.

The saddle is made of ductile cast iron (EN-GJS-400-15) pursuant to *EN 1563*. It is epoxy powder coated on the inside and outside pursuant to *DIN 3476-1* and in compliance with the quality and testing provisions of *RAL-GZ 662 (GSK)*: Coating thickness: min. 250 µm, zero porosity: min. 3000 V spark test, adhesion: min. 16 N/mm².

The connection here is an internal thread connection according to *ISO 228*. It contains an O-ring to protect the saddle housing from corrosion.
Other variations can be flange or ZAK connection types (see annex).

The rubber padded saddle is fastened via straps made of stainless steel, nuts and washers.
Other variations of the tapping saddle can be fastend via holding pieces made of polyamide (H-type fixation) or by full pipe enclosure fixation with a second housing part from cast iron (see annex).

The shut-off chamber contains various POM-parts for framing and EPDM parts for sealing. The saddle blade and the other drilling equipment is not part of the product.

For the use and application of the product the respective national provisions at the place of use apply, in Germany, for example, the building codes of the federal states and the corresponding national specifications.

2.2 Application

The universal shut-off tapping saddle is a pipe connection component used for creating controlled branch outlets on pressurized water distribution pipelines.
It is used in pressurized pipeline systems and is commonly used in potable water supply lines, especially for house connections.
Typically, the tapping saddle is used in conjunction with a fitting and a service valve to establish a complete service connection.

2.3 Technical Data

The following data is decisive for the products of E. Hawle Armaturenwerke GmbH:

Constructional data

5004056 / UNI SPER 100-2"

Name	Value	Unit
Medium	Water	
Nominal diameter (DN)	100	
Max. working pressure (PN)	16	bar
temperature (range)	0 - 30	°C
Connection 1	Internal thread	
Connection 2	Strap-on tapping connection	
Weight	0.00242	t
Housing	Ductile iron (EN-GJS-400-115 EN 1563)	

The performance values of the product with respect to its characteristics comply with the applicable technical regulation pursuant to *ISO 17885* and other application-specific standards (no CE marking).

2.4 Delivery status

The Hawle Universal shut-off tapping saddle is delivered in two parts:
The saddle, including the shut-off chamber components, is assembled, tested, and packaged.
The padded straps, including the nuts and washers, are packaged separately.

The saddle body of the 'UNI SPER 100-2" saddle' is 9 cm high, 9 cm long and approximately 14 cm wide.
The straps are 45.5 cm long, 6 cm wide and 1.5 cm thick.

2.5 Base materials/Ancillary materials

The main product components are listed in the table below.

Name	Value	Unit
Housing cast iron epoxy powder coated	67,4	%
Saddle gasket EPDM	1,3	%
O-ring (internal thread) EPDM	0,4	%
Shut-off chamber gaskets EPDM	0,7	%
Shut-off chamber components POM	0,8	%
Shut-off chamber lid POM GF20	2,1	%
Lid sealing EPDM	0,3	%
Lid bolts stainless steel	1,9	%
Lid washers stainless steel	0,7	%
Strap bolts stainless steel	12,8	%
Strap stainless steel	6,5	%
Nut and washer for strap stainless steel	2,8	%
Rubber pad EPDM	2,3	%

The main constituents are made of metals: a cast iron housing, a stainless steel strap including bolts, nuts and washers.
Other relevant components are elastomer parts from EPDM such as rubber pad, O-rings and other gaskets and the shut-off chamber components made of POM.

A component of the product contains substances listed in the *candidate list* (date: 27.02.2026) exceeding 0.1 percentage by mass: **yes**

Substance: 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol
CAS number: 119-47-1
Reason: Toxic for reproduction (Article 57c)
Hazards: H360F (according to *Regulation (EC) No 1272/2008 (CLP)*)
Component: Lid of the shut-off chamber
Material: POM, fiber glass reinforced (DELRIN 570 NC 10+20% glass fibre)
Concentration:
- Approx. 0.11 - 0.14 % in the component
- Approx. 0,00295 % in the product

This material is only used for the shut-off lid, which is not in contact with drinking water.

All materials used in the product are exclusively materials suitable for drinking water hygiene, which are classified by the Federal Environment Agency (UBA) as harmless for the protection of human health.

