Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

BUTTFUSION FITTINGS

from

EUROSTANDARD S.p.A.

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-04506
Publication date:	2021-09-14
Valid until:	2026-09-13

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): Construction products, PCR 2019:14 version 1.11 UN CPC code(s): 36320
PCR review was conducted by: Martin Erlandsson, IVL Swedish Environmental Research Institute, martin.erlandsson@ivl.se
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: Marcel Gómez Ferrer, Marcel Gómez Consultoria Ambiental, info@marcelgomez.com Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Name and contact information of LCA practitioners:
Esalex srl – info@esalex.eu

Company information

Owner of the EPD: Eurostandard S.p.A.

Contact: Maurizio Tiso, email: maurizio.tiso@eurostandard.it

Description of the organisation: Eurostandard S.p.A. carries out moulding of plastic materials for the production of polyethylene and polypropylene fittings, used in gas and water distribution networks, in fire-fighting and water treatment systems.
The Company was founded in the 1965 for the production of high density polyethylene crates and since 1984 has converted its production into polyethylene fittings for pressure pipelines. The production plant is located in Tesero, in Val di Fiemme, in the hearth of the Dolomites. All production is highly automated and equipped with robot and complex machineries.
Eurostandard S.p.A. is certified ISO 9001:2015 (certificate n. 21071/10/S), ISO 14001:2015 (certificate n. EMS-2935/S), ISO 45001:2018 (certificate n. OHS-3876). The company has an accredited laboratory for the product quality control (n.0740L).

More information: www.eurostandard.it

Name and location of production site:
Eurostandard S.p.A.
Zona Industriale Lago 22
38038 Tesero (TN), Italy
T. +39 0462 811 211
info@eurostandard.it

Product information

Product name: Buttfusion fitting

Product description and identification: the fittings are made of polyethylene injection moulded with long collar. The polyethylene compounds used are added at the origin with carbon black for UV stabilization, are suitable for drinking water and foodstuffs (conformity to Italian law DM 21st March 1973 and the DM n. 174 dated 6th April 2004). The product (cod. 20.47) can have a flange in steel included.

The products included in the LCA study are:

- Elbow/bends
    - Elbows 90° (cod. 20.10)
    - Elbow 45° (cod. 20.15)
    - Segmented bend 90° (cod. 20.12)
    - Segmented bend 45° (cod. 20.17)
- Tee
    - TE 90° (cod. 20.20)
    - 90° Reduced Tee moulded (cod. 20.21A)
    - 90° Reduced Tee assembled (cod 20.21B)
- Other forms
    - Stub end (cod. 20.30)
    - Stub end for butterfly valve (cod. 20.34)
    - Stub end/PP flange system (cod. 20.47B)
    - Cap (cod. 20.35)
    - Reducer (cod. 20.50)

UN CPC code: 36320

Geographical scope: International

Technical specification:

The technical features of the products are:

FEATURES	Typical values	Unit	Methods test
Density	958 – 959	kg/m3	ISO 1183-1
Melt mass-flow rate (MFR) 5 kg/190°C	0,23 – 0,45	g/10 min	ISO 1133-1
Tensile strength at yield	23 – 25	MPa	ISO 527
Tensile elongation at break	≥ 350	%	ISO 527
Carbon black content	2,0 – 2,5	%	ISO 6964
Linear thermal expansion coefficient	2,0 x 10-4	m/m °C	
Temperature of brittleness	- 80	°C	ASTM D746

The Eurostandard fittings are constantly monitored throughout the production process in accordance with the provisions of the internal self-control plans derived from UNI EN 1555, UNI EN 12201 and UNI UN ISO 15494 standard for fittings.

The test activities are carried out continuously in full compliance with the standards established by the reference standards and include mechanical and physical tests, performed both on the fittings and on the raw material.

In particular, the production is subjected to the following tests:

- Mass fluidity index (MFR): UNI EN ISO 1133-1
- Dimensional check - Examination of the appearance - Verification of marking - Electric resistance: UNI EN 1555, UNI EN 12201, UNI EN ISO 15494, UNI EN ISO 3126
- Resistance to internal hydrostatic pressure at 20°C AND 80°C: UNI EN ISO 1167
- Traction resistance on buttfusion fittings: ISO 13953
- Oxidation induction time (OIT): ISO 11357-6

The LCA study has been modelled on Eurostandard production data for 2020. The following tables list the products under study and their weight. More technical information for each product can be found on the Eurostandard website (www.eurostandard.it).

Buttfusion fitting (only polyethylene)

Article code	Article description	Weight (kg)
C-2010100090AA	ELBOW 90° d. 90 PN 10	0,470
C-2010100110AA	ELBOW 90° d. 110 PN 10	0,780
C-2010100125	ELBOW 90° d. 125 PN 10	0,915
C-2010100140	ELBOW 90° d. 140 PN 10	1,250
C-2010100160	ELBOW 90° d. 160 PN 10	2,155
C-2010100180	ELBOW 90° d. 180 PN 10	2,675
C-2010100200	ELBOW 90° d. 200 PN 10	3,335
C-2010100225	ELBOW 90° d. 225 PN 10	5,600
C-2010100250	ELBOW 90° d. 250 PN 10	7,400
C-2010100315	ELBOW 90° d. 315 PN 10	12,440
C-2010160020	ELBOW 90° d. 20 PN 16	0,030
C-2010160025	ELBOW 90° d. 25 PN 16	0,050
C-2010160032	ELBOW 90° d. 32 PN 16	0,055
C-2010160040	ELBOW 90° d. 40 PN 16	0,075
C-2010160050	ELBOW 90° d. 50 PN 16	0,120

C-2010160063	ELBOW 90° d. 63 PN 16	0,235
C-2010160075AA	ELBOW 90° d. 75 PN 16	0,385
C-2010160090AA	ELBOW 90° d. 90 PN 16	0,640
C-2010160110AA	ELBOW 90° d. 110 PN 16	1,050
C-2010160125	ELBOW 90° d. 125 PN 16	1,310
C-2010160140	ELBOW 90° d. 140 PN 16	1,795
C-2010160160	ELBOW 90° d. 160 PN 16	3,000
C-2010160180	ELBOW 90° d. 180 PN 16	3,985
C-2010160200	ELBOW 90° d. 200 PN 16	5,100
C-2010160225	ELBOW 90° d. 225 PN 16	7,720
C-2010160250	ELBOW 90° d. 250 PN 16	10,350
C-2010160315	ELBOW 90° d. 315 PN 16	18,750
C-2010250032	ELBOW 90° d. 32 PN 25	0,065
C-2010250040	ELBOW 90° d. 40 PN 25	0,100
C-2010250050	ELBOW 90° d. 50 PN 25	0,175
C-2010250063	ELBOW 90° d. 63 PN 25	0,310
C-2010250075AA	ELBOW 90° d. 75 PN 25	0,540
C-2010250090AA	ELBOW 90° d. 90 PN 25	0,875
C-2010250110AA	ELBOW 90° d. 110 PN 25	1,460
C-2010250125	ELBOW 90° d. 125 PN 25	1,800
C-2010250140	ELBOW 90° d. 140 PN 25	2,500
C-2010250160	ELBOW 90° d. 160 PN 25	4,100
C-2015100090	ELBOW 45° d. 90 PN 10	0,350
C-2015100110	ELBOW 45° d. 110 PN 10	0,495
C-2015100125	ELBOW 45° d. 125 PN 10	0,740
C-2015100140	ELBOW 45° d. 140 PN 10	0,970
C-2015100160	ELBOW 45° d. 160 PN 10	1,365
C-2015100180	ELBOW 45° d. 180 PN 10	2,300
C-2015100200	ELBOW 45° d. 200 PN 10	3,150
C-2015100225	ELBOW 45° d. 225 PN 10	4,360
C-2015100250	ELBOW 45° d. 250 PN 10	5,750
C-2015100315	ELBOW 45° d. 315 PN 10	11,980
C-2015160032	ELBOW 45° d. 32 PN 16	0,040
C-2015160040	ELBOW 45° d. 40 PN 16	0,065
C-2015160050	ELBOW 45° d. 50 PN 16	0,105
C-2015160063	ELBOW 45° d. 63 PN 16	0,190
C-2015160075	ELBOW 45° d. 75 PN 16	0,290
C-2015160090	ELBOW 45° d. 90 PN 16	0,480
C-2015160110	ELBOW 45° d. 110 PN 16	0,720
C-2015160125	ELBOW 45° d. 125 PN 16	1,045
C-2015160140	ELBOW 45° d. 140 PN 16	1,390
C-2015160160A0	ELBOW 45° d. 160 PN 16	1,990
C-2015160180	ELBOW 45° d. 180 PN 16	3,355

