Environmental Product Declaration

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

TRANSITION FITTINGS

from

EUROSTANDARD S.p.A.

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
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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
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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: transition fitting.
The products under study are:

- Transition fitting with inclusion in galvanized steel
- Transition fitting with inclusion in copper
- Transition fitting with inclusion in brass.

Product description and identification: the fittings are made of polyethylene injection moulded and a part in metal (galvanized steel, copper or brass). 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 flange is out of the system under study.

The products included in the LCA study are:

- Steel/PE coupling
  - Steel/PE coupling (cod. 20.60)
  - Transition insert in brass male (cod. 21.77)
  - Transition insert in brass female (cod. 21.78)
  - Steel/PE coupling (cod. 20.65)
  - Copper/PE coupling (cod. 20.62)
  - Steel/PE coupling with extension and thread – galvanized (cod. 20.61A)
  - Steel/PE coupling with extension and thread – galvanized coated (cod. 20.61R)
- Electrofusion transition fitting
  - Electrofusion transition socket with brass insert male (cod. 21.61)
  - Electrofusion transition socket with brass insert female (cod. 21.62)
  - Electrofusion transition 90° elbow with brass insert male (cod. 21.65)
  - Electrofusion transition 90° elbow with brass insert female (cod. 21.66)
  - Electrofusion transition 45° elbow with brass insert male (cod. 21.67)
  - Electrofusion transition 45° elbow with brass insert male (cod. 21.68)
  - Electrofusion transition socket with brass insert and free nut (cod. 21.70)
  - Electrofusion transition 45° elbow with brass insert and free nut (cod. 21.71)
  - Electrofusion transition 45° elbow with brass insert and free nut (cod. 21.72)
  - Electrofusion transition spigot saddle with brass insert (cod. 21.63)
  - Electrofusion spigot saddle for shut-off equipment (cod. 21.64)

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
- Impact resistance on junction collars: UNI EN 1716
- 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).

Transition fittings with steel

Article code	Article description	Weight (kg)
C-2060160025A	STEEL/PE COUPLING d. 25 GALVANIZED	0,635
C-2060160025F	STEEL/PE COUPLING d. 25 GALVANIZED WITH THREAD	0,635
C-2060160025H	STEEL/PE COUPLING d. 25 GALVANIZED COATED WITH THREAD	0,640
C-2060160032A	STEEL/PE COUPLING d. 32 GALVANIZED	0,945
C-2060160032F	STEEL/PE COUPLING d. 32 GALVANIZED WITH THREAD	0,945
C-2060160032H	STEEL/PE COUPLING d. 32 GALVANIZED COATED WITH THREAD	1,005
C-2060160040A	STEEL/PE COUPLING d. 40 GALVANIZED	1,220
C-2060160040F	STEEL/PE COUPLING d. 40 GALVANIZED WITH THREAD	1,220
C-2060160040H	STEEL/PE COUPLING d. 40 GALVANIZED COATED WITH THREAD	1,250
C-2060160050A	STEEL/PE COUPLING d. 50 GALVANIZED	1,430
C-2060160050F	STEEL/PE COUPLING d. 50 GALVANIZED WITH THREAD	1,430