This product/article/at least one partial article contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the *candidate list*, exceeding 0.1 percentage by mass: **no**

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) *Ordinance on Biocide Products* No. 528/2012): **no**

2.6 Manufacture

The shut-off saddle is manufactured in accordance with the quality management standard *ISO 9001*.
All products are checked for function and tightness prior to dispatch. Production takes place according to the specifications of the relevant standards. The products and the manufacturing methods also meet the requirements of the country-specific approvals.

Production takes place at the two production sites of E. Hawle Armaturenwerke GmbH in Vöcklabruck and Frankenmarkt.

The cast components are processed mechanically; the surfaces are blasted and then epoxy powder coated.
The straps are purchased at the correct length or cut to size at site.
The strap bolts are milled and welded.
Various plastic components are produced using injection moulding machines.
Gaskets and sealings are made from raw rubber in elastomer production. Various O-rings are bought in.

The individual components are assembled and are finished after passing functional and pressure testing. Saddle and straps are packed separately.

2.7 Environment and health during manufacturing

The production process at Hawle complies with the health and safety management standard *ISO 45001*. The commitment to continuous improvement is reflected in the company's exceeding of legal requirements with regard to inspections, evaluations, prevention staff and prevention times, and additional measures in connection with the 'Hawle Vital Program' (free fruit, vaccine drives, reintegration measures, various active events).

The certified environmental management system according to *ISO 14001* is proof of Hawle's commitment to steadily reducing its environmental impact. This includes various initiatives in the following areas:
- Resource efficiency: use of recycled plastics for parts that do not come into contact with drinking water; closing raw material loops with suppliers by way of cast iron swarf agglomeration; continuous scrap monitoring; integrated waste management concept; repair of used Euro-pallets, etc.
- Water management: preparation and re-use of test water;
- Energy management: thermal insulation; heat recovery plants; energy recovery plans; efficiency-boosting measures; lighting optimization, etc.

2.8 Product processing/Installation

Installation instructions are enclosed with the product. During laying, installation, and maintenance, the applicable standards, regulations, accident prevention regulations, and the regulations of the professional associations must be observed and complied with. Installation and maintenance shall only be carried out by trained professionals.

Tools needed for assembly are a torque wrench to tighten the straps, the under pressure drilling machine set and the saddle blade.

Hawle shut-off pipe saddles are designed for maintenance-free operation. After assembly, a pressure test is to be conducted in the open trench pursuant to *EN 805*; this is to be dictated by the working pressure.

2.9 Packaging

Appropriate packaging is selected to meet drinking water/hygiene requirements and to protect the products.

The following types of packaging are used:
Saddles and other housing products are protected with a shrink wrap foil.
Straps are not separately packed with foil. Nuts and washers are premounted for picking purposes.

Additional packaging serves merely to protect the product during transport and is dictated by the destination country in question (sea freight, air cargo, parcel express, truck).
The provisions governing standard packaging types are set out in a dedicated handbook.
For continental Europe, the transport packaging consists of an exchangeable Euro-pallet with a reusable folding frame and a hardboard base.
Saddles are usually commissioned in cardboard boxes.
The contact points from product and wood frame are protected with cardboard inserts (partly recycled secondary packaging) and the frame is braced with PET straps.

The packaging materials can either be re-used or sent to the country-specific waste collection systems (waste wood, waste paper, plastic packaging).

2.10 Condition of use

The material composition during the usage phase is the same as that at the time of manufacture. The highly corrosion-resistant design ensures a long product life.

The saddle is designed for maintenance-free operation.

2.11 Environment and health during use

From an environmental and health perspective, there are no hazards or restrictions on use.

2.12 Reference service life

Hawle products are produced to extremely high standards. In order to achieve the greatest possible service life, the products are made from or coated with particularly corrosion-resistant materials.

The reference service life of saddles is approximately 50 years according to *ÖNORM ISO 17885*.

Influences on ageing may include operating conditions not in accordance with the intended use. These can be excessive temperature or pressure and also corrosive media or soils.

2.13 Extraordinary effects

Fire

Saddles are not subject to the Construction Products Regulation. A building material class/flammability cannot be specified.

Water

In the event of flooding or other exposure to water, no negative effects on the product and therefore no resulting consequences for the environment are to be expected.

Mechanical destruction

No negative consequences for the environment are to be expected in the event of mechanical destruction.

As part of a drinking water supply pipeline, potential impacts in the event of a functional failure must be considered in the overall risk assessment of the supply pipeline.