C-2015160200	ELBOW 45° d. 200 PN 16	4,385
C-2015160225	ELBOW 45° d. 225 PN 16	6,110
C-2015160250	ELBOW 45° d. 250 PN 16	8,140
C-2015160315	ELBOW 45° d. 315 PN 16	17,000
C-2015250032	ELBOW 45° d. 32 PN 25	0,050
C-2015250050	ELBOW 45° d. 50 PN 25	0,150
C-2015250063	ELBOW 45° d. 63 PN 25	0,255
C-2015250075	ELBOW 45° d. 75 PN 25	0,400
C-2015250090	ELBOW 45° d. 90 PN 25	0,640
C-2015250110	ELBOW 45° d. 110 PN 25	1,000
C-2015250125	ELBOW 45° d. 125 PN 25	1,500
C-2015250140	ELBOW 45° d. 140 PN 25	1,950
C-2015250160	ELBOW 45° d. 160 PN 25	2,800
C-2017160180	SEGMENT BEND 45° d. 180 PN16 SETTORI	2,000
C-2017160280	SEGMENT BEND 45° d. 280 PN16 SETTORI	2,116
C-2020100090	TE 90° d. 90 PN 10	0,580
C-2020100110	TE 90° d. 110 PN 10	0,975
C-2020100125	TE 90° d. 125 PN 10	1,540
C-2020100140	TE 90° d. 140 PN 10	1,790
C-2020100160	TE 90° d. 160 PN 10	3,030
C-2020100180	TE 90° d. 180 PN 10	4,140
C-2020100200	TE 90° d. 200 PN 10	5,150
C-2020100225	TE 90° d. 225 PN 10	7,690
C-2020100250	TE 90° d. 250 PN 10	11,450
C-2020100315	TE 90° d. 315 PN 10	21,940
C-2020160020	TE 90° d. 20 PN 16	0,045
C-2020160025	TE 90° d. 25 PN 16	0,055
C-2020160032	TE 90° d. 32 PN 16	0,075
C-2020160040	TE 90° d. 40 PN 16	0,115
C-2020160050	TE 90° d. 50 PN 16	0,180
C-2020160063	TE 90° d. 63 PN 16	0,320
C-2020160075	TE 90° d. 75 PN 16	0,540
C-2020160090	TE 90° d. 90 PN 16	0,850
C-2020160110	TE 90° d. 110 PN 16	1,490
C-2020160125	TE 90° d. 125 PN 16	2,230
C-2020160140	TE 90° d. 140 PN 16	2,688
C-2020160160A0	TE 90° d. 160 PN 16	4,300
C-2020160180	TE 90° d. 180 PN 16	5,840
C-2020160200AA	TE 90° d. 200 PN 16	7,780
C-2020160225	TE 90° d. 225 PN 16	11,370
C-2020160250	TE 90° d. 250 PN 16	14,850
C-2020160315	TE 90° d. 315 PN 16	29,790

C-2020250032	TE 90° d. 32 PN 25	0,100
C-2020250040	TE 90° d. 40 PN 25	0,150
C-2020250050	TE 90° d. 50 PN 25	0,250
C-2020250063	TE 90° d. 63 PN 25	0,460
C-2020250075	TE 90° d. 75 PN 25	0,800
C-2020250090	TE 90° d. 90 PN 25	1,170
C-2020250110	TE 90° d. 110 PN 25	2,000
C-2020250125	TE 90° d. 125 PN 25	2,650
C-2020250140	TE 90° d. 140 PN 25	3,500
C-2020250160	TE 90° d. 160 PN 25	5,150
C-2021101150	90° REDUCED TEE MOULDED 110x 50 PN10	1,705
C-2021101163	90° REDUCED TEE MOULDED 110x 63 PN10	1,115
C-2021101175	90° REDUCED TEE MOULDED 110x 75 PN10	1,705
C-2021101190	90° REDUCED TEE MOULDED 110x 90 PN10	1,170
C-2021101211A0	90° REDUCED TEE MOULDED 125x110 PN10	1,630
C-2021101275	90° REDUCED TEE MOULDED 125x 75 PN10	1,630
C-2021101290A0	90° REDUCED TEE MOULDED 125x 90 PN10	1,452
C-2021101412	90° REDUCED TEE MOULDED 140x125 PN10	2,300
C-2021101490	90° REDUCED TEE MOULDED 140x 90 PN10	3,045
C-2021101611A0	90° REDUCED TEE MOULDED 160x110 PN10	2,750
C-2021101612	90° REDUCED TEE MOULDED 160x125 PN10	3,365
C-2021101690A0	90° REDUCED TEE MOULDED 160x 90 PN10	2,632
C-2021102011A0	90° REDUCED TEE MOULDED 200x110 PN10	4,710
C-2021102016A0	90° REDUCED TEE MOULDED 200x160 PN10	4,900
C-2021102216	90° REDUCED TEE MOULDED 225x160 PN10	8,950
C-2021102218	90° REDUCED TEE MOULDED 225x180 PN10	9,030
C-2021102220	90° REDUCED TEE MOULDED 225x200 PN10	9,230
C-2021102290	90° REDUCED TEE MOULDED 225x 90 PN10	8,030
C-2021102511	90° REDUCED TEE MOULDED 250x110 PN10	22,000
C-2021102516	90° REDUCED TEE MOULDED 250x160 PN10	20,000
C-2021102518	90° REDUCED TEE MOULDED 250x180 PN10	11,700
C-2021102520	90° REDUCED TEE MOULDED 250x200 PN10	11,450
C-2021103116	90° REDUCED TEE MOULDED 315x160 PN10	21,500
C-2021103125	90° REDUCED TEE MOULDED 315x250 PN10	28,600

C-2021109050	90° REDUCED TEE MOULDED 90x 50 PN10	0,700
C-2021109063	90° REDUCED TEE MOULDED 90x 63 PN10	0,715
C-2021109075	90° REDUCED TEE MOULDED 90x 75 PN10	0,780
C-2021161150	90° REDUCED TEE MOULDED 110x 50 PN16	1,635
C-2021161163A0	90° REDUCED TEE MOULDED 110x 63 PN16	1,370
C-2021161175	90° REDUCED TEE MOULDED 110x 75 PN16	1,705
C-2021161190A0	90° REDUCED TEE MOULDED 110x 90 PN16	1,375
C-2021161211A0	90° REDUCED TEE MOULDED 125x110 PN16	2,220
C-2021161263A0	90° REDUCED TEE MOULDED 125x 63 PN16	1,970
C-2021161275	90° REDUCED TEE MOULDED 125x 75 PN16	2,180
C-2021161290A0	90° REDUCED TEE MOULDED 125x 90 PN16	1,993
C-2021161411	90° REDUCED TEE MOULDED 140x110 PN16	2,920
C-2021161412	90° REDUCED TEE MOULDED 140x125 PN16	3,030
C-2021161463	90° REDUCED TEE MOULDED 140x 63 PN16	2,500
C-2021161475	90° REDUCED TEE MOULDED 140x 75 PN16	2,500
C-2021161490	90° REDUCED TEE MOULDED 140x 90 PN16	2,900
C-2021161611A0	90° REDUCED TEE MOULDED 160x110 PN16	3,770
C-2021161612	90° REDUCED TEE MOULDED 160x125 PN16	4,470
C-2021161614	90° REDUCED TEE MOULDED 160x140 PN16	5,005
C-2021161663	90° REDUCED TEE MOULDED 160x 63 PN16	4,100
C-2021161675	90° REDUCED TEE MOULDED 160x 75 PN16	0,560
C-2021161690A0	90° REDUCED TEE MOULDED 160x 90 PN16	3,593
C-2021161812	90° REDUCED TEE MOULDED 180x125 PN16	6,510
C-2021161814	90° REDUCED TEE MOULDED 180x140 PN16	6,645
C-2021161816	90° REDUCED TEE MOULDED 180x160 PN16	6,760
C-2021161890	90° REDUCED TEE MOULDED 180x 90 PN16	6,510
C-2021162011A0	90° REDUCED TEE MOULDED 200x110 PN16	6,520
C-2021162014	90° REDUCED TEE MOULDED 200x140 PN16	8,360
C-2021162016	90° REDUCED TEE MOULDED 200x160 PN16	8,660
C-2021162016A0	90° REDUCED TEE MOULDED 200x160 PN16	7,040
C-2021162018	90° REDUCED TEE MOULDED 200x180 PN16	9,400