C-2060160050H	STEEL/PE COUPLING d. 50 GALVANIZED COATED WITH THREAD	1,545
C-2060160063A	STEEL/PE COUPLING d. 63 GALVANIZED	2,120
C-2060160063F	STEEL/PE COUPLING d. 63 GALVANIZED WITH THREAD	2,120
C-2060160063H	STEEL/PE COUPLING d. 63 GALVANIZED COATED WITH THREAD	2,270
C-2060160075A	STEEL/PE COUPLING d. 75 GALVANIZED	2,900
C-2060160075F	STEEL/PE COUPLING d. 75 GALVANIZED WITH THREAD	2,900
C-2060160075H	STEEL/PE COUPLING d. 75 GALVANIZED COATED WITH THREAD	3,000
C-2060160090A	STEEL/PE COUPLING d. 90 GALVANIZED	3,450
C-2060160090F	STEEL/PE COUPLING d. 90 GALVANIZED WITH THREAD	3,450
C-2060160090H	STEEL/PE COUPLING d. 90 GALVANIZED COATED WITH THREAD	3,860
C-2060160110A	STEEL/PE COUPLING d.110 GALVANIZED	5,650
C-2060160110F	STEEL/PE COUPLING d.110 GALVANIZED WITH THREAD	5,650
C-2060160110H	STEEL/PE COUPLING d.110 GALVANIZED COATED WITH THREAD	5,980
C-2060160125A	STEEL/PE COUPLING d.125 GALVANIZED	5,950
C-2060160125F	STEEL/PE COUPLING d.125 GALVANIZED WITH THREAD	5,950
C-2060160125H	STEEL/PE COUPLING d.125 GALVANIZED COATED WITH THREAD	6,180
C-2061161225R	STEEL/PE COUPLING WITH EXTENSION d.25-3/4" ZIN RIV	2,020
C-2061161232A	STEEL/PE COUPLING WITH EXTENSION d.32-1" GALVANIZED	2,750
C-2061161232R	STEEL/PE COUPLING WITH EXTENSION d.32-1" THREAD GALVANIZED	2,900
C-2061161240A	STEEL/PE COUPLING WITH EXTENSION d.40-1"1/4 GALVANIZED	3,120
C-2061161240R	STEEL/PE COUPLING WITH EXTENSION d.40-1"1/4 THREAD GALVANIZED	3,500
C-2061161250A	STEEL/PE COUPLING WITH EXTENSION d.50-1"1/2 GALVANIZED	3,850
C-2061161250R	STEEL/PE COUPLING WITH EXTENSION d.50-1"1/2 THREAD GALVANIZED	4,450
C-2061161263A	STEEL/PE COUPLING WITH EXTENSION d.63-2" GALVANIZED	5,800
C-2061161263R	STEEL/PE COUPLING WITH EXTENSION d.63-2" THREAD GALVANIZED	6,150
C-2061161532R	STEEL/PE COUPLING WITH EXTENSION 32-1" L150 RIV PE100	2,900
C-2061161550R	STEEL/PE COUPLING WITH EXTENSION 50-1"1/2 LUNG RIV.	4,450
C-2061161563R	STEEL/PE COUPLING WITH EXTENSION 63-2" LUNG RIV PE100	6,150

Transition fittings with copper

Article code	Article description	Weight (kg)
C-2062162518A	COPPER/PE COUPLING d. 25x18 PN16	0,335
C-2062162522A	COPPER/PE COUPLING d. 25x22 PN16	0,375
C-2062163222A	COPPER/PE COUPLING d. 32x22 PN16	0,425
C-2062163228A	COPPER/PE COUPLING d. 32x28 PN16	0,490

Transition fittings with brass

Article code	Article description	Weight (kg)
C-2177250020AA	TRANSITION INSERT IN BRASS MALE d. 20-1/2" M	0,030
C-2177250025AA	TRANSITION INSERT IN BRASS MALE d. 25-3/4" M	0,045
C-2177250032AA	TRANSITION INSERT IN BRASS MALE d. 32-1" M	0,140
C-2177250040AA	TRANSITION INSERT IN BRASS MALE d. 40-1"1/4 M	0,250
C-2177250050AA	TRANSITION INSERT IN BRASS MALE d. 50-1"1/2 M	0,377
C-2177250063AA	TRANSITION INSERT IN BRASS MALE d. 63-2" M	0,650
C-2177250075A0	TRANSITION INSERT IN BRASS MALE d. 75-2"1/2 M	1,060
C-2177250090A0	TRANSITION INSERT IN BRASS MALE d. 90-3" M	1,595
C-2177250110A0	TRANSITION INSERT IN BRASS MALE d. 110-4" M	2,240
C-2178250020AA	TRANSITION INSERT IN BRASS FEMALE d. 20-1/2" F	0,100
C-2178250025AA	TRANSITION INSERT IN BRASS FEMALE d. 25-3/4" F	0,130
C-2178250032AA	TRANSITION INSERT IN BRASS FEMALE d. 32-1" F	0,180
C-2178250040AA	TRANSITION INSERT IN BRASS FEMALE d. 40-1"1/4 F	0,345
C-2178250050AA	TRANSITION INSERT IN BRASS FEMALE d. 50-1"1/2 F	0,405
C-2178250063AA	TRANSITION INSERT IN BRASS FEMALE d. 63-2" F	0,660
C-2178250075A0	TRANSITION INSERT IN BRASS FEMALE d. 75-2"1/2 F	1,070
C-2178250090A0	TRANSITION INSERT IN BRASS FEMALE d. 90-3" F	1,595
C-2178250110A0	TRANSITION INSERT IN BRASS FEMALE d. 110-4" F	2,310
C-2161160020AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT MALE d. 20 M	0,075
C-2161160032AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT MALE d. 32 M	0,229
C-2161160040AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT MALE d. 40 M	0,363
C-2161160050AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT MALE d. 50 M	0,532
C-2161160063AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT MALE d. 63 M	0,889
C-2161160075A0	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT MALE d. 75 M	1,431
C-2161160090A0	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT MALE d. 90 M	2,085
C-2161160110A0	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT MALE d.110 M	3,11
C-2161160025AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT MALE d. 25 M	0,100
C-2162160020AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT FEMALE d. 20 F	0,136
C-2162160025AA	ELECTROFUSION TRANSITION SOCKET	0,186