2.14 Re-use phase

Repair: All relevant components can be replaced (saddle gasket, strap, O-rings...).

Reuse: The cast iron body components could be returned to the production cycle by way of lye treatment/recoating.

Recycling: The product can be dismantled into its components. The materials that are relevant in terms of weight (cast iron, stainless steel) can be recycled directly, elastomer parts can only be used for energy recovery.

2.15 Disposal

The product is disposed of according to national regulations. Not considering the possibilities mentioned in 2.14, the saddle is disposed of by being fed into the scrap iron processing cycle. The waste code according to the *European Waste Catalogue* is: 17 04 07 Mixed Metal Waste.

2.16 Further information

You can find further information at:

www.hawle.com

3. LCA: Calculation rules

3.1 Declared Unit

This environmental product declaration refers to a declared unit of 1 piece saddle - type 'UNI shut-off saddle PN16 strap L 455 mm: UNI sper 100-2"' - with a weight of 2.72 kg/piece.

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	pce.
Mass reference	2.72	kg/pce

The results for additional versions of saddles can be found in an annex to this EPD:

- Annex saddles declaring 266 further saddles

3.2 System boundary

The life cycle assessment of saddles refers to a cradle-to-gate analysis with modules C1–C4 and module D (A1–A3 + C + D). The following life cycle phases are part of the analysis:

Module A1–A3 | Production stage

The production stage includes the upstream burdens of raw material supply, their transport and the production at E. Hawle Armaturenwerke GmbH in Vöcklabruck and Frankenmarkt. The production sites are supplied with 100 % green electricity (GWP-total = 0,01 kg CO_2-equivalents/kWh). The provision of thermal energy at the site in Vöcklabruck is based on district heating using natural gas and biomass. Thermal energy supply in Frankenmarkt is based on local heating using biomass. The production of the product packaging is also included in module A1–A3.

Module C1 | Deconstruction and demolition

The product is used underground and is either dismounted from the accompanying structures or the valves may remain in the ground after their service life. Burdens associated with the dismounting of the products are assumed as low. The real energy consumption of dismounting strongly depends on the site-specific conditions.

Module C2 | Transport to disposal

The transport to the disposal of the material is estimated declaring a 50 km radius to the waste processing.

Module C3 | Waste processing

Module C3 refers to the emissions from the disposal of the polymer parts of the products. The scenario includes the energy recovery of the polymers in a waste incineration plant. Product flows that reach Module D for recycling reach the end-of-waste state in C3 and thus leave the product system. Environmental impacts resulting from the sorting of metal scrap are not included, as referring energy demand is considered to be negligible.

Module C4 | Landfilling

Module C4 refers to the emissions from the disposal of the losses from waste processing (5 % of metals).

Module D | Benefits and loads beyond the system boundary

Module D declares the recycling of the recovered metals (95 % of metals) including the environmental potential for substituting primary material. In addition, substitution potentials from energy recovery of the incineration of the polymers are accounted for in this module.

3.3 Estimates and assumptions

Assumptions and approximations are applied in case of a lack of representative data. All assumptions and approximations are documented precisely and represent a best-guess representation of reality. The regional applicability of the used background data refers to average data for Europe or Austria. If no European or Austrian data was available, German data was used to represent the Austrian market.

3.4 Cut-off criteria

The LCA model covers all available input and output flows, which can be represented based on robust data and from which a significant contribution can be expected. Data gaps are filled with conservative assumptions of average data or generic data if available and are documented accordingly. Only data with a contribution of less than 1 % were cut off. Thus, no data were neglected, of which a substantial impact is to be expected. All relevant data were collected comprehensively. Cut-off material and energy flows were chosen carefully based on their expected quantitative contribution as well as potential environmental impacts. Thus, it can be assumed that the sum of all neglected input flows does not account for more than 5 % of the total material, water and energy flows.

3.5 Background data

Primary and secondary data are used for the evaluation of upstream environmental impacts in the LCA model. Primary data from one supplier of cast iron is available for modelling the upstream supply chain. Secondary data are taken from the *MLC* 2025.2 background database.

3.6 Data quality

Data collection is based on industry-specific questionnaires. It follows an iterative process clarifying questions via email, telephone calls or in personal/web meetings. Intensive discussions between E. Hawle Armaturenwerke GmbH and Daxner & Merl result in an accurate mapping of product-related material and energy flows. This leads to a high quality of foreground data collected. Data collection relies on a consistent process according to *ISO 14044*.