C-2021162063	90° REDUCED TEE MOULDED 200x 63 PN16	8,700
C-2021162063A0	90° REDUCED TEE MOULDED 200x 63 PN16	6,320
C-2021162075	90° REDUCED TEE MOULDED 200x 75 PN16	8,100
C-2021162211	90° REDUCED TEE MOULDED 225x110 PN16	11,825
C-2021162211AA	90° REDUCED TEE MOULDED 225x110 PN16	9,640
C-2021162212	90° REDUCED TEE MOULDED 225x125 PN16	10,995
C-2021162216	90° REDUCED TEE MOULDED 225x160 PN16	11,825
C-2021162216AA	90° REDUCED TEE MOULDED 225x160 PN16	10,060
C-2021162218	90° REDUCED TEE MOULDED 225x180 PN16	11,960
C-2021162220	90° REDUCED TEE MOULDED 225x200 PN16	12,865
C-2021162290	90° REDUCED TEE MOULDED 225x 90 PN16	10,700
C-2021162511	90° REDUCED TEE MOULDED 250x110 PN16	24,000
C-2021162516	90° REDUCED TEE MOULDED 250x160 PN16	22,000
C-2021162516AA	90° REDUCED TEE MOULDED 250x160 PN16	22,000
C-2021162518	90° REDUCED TEE MOULDED 250x180 PN16	15,775
C-2021162520	90° REDUCED TEE MOULDED 250x200 PN16	17,420
C-2021162522	90° REDUCED TEE MOULDED 250x225 PN16	16,185
C-2021163111	90° REDUCED TEE MOULDED 315x110 PN16	31,850
C-2021163112	90° REDUCED TEE MOULDED 315x125 PN16	29,650
C-2021163116	90° REDUCED TEE MOULDED 315x160 PN16	30,585
C-2021163120	90° REDUCED TEE MOULDED 315x200 PN16	24,995
C-2021163122	90° REDUCED TEE MOULDED 315x225 PN16	30,400
C-2021163125	90° REDUCED TEE MOULDED 315x250 PN16	31,400
C-2021166332	90° REDUCED TEE MOULDED 63x 32 PN16	0,370
C-2021166340	90° REDUCED TEE MOULDED 63x 40 PN16	0,365
C-2021166350	90° REDUCED TEE MOULDED 63x 50 PN16	0,440
C-2021167540	90° REDUCED TEE MOULDED 75x 40 PN16	0,640
C-2021167550	90° REDUCED TEE MOULDED 75x 50 PN16	0,625
C-2021167563	90° REDUCED TEE MOULDED 75x 63 PN16	0,660
C-2021169050	90° REDUCED TEE MOULDED 90x 50 PN16	0,975
C-2021169063A0	90° REDUCED TEE MOULDED 90x 63 PN16	0,830

C-2021169075	90° REDUCED TEE MOULDED 90x 75 PN16	1,015
C-2021251163	90° REDUCED TEE MOULDED 110x 63 PN25	2,430
C-2021251190	90° REDUCED TEE MOULDED 110x 90 PN25	2,370
C-2021251211	90° REDUCED TEE MOULDED 125x110 PN25	3,580
C-2021251611	90° REDUCED TEE MOULDED 160x110 PN25	6,915
C-2021251612	90° REDUCED TEE MOULDED 160x125 PN25	6,970
C-2021251663	90° REDUCED TEE MOULDED 160x 63 PN25	6,700
C-2021256332	90° REDUCED TEE MOULDED 63x 32 PN25	0,570
C-2021256350	90° REDUCED TEE MOULDED 63x 50 PN25	0,545
C-2021259063	90° REDUCED TEE MOULDED 90x 63 PN25	1,370
C-2021259075	90° REDUCED TEE MOULDED 90x 75 PN25	1,600
C-2030100050	STUB END d. 50 PN 10	0,100
C-2030100063	STUB END d. 63 PN 10	0,145
C-2030100075	STUB END d. 75 PN 10	0,250
C-2030100090	STUB END d. 90 PN 10	0,350
C-2030100110	STUB END d. 110 PN 10	0,485
C-2030100125	STUB END d. 125 PN 10	0,505
C-2030100140	STUB END d. 140 PN 10	0,895
C-2030100160	STUB END d. 160 PN 10	1,035
C-2030100180	STUB END d. 180 PN 10	1,140
C-2030100200	STUB END d. 200 PN 10	2,120
C-2030100225	STUB END d. 225 PN 10	2,130
C-2030100250	STUB END d. 250 PN 10	3,370
C-2030100280	STUB END d. 280 PN 10	3,400
C-2030100315	STUB END d. 315 PN 10	5,100
C-2030100355	STUB END d. 355 PN 10	8,600
C-2030100400	STUB END d. 400 PN 10	9,980
C-2030160025	STUB END d. 25 PN 16	0,040
C-2030160032	STUB END d. 32 PN 16	0,065
C-2030160040	STUB END d. 40 PN 16	0,080
C-2030160050	STUB END d. 50 PN 16	0,120
C-2030160063	STUB END d. 63 PN 16	0,180
C-2030160075	STUB END d. 75 PN 16	0,285
C-2030160090	STUB END d. 90 PN 16	0,405
C-2030160110	STUB END d. 110 PN 16	0,610
C-2030160125	STUB END d. 125 PN 16	0,820
C-2030160140	STUB END d. 140 PN 16	1,140
C-2030160160	STUB END d. 160 PN 16	1,520
C-2030160180	STUB END d. 180 PN 16	1,940

C-2030160200	STUB END d. 200 PN 16	3,000
C-2030160225	STUB END d. 225 PN 16	3,140
C-2030160250	STUB END d. 250 PN 16	4,695
C-2030160280	STUB END d. 280 PN 16	5,170
C-2030160315	STUB END d. 315 PN 16	9,000
C-2030160355	STUB END d. 355 PN 16	12,240
C-2030160400	STUB END d. 400 PN 16	14,630
C-2030250020	STUB END d. 20 PN 25	0,025
C-2030250032	STUB END d. 32 PN 25	0,080
C-2030250050	STUB END d. 50 PN 25	0,150
C-2030250063	STUB END d. 63 PN 25	0,235
C-2030250075	STUB END d. 75 PN 25	0,360
C-2030250090	STUB END d. 90 PN 25	0,570
C-2030250110	STUB END d. 110 PN 25	0,825
C-2030250125	STUB END d. 125 PN 25	1,175
C-2030250140	STUB END d. 140 PN 25	1,580
C-2030250160	STUB END d. 160 PN 25	1,970
C-2030250180	STUB END d. 180 PN 25	2,300
C-2030250200	STUB END d. 200 PN 25	3,700
C-2034100110A0	STUB END FOR BUTTERFLY VALVE D.110 PN10	0,485
C-2034100160A0	STUB END FOR BUTTERFLY VALVE D.160 PN10	1,035
C-2034100200A0	STUB END FOR BUTTERFLY VALVE D.200 PN10	2,120
C-2034100225A0	STUB END FOR BUTTERFLY VALVE D.225 PN10	2,130
C-2034100250A0	STUB END FOR BUTTERFLY VALVE D.250 PN10	3,370
C-2034160110A0	STUB END FOR BUTTERFLY VALVE D.110 PN16	0,610
C-2034160140A0	STUB END FOR BUTTERFLY VALVE D.140 PN16	1,140
C-2034160160A0	STUB END FOR BUTTERFLY VALVE D.160 PN16	1,520
C-2034160200A0	STUB END FOR BUTTERFLY VALVE D.200 PN16	3,000
C-2034160225A0	STUB END FOR BUTTERFLY VALVE D.225 PN16	3,140
C-2034160250A0	STUB END FOR BUTTERFLY VALVE D.250 PN16	4,695