	WITH BRASS INSERT FEMALE d. 25 F	
C-2162160032AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT FEMALE d. 32 F	0,256
C-2162160040AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT FEMALE d. 40 F	0,455
C-2162160050AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT FEMALE d. 50 F	0,560
C-2162160063AA	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT FEMALE d. 63 F	0,882
C-2162160075A0	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT FEMALE d. 75 F	1,445
C-2162160090A0	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT FEMALE d. 90 F	1,990
C-2162160110A0	ELECTROFUSION TRANSITION SOCKET WITH BRASS INSERT FEMALE d.110 F	3,170
C-2164161163	ELECTROFUSION SPIGOT SADDLE FOR SHUT-OFF EQUIPMENT110x2"	2,2
C-2164161263	ELECTROFUSION SPIGOT SADDLE FOR SHUT-OFF EQUIPMENT125x2"	2,315
C-2164161663	ELECTROFUSION SPIGOT SADDLE FOR SHUT-OFF EQUIPMENT160x2"	2,655
C-2163161150	ELECTROFUSION TRANSITION SPIGOT SADDLE WITH BRASS INSERT110x1"1/2	1,3
C-2163161163	ELECTROFUSION TRANSITION SPIGOT SADDLE WITH BRASS INSERT110x2"	1,555
C-2163161250	ELECTROFUSION TRANSITION SPIGOT SADDLE WITH BRASS INSERT125x1"1/2	1,415
C-2163161263	ELECTROFUSION TRANSITION SPIGOT SADDLE WITH BRASS INSERT 125x2"	1,68
C-2163161450	ELECTROFUSION TRANSITION SPIGOT SADDLE WITH BRASS INSERT 140x1"1/2	1,565
C-2163161463	ELECTROFUSION TRANSITION SPIGOT SADDLE WITH BRASS INSERT 140x2"	1,85
C-2163161650	ELECTROFUSION TRANSITION SPIGOT SADDLE WITH BRASS INSERT 160x1"1/2	1,75
C-2163161663	ELECTROFUSION TRANSITION SPIGOT SADDLE WITH BRASS INSERT 160x2"	2,02
C-2165160020AA	ELBOW 90° EL. TRANS. d. 20 M	0,105
C-2165160025AA	ELBOW 90° EL. TRANS. d. 25 M	0,125
C-2165160032AA	ELBOW 90° EL. TRANS. d. 32 M	0,285
C-2165160040AA	ELBOW 90° EL. TRANS. d. 40 M	0,455
C-2165160050AA	ELBOW 90° EL. TRANS. d. 50 M	0,705
C-2165160063AA	ELBOW 90° EL. TRANS. d. 63 M	1,12
C-2165160075A0	ELBOW 90° EL. TRANS. d. 75 M	1,725
C-2165160090A0	ELBOW 90° EL. TRANS. d. 90 M	2,635
C-2165160110A0	ELBOW 90° EL. TRANS. d.110 M	3,865
C-2166160020AA	ELBOW 90° EL. TRANS. d. 20 F	0,16
C-2166160025AA	ELBOW 90° EL. TRANS. d. 25 F	0,22
C-2166160032AA	ELBOW 90° EL. TRANS. d. 32 F	0,31
C-2166160040AA	ELBOW 90° EL. TRANS. d. 40 F	0,525
C-2166160050AA	ELBOW 90° EL. TRANS. d. 50 F	0,735
C-2166160063AA	ELBOW 90° EL. TRANS. d. 63 F	1,105
C-2166160075A0	ELBOW 90° EL. TRANS. d. 75 F	1,735
C-2166160090A0	ELBOW 90° EL. TRANS. d. 90 F	2,575
C-2166160110A0	ELBOW 90° EL. TRANS. d.110 F	4,125
C-2167160063AA	ELBOW 45° EL. TRANS. d. 63 M	1,05
C-2168160075A0	ELBOW 45° EL. TRANS. d. 75 F	1,725
C-2170160020AA	SOCKET TRANS. 20 FREE NUT	0,11
C-2170160025AA	SOCKET TRANS. 25 FREE NUT	0,132
C-2170160032AA	SOCKET TRANS. 32 FREE NUT	0,27
C-2170160040AA	SOCKET TRANS. 40 FREE NUT	0,313
C-2170160050AA	SOCKET TRANS. 50 FREE NUT	0,495
C-2170160063AA	SOCKET TRANS. 63 FREE NUT	0,805
C-2171160025	ELBOW 90° EL TRANS. 25 FREE NUT	0,2