The technological, geographical and time-related representativeness of the database was kept in mind when selecting background data. Whenever specific data were missing, either generic datasets or representative average data were used instead. The implemented *MLC*-background datasets refer to the latest versions available and are carefully chosen. Except for the dataset for POM, they are not more than ten years old. Due to a lack of more actual data for POM, the industry publication of Plastics Europe from 2010 is part of this analysis. In the absence of more recent data, this data set serves as a conservative approximation.

3.7 Period under review

Foreground data were collected in the 2024 production year, and the data are based on the volumes produced on an annual basis.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Europe

3.9 Allocation

For energy demand, auxiliary materials and land occupation, no product-specific data are available. Therefore, annual quantities were allocated to the product using representative allocation keys (product mass, pieces produced).

All inputs of secondary material are regarded as burden-free. To calculate the net flow, the total external scrap input is subtracted from the total mass of the metal in the product.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. The *MLC* 2025.2 database was used to calculate the LCA (*LCA FE*-Software Version 10.9).

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The declared product does not contain any biogenic carbon.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.03	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

The carbon stored in the packaging was taken into account as 'CO_2-neutral'. This means that the storage effect of the carbon bound in the packaging is not included in the calculation and is considered to be emitted immediately.

Installation into the building (A5)

The end-of-life of the packaging materials is not declared in module A5.

Name	Value	Unit
Packaging (wooden)	0,056	kg
Packaging (particle board)	0,016	kg
Packaging (PE-foil)	0,011	kg
Packaging (cardboard)	0,003	kg
Packaging (PET-strip)	0,0005	kg

End of life (C1-C4)

Name	Value	Unit
Collected separately waste type (steel)	2.01	kg
Recycling (95 %)	1.91	kg
Landfilling (5 %)	0.1	kg
Collected separately waste type (stainless steel)	0.50	kg
Recycling (95 %)	0.47	
Landfilling (5 %)	0.03	kg
Collected separately waste type (polymers)	0.21	kg
Energy recovery (100 %)	0.21	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Nef flow (steel)	0.52	kg
Net flow (stainless steel)	0.20	kg

This scenario contains a recycling rate of 95 %. As scrap is purchased in the upstream supply chain for the production of the metal parts, this is offset against the metal scrap for recycling (net flow).

5. LCA: Results

The following table contains the LCA results (Environmental impact assessment according to *EN 15804*, *EF 3.1*) for a declared unit of 1 piece saddle - type 'UNI shut-off saddle PN16 strap L 455 mm: UNI sper 100-2"' with a weight of 2.72 kg/piece.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece saddle - type 'UNI shut-off saddle PN16 strap L 455 mm: UNI sper 100-2"'

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO_2 eq	8.14E+00	0	1.06E-02	5.51E-01	2.67E-03	-2.18E+00
Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 eq	8.03E+00	0	1.05E-02	5.51E-01	2.66E-03	-2.18E+00
Global Warming Potential biogenic (GWP-biogenic)	kg CO_2 eq	8.51E-02	0	1.95E-05	1.96E-05	-3.78E-06	9.55E-03
Global Warming Potential luluc (GWP-luluc)	kg CO_2 eq	2.07E-02	0	1.1E-04	2.31E-05	8.37E-06	-3.33E-03
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	1.01E-10	0	1.77E-15	6.88E-14	8.62E-15	-6.04E-13
Acidification potential of land and water (AP)	mol H^+ eq	3.3E-02	0	3.82E-05	6.04E-05	1.66E-05	-9.21E-03
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	5.36E-05	0	2.88E-08	1.35E-08	3.76E-09	-1.98E-06
Eutrophication potential aquatic marine (EP-marine)	kg N eq	6.18E-03	0	1.81E-05	1.64E-05	4.05E-06	-1.39E-03
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	6.77E-02	0	1.96E-04	2.83E-04	4.42E-05	-1.45E-02
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	1.72E-02	0	3.49E-05	4.65E-05	1.26E-05	-4.58E-03
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	7.6E-05	0	7.1E-10	7.81E-10	1.81E-10	-3.71E-05
Abiotic depletion potential for fossil resources (ADPF)	MJ	1.05E+02	0	1.37E-01	1.43E-01	4.36E-02	-2.59E+01
Water use (WDP)	m^3 world eq deprived	3.35E+00	0	4.88E-05	4.9E-02	3.11E-04	-5.32E-01