C-2034160315AA	STUB END FOR BUTTERFLY VALVE D.315 PN16	9,000
C-2930100160	STUB END FOR BUTTERFLY VALVE D.160 PN10	1,035
C-2930160110	STUB END FOR BUTTERFLY VALVE D.110 PN16	0,610
C-2930160140	STUB END FOR BUTTERFLY VALVE D.140 PN16	1,140
C-2930160160	STUB END FOR BUTTERFLY VALVE D.160 PN16	1,520
C-2930160200	STUB END FOR BUTTERFLY VALVE D.200 PN16	3,000
C-2930160250	STUB END FOR BUTTERFLY VALVE D.250 PN16	3,900
C-6010160225AC	GT 90° d.225 PN 16 UNIDELTA	7,720
C-6015100110AC	GT 45° d.110 PN 10 UNIDELTA	0,495
C-6015160063AC	GT 45° d. 63 PN 16 UNIDELTA	0,190
C-6015160090AC	GT 45° d. 90 PN 16 UNIDELTA	0,480
C-6015160110AC	GT 45° d.110 PN 16 UNIDELTA	0,720
C-6015160140AC	GT 45° d.140 PN 16 UNIDELTA	1,390
C-6015160225AC	GT 45° d.225 PN 16 UNIDELTA	6,110
C-6020160032AC	TE 90° d. 32 PN 16 UNIDELTA	0,075
C-6020160040AC	TE 90° d. 40 PN 16 UNIDELTA	0,115
C-6020160225AC	TE 90° d.225 PN 16 UNIDELTA	11,370
C-6030160225AC	STUB END d. 225 PN 16 UNIDELTA	3,140
C-6030160250AC	STUB END d.250 SDR11 UNIDELTA	4,695
C-6030160280AC	STUB END d.280 SDR11 UNIDELTA	5,170
C-6032160110A	STUB END VAL.PVC 110 PN16 PE100	0,611
C-6035160025AC	CUP d. 25 PN 16 UNIDELTA	0,015
C-6035160032AC	CUP d. 32 PN 16 UNIDELTA	0,020
C-6035160040AC	CUP d. 40 PN 16 UNIDELTA	0,035
C-6035160050AC	CUP d. 50 PN 16 UNIDELTA	0,050
C-6035160063AC	CUP d. 63 PN 16 UNIDELTA	0,085
C-6035160090AC	CUP d. 90 PN 16 UNIDELTA	0,230
C-6035160110AC	CUP d. 110 PN 16 UNIDELTA	0,405

C-6035160125AC	CUP d. 125 PN 16 UNIDELTA	0,570
C-6035160250AC	CUP d. 250 PN 16 UNIDELTA	3,355
C-6050101175AC	RID.110x 75 PN 10 UNIDELTA	0,285
C-6050101490AC	RID.140x 90 PN 10 UNIDELTA	0,555
C-6050101611AC	RID.160x110 PN 10 UNIDELTA	0,950
C-6050101690AC	RID.160x 90 PN 10 UNIDELTA	0,775
C-6050101812AC	RID.180x125 PN 10 UNIDELTA	1,040
C-6050102014AC	RID.200x140 PN 10 UNIDELTA	1,330
C-6050103122AC	RID.315x225 PN 10 UNIDELTA	5,180
C-6050109075AC	RID. 90x 75 PN 10 UNIDELTA	0,205
C-6050161175AC	RID.110x 75 PN 16 UNIDELTA	0,425
C-6050161190AC	RID.110x 90 PN 16 UNIDELTA	0,485
C-6050161211AC	RID.125x110 PN 16 UNIDELTA	0,720
C-6050161412AC	RID.140x125 PN 16 UNIDELTA	0,990
C-6050161490AC	RID.140x 90 PN 16 UNIDELTA	0,815
C-6050161690AC	RID.160x 90 PN 16 UNIDELTA	1,040
C-6050161814AC	RID.180x140 PN 16 UNIDELTA	1,610
C-6050162218AC	RID.225x180 PN 16 UNIDELTA	3,010
C-6050162518AC	RID.250x180 PN 16 UNIDELTA	3,950
C-6050162520AC	RID.250x200 PN 16 UNIDELTA	4,420
C-6050163122AC	RID.315x225 PN 16 UNIDELTA	8,030
C-6050164032AC	RID. 40x 32 PN 16 UNIDELTA	0,045
C-2035100063	CUP d. 63 PN 10	0,065
C-2035100075	CUP d. 75 PN 10	0,100
C-2035100090	CUP d. 90 PN 10	0,165
C-2035100110	CUP d. 110 PN 10	0,270
C-2035100125	CUP d. 125 PN 10	0,350
C-2035100140	CUP d. 140 PN 10	0,450
C-2035100160	CUP d. 160 PN 10	0,665
C-2035100180	CUP d. 180 PN 10	0,970
C-2035100200	CUP d. 200 PN 10	1,310
C-2035100225	CUP d. 225 PN 10	1,750
C-2035100250	CUP d. 250 PN 10	2,275
C-2035100315	CUP d. 315 PN 10	5,100
C-2035160025	CUP d. 25 PN 16	0,015

C-2035160032	CUP d. 32 PN 16	0,020
C-2035160040	CUP d. 40 PN 16	0,035
C-2035160050	CUP d. 50 PN 16	0,050
C-2035160063	CUP d. 63 PN 16	0,085
C-2035160075AA	CUP d. 75 PN 16	0,150
C-2035160090AA	CUP d. 90 PN 16	0,230
C-2035160110AA	CUP d. 110 PN 16	0,405
C-2035160125	CUP d. 125 PN 16	0,570
C-2035160140	CUP d. 140 PN 16	0,780
C-2035160160A0	CUP d. 160 PN 16	0,960
C-2035160180	CUP d. 180 PN 16	1,450
C-2035160200	CUP d. 200 PN 16	1,890
C-2035160225	CUP d. 225 PN 16	2,660
C-2035160250	CUP d. 250 PN 16	3,355
C-2035160315	CUP d. 315 PN 16	7,540
C-2035250020AA	CUP d. 20 PN 25	0,015
C-2035250025	CUP d. 25 PN 25	0,017
C-2035250063AA	CUP d. 63 PN 25	0,115
C-2035250075	CUP d. 75 PN 25	0,200
C-2035250090	CUP d. 90 PN 25	0,340
C-2035250110	CUP d. 110 PN 25	0,600
C-2035250125	CUP d. 125 PN 25	0,790
C-2035250160	CUP d. 160 PN 25	1,500
C-2050101150	REDUCER 110x 50 PN 10	0,280
C-2050101163	REDUCER 110x 63 PN 10	0,285
C-2050101175	REDUCER 110x 75 PN 10	0,285
C-2050101190	REDUCER 110x 90 PN 10	0,330
C-2050101211	REDUCER 125x110 PN 10	0,460
C-2050101275	REDUCER 125x 75 PN 10	0,385
C-2050101290	REDUCER 125x 90 PN 10	0,430
C-2050101411	REDUCER 140x110 PN 10	0,560
C-2050101412	REDUCER 140x125 PN 10	0,590
C-2050101490	REDUCER 140x 90 PN 10	0,555
C-2050101611	REDUCER 160x110 PN 10	0,950
C-2050101612	REDUCER 160x125 PN 10	0,735
C-2050101614	REDUCER 160x140 PN 10	0,835
C-2050101690	REDUCER 160x 90 PN 10	0,775
C-2050101812	REDUCER 180x125 PN 10	1,040
C-2050101814	REDUCER 180x140 PN 10	1,060
C-2050101816	REDUCER 180x160 PN 10	1,165
C-2050101890A0	REDUCER 180x 90 PN 10	0,980
C-2050102011AA	REDUCER 200x110 PN 10	1,300
C-2050102014	REDUCER 200x140 PN 10	1,330