C-2171160032AA	ELBOW 90° EL TRANS. 32 FREE NUT	0,262
C-2171160040AA	ELBOW 90° EL TRANS. 40 FREE NUT	0,393
C-2171160063	ELBOW 90° EL TRANS. 63 FREE NUT	1,03
C-2171160063AA	ELBOW 90° EL TRANS. 63 FREE NUT	1,03

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).

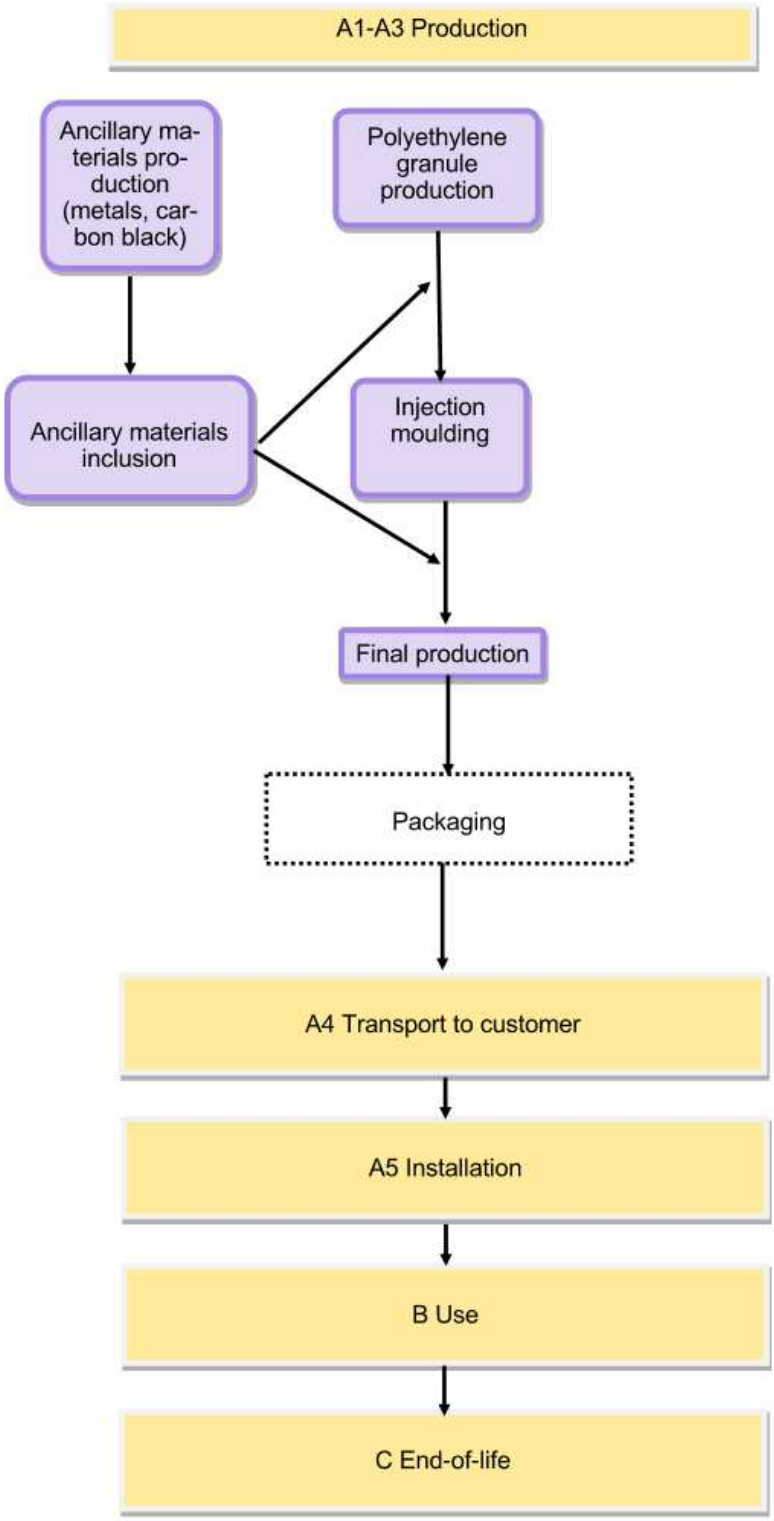
Database(s) and LCA software used: for the elaboration of data SimaPro v. 9.1.1.7; the database used is Ecoinvent 3.6.