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece saddle - type 'UNI shut-off saddle PN16 strap L 455 mm: UNI sper 100-2"'

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	8.44E+01	0	1.03E-02	3.66E-02	7.1E-03	-3.29E+00
Renewable primary energy resources as material utilization (PERM)	MJ	1.2E+00	0	0	0	0	0
Total use of renewable primary energy resources (PERT)	MJ	8.56E+01	0	1.03E-02	3.66E-02	7.1E-03	-3.29E+00
Non renewable primary energy as energy carrier (PENRE)	MJ	9.83E+01	0	1.37E-01	6.36E+00	4.36E-02	-2.59E+01
Non renewable primary energy as material utilization (PENRM)	MJ	6.73E+00	0	0	-6.21E+00	0	0
Total use of non renewable primary energy resources (PENRT)	MJ	1.05E+02	0	1.37E-01	1.43E-01	4.36E-02	-2.59E+01
Use of secondary material (SM)	kg	1.88E+00	0	0	0	0	7.16E-01
Use of renewable secondary fuels (RSF)	MJ	0	0	0	0	0	0
Use of non renewable secondary fuels (NRSF)	MJ	0	0	0	0	0	0
Use of net fresh water (FW)	m^3	1.35E-01	0	5.09E-06	1.16E-03	9.17E-06	-1.11E-01

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece saddle - type 'UNI shut-off saddle PN16 strap L 455 mm: UNI sper 100-2"'

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	9.26E-08	0	5.48E-12	7.33E-11	9.41E-12	-1.24E-04
Non hazardous waste disposed (NHWD)	kg	1.26E+00	0	1.91E-05	2.84E-02	1.25E-01	1.19E-01
Radioactive waste disposed (RWD)	kg	2.74E-03	0	2.58E-07	5.95E-06	6.04E-07	-3.43E-04
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	1.73E+00	0	0	2.38E+00	0	0
Materials for energy recovery (MER)	kg	0	0	0	0	0	0
Exported electrical energy (EEE)	MJ	0	0	0	9.06E-01	0	0
Exported thermal energy (EET)	MJ	0	0	0	1.62E+00	0	0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece saddle - type 'UNI shut-off saddle PN16 strap L 455 mm: UNI sper 100-2"'