C-2050102016	REDUCER 200x160 PN 10	1,430
C-2050102018	REDUCER 200x180 PN 10	1,460
C-2050102090	REDUCER 200x 90 PN 10	1,875
C-2050102211	REDUCER 225x110 PN 10	2,900
C-2050102212	REDUCER 225x125 PN 10	1,930
C-2050102216	REDUCER 225x160 PN 10	2,040
C-2050102218	REDUCER 225x180 PN 10	2,180
C-2050102220	REDUCER 225x200 PN 10	2,380
C-2050102290	REDUCER 225x 90 PN 10	1,860
C-2050102516AA	REDUCER 250x160 PN 10	2,670
C-2050102518	REDUCER 250x180 PN 10	2,700
C-2050102520	REDUCER 250x200 PN 10	2,450
C-2050102522	REDUCER 250x225 PN 10	2,855
C-2050103116AA	REDUCER 315x160 PN 10	3,800
C-2050103120AA	REDUCER 315x200 PN 10	5,100
C-2050103122	REDUCER 315x225 PN 10	5,180
C-2050103125	REDUCER 315x250 PN 10	5,200
C-2050104032	REDUCER 40x 32 PN 10	0,040
C-2050105040	REDUCER 50x 40 PN 10	0,055
C-2050106332	REDUCER 63x 32 PN 10	0,070
C-2050106340	REDUCER 63x 40 PN 10	0,070
C-2050106350	REDUCER 63x 50 PN 10	0,080
C-2050107540	REDUCER 75x 40 PN 10	0,105
C-2050107550	REDUCER 75x 50 PN 10	0,110
C-2050107563	REDUCER 75x 63 PN 10	0,135
C-2050109050	REDUCER 90x 50 PN 10	0,180
C-2050109063	REDUCER 90x 63 PN 10	0,180
C-2050109075	REDUCER 90x 75 PN 10	0,205
C-2050161150	REDUCER 110x 50 PN 16	0,400
C-2050161163	REDUCER 110x 63 PN 16	0,410
C-2050161175	REDUCER 110x 75 PN 16	0,425
C-2050161190	REDUCER 110x 90 PN 16	0,485
C-2050161211	REDUCER 125x110 PN 16	0,720
C-2050161263	REDUCER 125x 63 PN 16	0,600
C-2050161275	REDUCER 125x 75 PN 16	0,610
C-2050161290	REDUCER 125x 90 PN 16	0,625
C-2050161411	REDUCER 140x110 PN 16	0,870
C-2050161412	REDUCER 140x125 PN 16	0,990
C-2050161490	REDUCER 140x 90 PN 16	0,815
C-2050161611	REDUCER 160x110 PN 16	1,160
C-2050161612	REDUCER 160x125 PN 16	1,155
C-2050161614	REDUCER 160x140 PN 16	1,235
C-2050161663	REDUCER 160x 63 PN 16	1,050

C-2050161690	REDUCER 160x 90 PN 16	1,040
C-2050161812	REDUCER 180x125 PN 16	1,515
C-2050161814	REDUCER 180x140 PN 16	1,610
C-2050161816	REDUCER 180x160 PN 16	1,725
C-2050161890A0	REDUCER 180x 90 PN 16	1,430
C-2050162011AA	REDUCER 200x110 PN 16	1,900
C-2050162012	REDUCER 200x125 PN 16	3,100
C-2050162014	REDUCER 200x140 PN 16	1,940
C-2050162016	REDUCER 200x160 PN 16	2,155
C-2050162018	REDUCER 200x180 PN 16	2,300
C-2050162018	REDUCER 200x180 PN 16	2,300
C-2050162025	REDUCER 25x 20 PN 16	0,020
C-2050162212AA	REDUCER 225x125 PN 16	3,160
C-2050162216	REDUCER 225x160 PN 16	3,085
C-2050162218	REDUCER 225x180 PN 16	3,010
C-2050162220	REDUCER 225x200 PN 16	3,465
C-2050162290AA	REDUCER 225x 90 PN 16	2,790
C-2050162516AA	REDUCER 250x160 PN 16	4,110
C-2050162518	REDUCER 250x180 PN 16	3,950
C-2050162520	REDUCER 250x200 PN 16	4,420
C-2050162522	REDUCER 250x225 PN 16	4,630
C-2050163116	REDUCER 315x160 PN 16	11,000
C-2050163116AA	REDUCER 315x160 PN 16	5,650
C-2050163120AA	REDUCER 315x200 PN 16	7,330
C-2050163122	REDUCER 315x225 PN 16	8,030
C-2050163125	REDUCER 315x250 PN 16	8,250
C-2050163220	REDUCER 32x 20 PN 16	0,030
C-2050163225	REDUCER 32x 25 PN 16	0,030
C-2050164025	REDUCER 40x 25 PN 16	0,040
C-2050164032	REDUCER 40x 32 PN 16	0,045
C-2050165025	REDUCER 50x 25 PN 16	0,060
C-2050165032	REDUCER 50x 32 PN 16	0,065
C-2050165040	REDUCER 50x 40 PN 16	0,075
C-2050166325	REDUCER 63x 25 PN 16	0,090
C-2050166332	REDUCER 63x 32 PN 16	0,100
C-2050166340	REDUCER 63x 40 PN 16	0,105
C-2050166350	REDUCER 63x 50 PN 16	0,120
C-2050167540	REDUCER 75x 40 PN 16	0,165
C-2050167550	REDUCER 75x 50 PN 16	0,165
C-2050167563	REDUCER 75x 63 PN 16	0,200
C-2050169050	REDUCER 90x 50 PN 16	0,260
C-2050169063	REDUCER 90x 63 PN 16	0,280
C-2050169075	REDUCER 90x 75 PN 16	0,305

C-2050251163	REDUCER 110x 63 PN 25	0,555
C-2050251175	REDUCER 110x 75 PN 25	0,620
C-2050251190	REDUCER 110x 90 PN 25	0,690
C-2050251211	REDUCER 125x110 PN 25	0,985
C-2050251275	REDUCER 125x 75 PN 25	0,790
C-2050251290	REDUCER 125x 90 PN 25	0,855
C-2050251411	REDUCER 140x110 PN 25	1,215
C-2050251412	REDUCER 140x125 PN 25	1,380
C-2050251490	REDUCER 140x 90 PN 25	1,145
C-2050251611	REDUCER 160x110 PN 25	1,565
C-2050251612	REDUCER 160x125 PN 25	1,645
C-2050251614	REDUCER 160x140 PN 25	1,780
C-2050253225	REDUCER 32x 25 PN 25	0,030
C-2050254032	REDUCER 40x 32 PN 25	0,070
C-2050255032	REDUCER 50x 32 PN 25	0,090
C-2050255040	REDUCER 50x 40 PN 25	0,110
C-2050256332	REDUCER 63x 32 PN 25	0,130
C-2050256340	REDUCER 63x 40 PN 25	0,150
C-2050256350	REDUCER 63x 50 PN 25	0,150
C-2050257540	REDUCER 75x 40 PN 25	0,230
C-2050257550	REDUCER 75x 50 PN 25	0,240
C-2050257563	REDUCER 75x 63 PN 25	0,280
C-2050259050	REDUCER 90x 50 PN 25	0,345
C-2050259063	REDUCER 90x 63 PN 25	0,400
C-2050259075	REDUCER 90x 75 PN 25	0,445