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 transition fittings with copper inclusion group of products. Variability of 10,2% of impacts in transition fittings with steel inclusion group of products and 22,4% of impacts in transition fittings with brass inclusion.					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	One manufacturing site – not relevant					-	-	-	-	-	-	-	-	-	-	-	-

The variability inside each group of products under study is calculated between the less and more impactful product.

- 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.

- 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	Transition fittings with steel inclusion - Truck: 386 Km - Ferry: 14,72 mi - Ship: 41,57 mi Transition fittings with copper inclusion - Truck: 433 Km - Ship: 59,93 mi Transition fittings with brass inclusion - Truck: 820 Km - Ferry: 9,74 mi - Ship: 857,81 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	Solvent organic (g)	2,1
Quantitative description of energy type and consumption during the preparation and installation process	Electric energy kWh	0,25
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

Transition fittings with steel inclusion

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Polyethylene	0,13	0	0
Carbon black	0,003	0	0
Steel	0,86	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.)	7,01E+00	6,99E-02	2,66E-01	0,00E+00	0,00E+00	2,71E-02	0,00E+00	5,27E-03	7,38E+00	0,00E+00
GWP-biogenic (kg CO_2 eq.)	8,98E-02	2,50E-05	2,03E-03	0,00E+00	0,00E+00	8,00E-06	0,00E+00	1,04E-05	9,19E-02	0,00E+00
GWP-luluc (kg CO_2 eq)	6,58E-03	2,59E-05	4,61E-04	0,00E+00	0,00E+00	1,54E-05	0,00E+00	1,47E-06	7,08E-03	0,00E+00
GWP-total (kg CO_2 eq)	7,11E+00	7,00E-02	2,68E-01	0,00E+00	0,00E+00	2,71E-02	0,00E+00	5,28E-03	7,48E+00	0,00E+00
ODP (kg CFC 11 eq.)	5,60E-07	1,51E-08	1,67E-08	0,00E+00	0,00E+00	5,46E-09	0,00E+00	2,17E-09	6,00E-07	0,00E+00
AP (mol H^+ eq.)	3,94E-02	3,74E-04	1,41E-03	0,00E+00	0,00E+00	1,32E-04	0,00E+00	5,00E-05	4,14E-02	0,00E+00
EP-freshwater (kg PO_4^{3-} eq.)	3,49E-03	4,29E-05	1,31E-04	0,00E+00	0,00E+00	1,65E-05	0,00E+00	6,66E-06	3,69E-03	0,00E+00
EP-freshwater (kg P eq)	2,68E-04	6,31E-07	1,33E-05	0,00E+00	0,00E+00	3,38E-07	0,00E+00	5,90E-08	2,82E-04	0,00E+00
EP-marine (kg N eq.)	6,85E-03	1,05E-04	2,40E-04	0,00E+00	0,00E+00	4,03E-05	0,00E+00	1,72E-05	7,26E-03	0,00E+00
EP-terrestrial (mol N eq.)	8,09E-02	1,16E-03	2,74E-03	0,00E+00	0,00E+00	4,46E-04	0,00E+00	1,90E-04	8,55E-02	0,00E+00
POCP (kg NMVOC eq.)	2,27E-02	3,41E-04	7,55E-04	0,00E+00	0,00E+00	1,29E-04	0,00E+00	5,51E-05	2,40E-02	0,00E+00
ADP-minerals&metals (kg Sb eq.) [1]	2,01E-02	1,78E-06	2,02E-04	0,00E+00	0,00E+00	1,27E-06	0,00E+00	4,82E-08	2,03E-02	0,00E+00
ADP-fossil (MJ) [1]	9,62E+01	1,02E+00	3,59E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	1,01E+02	0,00E+00
WDP (m^3) [1]	2,58E+00	3,25E-03	5,77E-02	0,00E+00	0,00E+00	1,58E-03	0,00E+00	6,60E-03	2,65E+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 CO2 eq.) [2]	6,83E+00	6,92E-02	2,60E-01	0,00E+00	0,00E+00	2,68E-02	0,00E+00	5,15E-03	7,19E+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)	2,14E+01	1,13E-02	5,15E-01	0,00E+00	0,00E+00	6,16E-03	0,00E+00	1,19E-03	2,19E+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)	2,30E+01	1,13E-02	5,32E-01	0,00E+00	0,00E+00	6,16E-03	0,00E+00	1,19E-03	2,36E+01	0,00E+00
PENRE (MJ)	9,62E+01	1,02E+00	3,59E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	1,01E+02	0,00E+00
PENRM (MJ)	6,64E+00	0,00E+00	6,70E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,70E+00	0,00E+00
PENRT (MJ)	1,03E+02	1,02E+00	3,66E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	1,08E+02	0,00E+00
SM (kg)	7,27E-01	0,00E+00	7,34E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,34E-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)	1,22E-01	1,92E-04	2,06E-03	0,00E+00	0,00E+00	7,88E-05	0,00E+00	1,64E-04	1,24E-01	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)	2,62E-03	2,64E-06	2,77E-05	0,00E+00	0,00E+00	1,08E-06	0,00E+00	2,20E-07	2,65E-03	0,00E+00
Non-hazardous waste disposed (kg)	4,91E+00	4,67E-02	1,83E-01	0,00E+00	0,00E+00	1,17E-02	0,00E+00	1,00E+00	6,15E+00	0,00E+00
Radioactive waste disposed (kg)	2,14E-04	6,75E-06	1,10E-05	0,00E+00	0,00E+00	2,44E-06	0,00E+00	9,67E-07	2,35E-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