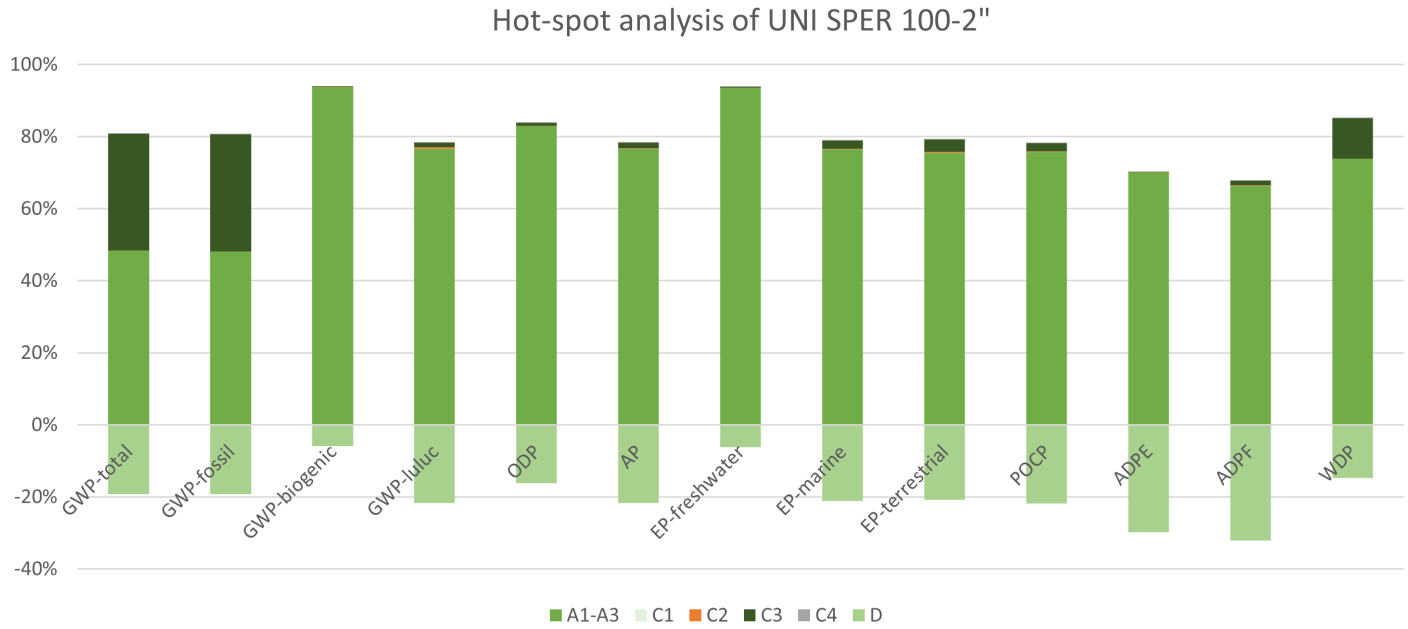
Parameter	Unit	A1-A3	C1	C2	C3	C4	D

Incidence of disease due to PM emissions (PM)	Disease incidence	ND	ND	ND	ND	ND	ND
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	ND	ND	ND	ND	ND	ND
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	ND	ND	ND	ND	ND	ND
Soil quality index (SQP)	SQP	ND	ND	ND	ND	ND	ND

Disclaimer – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'.
The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high, as there is limited experience with the indicator.

6. LCA: Interpretation

The following interpretation contains a summary of the LCA results referenced to a declared unit of 1 piece saddle - type 'UNI shut-off saddle PN16 strap L 455 mm: UNI sper 100-2"'.



The comparison of the products' life cycle phases shows a clear dominance of the production phase (modules A1-A3).

Environmental impacts in module C3 mainly refer to emissions from the energetic treatment of the polymers in a waste incineration plant. Module C4 declares impacts from landfilling of metal losses making up a minor fraction of the total environmental impact of the valve.

Environmental potentials in module D refer to the recycling potential of primary steel and stainless steel as well as the benefits for the recovered energy from the incineration of the polymer components.

When it comes to the environmental impacts in the production phase, the production of the cast iron represents the major hot-spot in most impact categories considered. Due to the upstream supply chain of the cast iron being partially represented by primary data, this leads to a high representativeness of the results.
Other metal parts also show a certain contribution, especially stainless steel when it comes to the abiotic depletion potential minerals and metals. The overall contribution of POM in the impact of the declared products is low.

7. Requisite evidence

Not relevant for this EPD.

8. References

Standards

ISO 228-1+2
ISO 228-1:2000 / ISO 228-2:1987 - Pipe threads where pressure-tight joints are not made on the threads
Part 1: Dimensions, tolerances and designation
Part 2: Verification by means of limit gauges

ISO 17885
ISO 17885:2021 08, Plastics piping systems - Mechanical fittings for pressure piping systems - Specifications

EN 1171
EN 1171:2015: Industrial valves. Cast iron gate valves: This European Standard specifies the requirements for cast iron gate valves with flanged ends, socket ends, or spigot ends.

EN 12201
EN 12201:2024 - Plastics piping systems for water supply, and for drains and sewers under pressure.

DIN 8074
DIN 8074:2023 10 - Polyethylene (PE) pipes - PE 80, PE 100 - Dimensions.

DIN 8076
DIN 8076:2013 09 - Pressure pipelines made from thermoplastics materials - Metal and plastics compression fittings for polyethylene (PE) pipes.

EN 1452-2
EN 1452-2:2020 03: Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure - Unplasticized poly(vinyl chloride) (PVC-U) - Part 2: Pipes.

DIN EN 13774
DIN EN 13774:20213 05: Valves for gas distribution systems with maximum operating pressure less than or equal to 16 bar - Performance requirements.

EN 15804
EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products.

ISO 14025
EN ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

DIN 3476-1
DIN 3476-1:2018-08, Valves - Requirements and tests - Part 1: Protection against corrosion by epoxy coating of coating powders (P) or liquid varnishes (F).

EN 681-1
DIN EN 681-1:2006-11, Elastomeric seals – Material requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber.

EN 805
DIN EN 805:2000-03, Water supply - Requirements for systems and components outside buildings.

EN 1563
DIN EN 1563:2019-04, Founding - Spheroidal graphite cast irons.

EN 1074-1
DIN EN 1074-1:2000-07, Valves for water supply - Fitness for purpose requirements and appropriate verification tests - Part 1: General requirements.

EN 1074-2
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