Buttfusion fitting with steel

Article code	Article description	Weight (kg)
C-2047100200	STUB END + FLANGE PP 200 PN 10	7,331
C-2047100225	STUB END + FLANGE PP 225 PN 10	7,831
C-2047100250	STUB END + FLANGE PP 250 PN 10	11,43
C-2047100280	STUB END + FLANGE PP 280 PN 10	10,5
C-2047100315	STUB END + FLANGE PP 315 PN 10	18,46
C-2047160050	STUB END + FLANGE PP 50 PN16	0,43
C-2047160063	STUB END + FLANGE PP 63 PN16	0,59
C-2047160075	STUB END + FLANGE PP 75 PN16	0,78
C-2047160090	STUB END + FLANGE PP 90 PN16	0,875
C-2047160110	STUB END + FLANGE PP 110 PN16	1,135
C-2047160125	STUB END + FLANGE PP 125 PN16	1,365
C-2047160140	STUB END + FLANGE PP 140 PN16	4,191
C-2047160160	STUB END + FLANGE PP 160 PN16	5,501
C-2047160180	STUB END + FLANGE PP 180 PN16	5,88
C-2047160200	STUB END + FLANGE PP 200 PN16	7,641
C-2047160225	STUB END + FLANGE PP 225 PN16	8,931
C-2047160280	STUB END + FLANGE PP 280 PN16	11,7
C-2047160315	STUB END + FLANGE PP 315 PN16	19,45
C-4047160040	STUB END + FLANGE PP 40 PN16 PL	0,32
C-4047160063	STUB END + FLANGE PP 63 PN16 PL	0,59
C-4047160075	STUB END + FLANGE PP 75 PN16 PL	0,78
C-4047160090	STUB END + FLANGE PP 90 PN16 PL	0,875
C-4047160110	STUB END + FLANGE PP 110 PN16 PL	1,135
C-4047160140	STUB END + FLANGE PP 140 PN16 PL	4,191
C-4047160180	STUB END + FLANGE PP 180 PN16 PL	5,88
C-4047160200	STUB END + FLANGE PP 200 PN16 PL	7,641
C-4047160225	STUB END + FLANGE PP 225 PN16 PL	8,931
C-4048100400	KIT ANTIFLUAGE d. 400 PN10 PL	18,46
C-4048160032	KIT ANTIFLUAGE d. 32 PN16 PL	0,32
C-4048160040	KIT ANTIFLUAGE d. 40 PN16 PL	0,32
C-4048160050	KIT ANTIFLUAGE d. 50 PN16 PL	0,42
C-4048160063	KIT ANTIFLUAGE d. 63 PN16 PL	0,59
C-4048160075	KIT ANTIFLUAGE d. 75 PN16 PL	0,78
C-4048160090	KIT ANTIFLUAGE d. 90 PN16 PL	0,875
C-4048160110	KIT ANTIFLUAGE d. 110 PN16 PL	1,135
C-4048160125	KIT ANTIFLUAGE d. 125 PN16 PL	1,365
C-4048160140	KIT ANTIFLUAGE d. 140 PN16 PL	4,191
C-4048160160	KIT ANTIFLUAGE d. 160 PN16 PL	5,501
C-4048160180	KIT ANTIFLUAGE d. 180 PN16 PL	5,88
C-4048160200	KIT ANTIFLUAGE d. 200 PN16 PL	7,641
C-4048160200AD	KIT ANTIFLUAGE d.200 FULL PN16	7,641
C-4048160225	KIT ANTIFLUAGE d. 225 PN16 PL	8,931
C-4048160225AD	KIT ANTIFLUAGE d.225 FULL PN16	8,931
C-4048160250	KIT ANTIFLUAGE d. 250 PN16 PL	11,425
C-4048160250AD	KIT ANTIFLUAGE d.250 FULL PN16	11,425
C-4048160280	KIT ANTIFLUAGE d. 280 PN16 PL	11,7
C-4048160280AD	KIT ANTIFLUAGE d.280 FULL PN16	11,7
C-4048160315	KIT ANTIFLUAGE d. 315 PN16 PL	18,46
C-4048160315AD	KIT ANTIFLUAGE d.315 FULL PN16	18,46

LCA information

Functional unit: 1 kg of product installed
The products under study are fittings installed in pipes for water or gas distribution network. The study comprises the raw material extraction, raw material transportation, manufacturing, transportation to costumer, installation, end-of-life of product.

Reference service life: 50 years

Time representativeness: primary data refer to 2020 year. The generic data has been updated in 2019 (Ecoinvent 3.6).

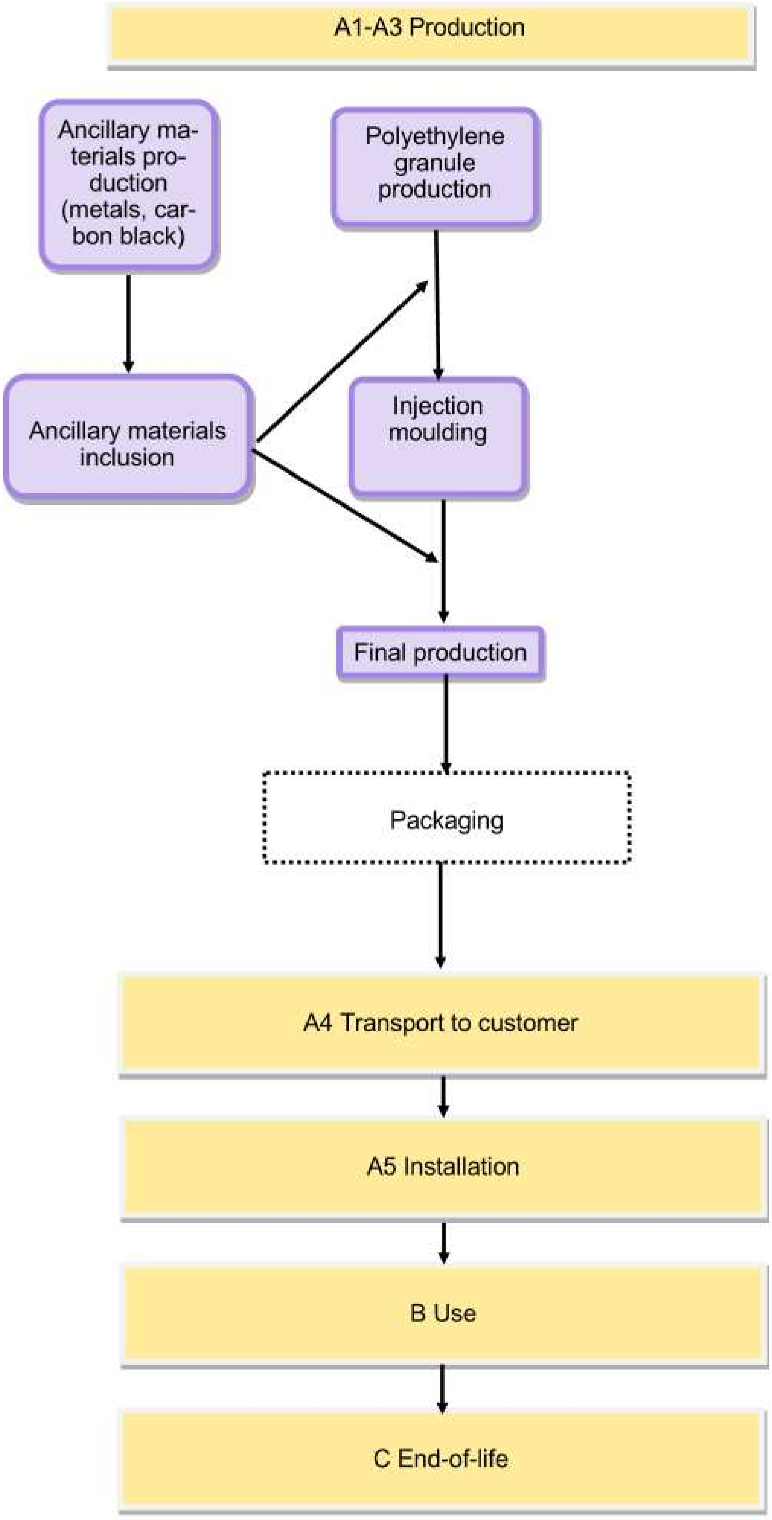
Database(s) and LCA software used: for the elaboration of data SimaPro v. 9.1.1.7; the database used is Ecoinvent 3.6.

Description of system boundaries: cradle-to-grave (A-B-C) + module D

Excluded lifecycle stages: all life stages are included in the LCA study

More information: www.eurostandard.it

System boundary is presented in the flow chart below:


A1-A3 Production
Ancillary materials production (metals, carbon black)
Polyethylene granule production
Ancillary materials inclusion
Injection moulding
Final production
Packaging
A4 Transport to customer
A5 Installation
B Use
C End-of-life

Additional information:

- The allocation is applied in the LCA study: when necessary, mass allocation is used.
- Electricity: the Eurostandard supplier mix in the 2020 is used.
  1 kWh = 0,176 Kg CO2eq.
  Furthermore, the company generates electricity from a photovoltaic plant and a cogeneration plant (in A1 module).
- Cut-off: at least 95% of the energy and materials used by module has been introduced, as well as 99% of the total use of energy and materials
- The modularity principle, as well as the polluter payer principle have been followed
- The next processes have not been included since its impact is not significant:
    - Environmental impact from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process.
    - Personnel-related impacts, such as transportation to and from work.
- The impact methods used are:
    - EN 15804+A2 v.1.00
    - Cumulative energy demand v. 1.00 for resource use
    - EDIP 2003 v. 1.07 for waste production

The verifier and the program operator do not make any claim nor have any responsibility of the legality of the product.

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage		Construction process stage			Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	Europe	Italy	Italy	World	World	World	World	World	World	World	World	World	World	World	World	World	World
Specific data used	Yes					-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	Less than 10% of impacts in every group of products					-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	One manufacturing site - not relevant					-	-	-	-	-	-	-	-	-	-	-	-

- Module A1 – Raw material supply: this module includes the extraction of raw material and energy production.

- Module A2 – Transport: this module includes the transportation of raw materials from the suppliers to the Eurostandard gate.

- Module A3 – Manufacturing: this module considers the Eurostandard internal processes, including consumption of resources and packaging. The production process consists in injection moulding of the polyethylene granulate and inclusion of metal parts, when necessary.

- Module A4 – Transport: this module considers the transport of product to construction site.

PARAMETER	DESCRIPTION / VALUE
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc	From Ecoinvent Truck (16-32 metric ton): 0,0375 kg of diesel low sulfur for ton*km transported Ferry: 0,030 kg of heavy fuel oil for ton*km transported Ship: 0,0025 kg of heavy fuel oil for ton*km transported Plane: 8,4016 kg of kerosene for ton*km transported
Distance	Buttfusion fittings without metal: - Truck: 983 km - Ferry: 7,74 mi - Plane: 1,93 km - Ship: 452,15 mi Buttfusion fittings with metal: - Truck: 972 km - Ferry: 0,91 mi
Capacity utilisation (including empty returns)	From Ecoinvent database: Truck: 66% Ferry: 50% Ship: 70% Plane: unspecified
Bulk density of transported products (kg/m3)	0,965
Volume capacity utilisation factor	1

- Module A5 – Construction installation: this module considers the installation of product in the building with use of auxiliary materials.

PARAMETER	DESCRIPTION	VALUE
Auxiliary materials for installation	kg	0
Use of water	m^3	0
Use of other resources	kg	0
Quantitative description of energy type and consumption during the preparation and installation process	Electric energy kWh	0
Direct emissions to ambient air, soil and water	kg	0
Waste materials on the building site, before waste processing, generated by the product's installation; specified by type	Product losses	1%
	Cardboard box kg	0,098
	Plastic bag kg	0,013
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal; specified by route	Landfill	100% of product packaging (0,013 kg of LDPE and 0,097 kg of cardboard box) and 1% of product losses

- Module B – Use stage: the product doesn't require any use, maintenance, repair, replacement, refurbishment and it isn't necessary use of energy or water for his use.

- Module C1 – Deconstruction/demolition: The product is uninstalled manually, without the use of energy.

- Module C2 – Transport to waste processing: the product is then transported to disposal; the scenario provides the transport for 50 km.

- Module C3 - Waste processing for reuse, recovery and/or recycling: the product is send to landfill and there isn't any reuse, recovery or recycling.

- Module C4 - Disposal: the product is totally disposed in landfill.

PARAMETER	VALUE / DESCRIPTION
Collection process specified by type	The product is uninstalled manually Product waste collected with 3,5-7,5 metric ton truck
Recovery system specified by type	There is no recovery, recycling or reuse
Disposal specified by type	100 % Landfill (1 kg)
Assumptions for scenario development (e.g. transportation)	3,5-7,5 metric ton truck. Distance: 50 km

- Module D - Reuse-Recovery-Recycling potential: Module D calculates the potential environmental benefits of the recycling or reuse of materials. This product has not considerable benefits due to recycling or/and reuse.

Content information

Buttfusion fitting (only polyethylene)

Product components	**Weight, kg**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
Polyethylene	0,98	0	0
Black carbon	0,02	0	0
TOTAL	1,00		
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Corrugated board box	0,10	9,8	
Packaging film	0,01	1,3	
TOTAL	0,11	11,1	

During the life cycle of the product any hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has not been used in a percentage higher than 0,1% of the weight of the product.

Environmental Information

Potential environmental impact - mandatory indicators according to EN 15804

Results per functional unit										
Indicator	**Tot.A1-A3**	**A4**	**A5**	**B**	**C1**	**C2**	**C3**	**C4**	**total**	**D**
GWP-fossil (kg CO$_2$ eq.)	4,12E+00	1,77E-01	4,73E-02	0,00E+00	0,00E+00	2,71E-02	0,00E+00	5,27E-03	4,38E+00	0,00E+00
GWP-biogenic (kg CO$_2$ eq.)	2,97E-02	6,30E-05	3,03E-04	0,00E+00	0,00E+00	8,00E-06	0,00E+00	1,04E-05	3,01E-02	0,00E+00
GWP-luluc (kg CO$_2$ eq)	1,45E-03	6,57E-05	1,73E-05	0,00E+00	0,00E+00	1,54E-05	0,00E+00	1,47E-06	1,55E-03	0,00E+00
GWP-total (kg CO$_2$ eq)	4,15E+00	1,77E-01	4,76E-02	0,00E+00	0,00E+00	2,71E-02	0,00E+00	5,28E-03	4,41E+00	0,00E+00
ODP (kg CFC 11 eq.)	3,17E-07	3,83E-08	4,51E-09	0,00E+00	0,00E+00	5,46E-09	0,00E+00	2,17E-09	3,68E-07	0,00E+00
AP (mol H$^+$ eq.)	1,16E-02	9,46E-04	1,48E-04	0,00E+00	0,00E+00	1,32E-04	0,00E+00	5,00E-05	1,29E-02	0,00E+00
EP-freshwater (kg PO$_4^{3-}$ eq.)	1,02E-03	1,08E-04	1,42E-05	0,00E+00	0,00E+00	1,65E-05	0,00E+00	6,66E-06	1,17E-03	0,00E+00
EP-freshwater (kg P eq)	5,18E-05	1,59E-06	5,87E-07	0,00E+00	0,00E+00	3,38E-07	0,00E+00	5,90E-08	5,44E-05	0,00E+00
EP-marine (kg N eq.)	2,12E-03	2,65E-04	3,10E-05	0,00E+00	0,00E+00	4,03E-05	0,00E+00	1,72E-05	2,47E-03	0,00E+00
EP-terrestrial (mol N eq.)	2,42E-02	2,93E-03	3,50E-04	0,00E+00	0,00E+00	4,46E-04	0,00E+00	1,90E-04	2,81E-02	0,00E+00
POCP (kg NMVOC eq.)	9,99E-03	8,62E-04	1,32E-04	0,00E+00	0,00E+00	1,29E-04	0,00E+00	5,51E-05	1,12E-02	0,00E+00
ADP-minerals&metals (kg Sb eq.) [1]	2,53E-05	4,49E-06	4,60E-07	0,00E+00	0,00E+00	1,27E-06	0,00E+00	4,82E-08	3,16E-05	0,00E+00
ADP-fossil (MJ) [1]	1,01E+02	2,60E+00	1,11E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	1,05E+02	0,00E+00
WDP (m^3) [1]	2,43E+00	8,20E-03	2,56E-02	0,00E+00	0,00E+00	1,58E-03	0,00E+00	6,60E-03	2,47E+00	0,00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

[1] The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

The modules B1-B7 have impacts 0.

Potential environmental impact - additional mandatory and voluntary indicators

Results per functional unit										
Indicator	**Tot.A1-A3**	**A4**	**A5**	**B**	**C1**	**C2**	**C3**	**C4**	**total**	**D**
GWP-GHG (kg CO$_2$ eq.) [2]	3,95E+00	1,75E-01	4,55E-02	0,00E+00	0,00E+00	2,68E-02	0,00E+00	5,15E-03	4,20E+00	0,00E+00

[2] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Information on biogenic carbon content

Results per functional unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	3,94E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

Use of resources

Results per functional unit										
Indicator	**Tot.A1-A3**	**A4**	**A5**	**B**	**C1**	**C2**	**C3**	**C4**	**total**	**D**
PERE (MJ)	8,63E+00	2,85E-02	8,83E-02	0,00E+00	0,00E+00	6,16E-03	0,00E+00	1,19E-03	8,75E+00	0,00E+00
PERM (MJ)	1,65E+00	0,00E+00	1,67E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,67E+00	0,00E+00
PERT (MJ)	1,03E+01	2,85E-02	1,05E-01	0,00E+00	0,00E+00	6,16E-03	0,00E+00	1,19E-03	1,04E+01	0,00E+00
PENRE (MJ)	1,01E+02	2,60E+00	1,11E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	1,05E+02	0,00E+00
PENRM (MJ)	4,50E+01	0,00E+00	4,54E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,54E+01	0,00E+00
PENRT (MJ)	1,46E+02	2,60E+00	1,56E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	1,50E+02	0,00E+00
SM (kg)	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF (MJ)	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF (MJ)	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW (m^3)	1,70E-02	4,84E-04	2,05E-04	0,00E+00	0,00E+00	7,88E-05	0,00E+00	1,64E-04	1,79E-02	0,00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

Waste production and output flows

Waste production

Results per functional unit										
Indicator	**Tot.A1-A3**	**A4**	**A5**	**B**	**C1**	**C2**	**C3**	**C4**	**total**	**D**
Hazardous waste disposed (kg)	4,77E-05	6,68E-06	7,05E-07	0,00E+00	0,00E+00	1,08E-06	0,00E+00	2,20E-07	5,63E-05	0,00E+00
Non-hazardous waste disposed (kg)	2,11E-01	1,18E-01	1,25E-01	0,00E+00	0,00E+00	1,17E-02	0,00E+00	1,00E+00	1,47E+00	0,00E+00
Radioactive waste disposed (kg)	8,76E-05	1,71E-05	1,47E-06	0,00E+00	0,00E+00	2,44E-06	0,00E+00	9,67E-07	1,10E-04	0,00E+00

Output flows

Results per functional unit										
Indicator	**Tot.A1-A3**	**A4**	**A5**	**B**	**C1**	**C2**	**C3**	**C4**	**total**	**D**
Components for re-use (kg)	0	0	0	0	0	0	0	0	0	0
Material for recycling (kg)	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery (kg)	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity (MJ)	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal (MJ)	0	0	0	0	0	0	0	0	0	0

Content information

Buttfusion fitting with steel

Product components	**Weight, kg**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
Polyethylene	0,39	0	0
Black carbon	0,01	0	0
Steel	0,60	85%	0
TOTAL	1,00		
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Corrugated board box	0,10	9,8	
Packaging film	0,01	1,3	
TOTAL	0,11	11,1	

During the life cycle of the product any hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has not been used in a percentage higher than 0,1% of the weight of the product.

Environmental Information

Potential environmental impact - mandatory indicators according to EN 15804

Results per functional unit										
Indicator	**Tot.A1-A3**	**A4**	**A5**	**B**	**C1**	**C2**	**C3**	**C4**	**total**	**D**
GWP-fossil (kg CO$_2$ eq.)	5,27E+00	1,69E-01	5,83E-02	0,00E+00	0,00E+00	2,71E-02	0,00E+00	5,27E-03	5,53E+00	0,00E+00
GWP-biogenic (kg CO$_2$ eq.)	4,86E-02	6,48E-05	4,88E-04	0,00E+00	0,00E+00	8,00E-06	0,00E+00	1,04E-05	4,91E-02	0,00E+00
GWP-luluc (kg CO$_2$ eq)	2,89E-03	6,07E-05	3,15E-05	0,00E+00	0,00E+00	1,54E-05	0,00E+00	1,47E-06	3,00E-03	0,00E+00
GWP-total (kg CO$_2$ eq)	5,32E+00	1,69E-01	5,88E-02	0,00E+00	0,00E+00	2,71E-02	0,00E+00	5,28E-03	5,58E+00	0,00E+00
ODP (kg CFC 11 eq.)	3,90E-07	3,66E-08	5,19E-09	0,00E+00	0,00E+00	5,46E-09	0,00E+00	2,17E-09	4,40E-07	0,00E+00
AP (mol H$^+$ eq.)	2,32E-02	7,06E-04	2,61E-04	0,00E+00	0,00E+00	1,32E-04	0,00E+00	5,00E-05	2,43E-02	0,00E+00
EP-freshwater (kg PO$_4^{3-}$ eq.)	1,94E-03	8,74E-05	2,30E-05	0,00E+00	0,00E+00	1,65E-05	0,00E+00	6,66E-06	2,07E-03	0,00E+00
EP-freshwater (kg P eq)	1,28E-04	1,56E-06	1,34E-06	0,00E+00	0,00E+00	3,38E-07	0,00E+00	5,90E-08	1,31E-04	0,00E+00
EP-marine (kg N eq.)	3,97E-03	2,05E-04	4,87E-05	0,00E+00	0,00E+00	4,03E-05	0,00E+00	1,72E-05	4,28E-03	0,00E+00
EP-terrestrial (mol N eq.)	4,58E-02	2,27E-03	5,57E-04	0,00E+00	0,00E+00	4,46E-04	0,00E+00	1,90E-04	4,92E-02	0,00E+00
POCP (kg NMVOC eq.)	1,47E-02	6,90E-04	1,76E-04	0,00E+00	0,00E+00	1,29E-04	0,00E+00	5,51E-05	1,57E-02	0,00E+00
ADP-minerals&metals (kg Sb eq.) [1]	1,12E-04	4,44E-06	1,33E-06	0,00E+00	0,00E+00	1,27E-06	0,00E+00	4,82E-08	1,19E-04	0,00E+00
ADP-fossil (MJ) [1]	8,54E+01	2,49E+00	9,44E-01	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	8,94E+01	0,00E+00
WDP (m^3) [1]	1,90E+00	8,05E-03	2,00E-02	0,00E+00	0,00E+00	1,58E-03	0,00E+00	6,60E-03	1,93E+00	0,00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

[1] The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

The modules B1-B7 have impacts 0.

Potential environmental impact - additional mandatory and voluntary indicators

Results per functional unit										
Indicator	**Tot.A1-A3**	**A4**	**A5**	**B**	**C1**	**C2**	**C3**	**C4**	**total**	**D**
GWP-GHG (kg CO$_2$ eq.) [2]	5,10E+00	1,67E-01	5,65E-02	0,00E+00	0,00E+00	2,68E-02	0,00E+00	5,15E-03	5,35E+00	0,00E+00

[2] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Information on biogenic carbon content

Results per functional unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	3,94E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

Use of resources

Results per functional unit										
Indicator	**Tot.A1-A3**	**A4**	**A5**	**B**	**C1**	**C2**	**C3**	**C4**	**total**	**D**
PERE (MJ)	1,58E+01	2,78E-02	1,59E-01	0,00E+00	0,00E+00	6,16E-03	0,00E+00	1,19E-03	1,60E+01	0,00E+00
PERM (MJ)	1,65E+00	0,00E+00	1,67E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,67E+00	0,00E+00
PERT (MJ)	1,74E+01	2,78E-02	1,75E-01	0,00E+00	0,00E+00	6,16E-03	0,00E+00	1,19E-03	1,76E+01	0,00E+00
PENRE (MJ)	8,54E+01	2,49E+00	9,44E-01	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	8,94E+01	0,00E+00
PENRM (MJ)	1,84E+01	0,00E+00	1,86E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,86E+01	0,00E+00
PENRT (MJ)	1,04E+02	2,49E+00	1,13E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	1,08E+02	0,00E+00
SM (kg)	5,04E-01	0,00E+00	5,09E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,09E-01	0,00E+00
RSF (MJ)	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF (MJ)	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW (m^3)	2,44E-02	4,72E-04	2,78E-04	0,00E+00	0,00E+00	7,88E-05	0,00E+00	1,64E-04	2,54E-02	0,00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

Waste production and output flows

Waste production

Results per functional unit										
Indicator	**Tot.A1-A3**	**A4**	**A5**	**B**	**C1**	**C2**	**C3**	**C4**	**total**	**D**
Hazardous waste disposed (kg)	6,83E-05	6,56E-06	9,05E-07	0,00E+00	0,00E+00	1,08E-06	0,00E+00	2,20E-07	7,70E-05	0,00E+00
Non-hazardous waste disposed (kg)	3,33E+00	1,17E-01	1,56E-01	0,00E+00	0,00E+00	1,17E-02	0,00E+00	1,00E+00	4,61E+00	0,00E+00
Radioactive waste disposed (kg)	1,22E-04	1,64E-05	1,79E-06	0,00E+00	0,00E+00	2,44E-06	0,00E+00	9,67E-07	1,43E-04	0,00E+00

Output flows

Results per functional unit										
Indicator	**Tot.A1-A3**	**A4**	**A5**	**B**	**C1**	**C2**	**C3**	**C4**	**total**	**D**
Components for re-use (kg)	0	0	0	0	0	0	0	0	0	0
Material for recycling (kg)	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery (kg)	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity (MJ)	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal (MJ)	0	0	0	0	0	0	0	0	0	0

Additional information

No further information is provided.

This document is the first version of EPD.

References

- General Programme Instructions of the International EPD® System. Version 3.0.
- PCR 2019:14. CONSTRUCTION PRODUCTS. Version 1.11
- ISO 14040:2006 Environmental management-Life Cycle Assessment - Principles and framework
- ISO 14044:2006 Environmental management-Life Cycle Assessment-Requirements and guidelines
- ISO 14025:2010 Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures
- EN 15804:2012+A2:2019, Sustainability of construction works — Environmental product declarations
- Project report rev.4 – Life cycle assessment: buttfusion fittings, transition fittings, electrofusion fittings

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