Transition fittings with copper inclusion

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Polyethylene	0,19	0	0
Carbon black	0,005	0	0
Copper	0,81	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.)	3,84E+00	6,99E-02	2,34E-01	0,00E+00	0,00E+00	2,71E-02	0,00E+00	5,27E-03	4,18E+00	0,00E+00
GWP-biogenic (kg CO_2 eq.)	2,55E-02	2,50E-05	1,38E-03	0,00E+00	0,00E+00	8,00E-06	0,00E+00	1,04E-05	2,69E-02	0,00E+00
GWP-luluc (kg CO_2 eq)	2,29E-03	2,59E-05	4,18E-04	0,00E+00	0,00E+00	1,54E-05	0,00E+00	1,47E-06	2,75E-03	0,00E+00
GWP-total (kg CO_2 eq)	3,87E+00	7,00E-02	2,36E-01	0,00E+00	0,00E+00	2,71E-02	0,00E+00	5,28E-03	4,21E+00	0,00E+00
ODP (kg CFC 11 eq.)	3,47E-07	1,51E-08	1,45E-08	0,00E+00	0,00E+00	5,46E-09	0,00E+00	2,17E-09	3,84E-07	0,00E+00
AP (mol H^+ eq.)	6,48E-02	3,74E-04	1,66E-03	0,00E+00	0,00E+00	1,32E-04	0,00E+00	5,00E-05	6,70E-02	0,00E+00
EP-freshwater (kg PO_4^{3-} eq.)	4,60E-03	4,29E-05	1,42E-04	0,00E+00	0,00E+00	1,65E-05	0,00E+00	6,66E-06	4,81E-03	0,00E+00
EP-freshwater (kg P eq)	4,98E-04	6,31E-07	1,56E-05	0,00E+00	0,00E+00	3,38E-07	0,00E+00	5,90E-08	5,15E-04	0,00E+00
EP-marine (kg N eq.)	6,55E-03	1,05E-04	2,37E-04	0,00E+00	0,00E+00	4,03E-05	0,00E+00	1,72E-05	6,95E-03	0,00E+00
EP-terrestrial (mol N eq.)	9,73E-02	1,16E-03	2,91E-03	0,00E+00	0,00E+00	4,46E-04	0,00E+00	1,90E-04	1,02E-01	0,00E+00
POCP (kg NMVOC eq.)	2,31E-02	3,41E-04	7,59E-04	0,00E+00	0,00E+00	1,29E-04	0,00E+00	5,51E-05	2,44E-02	0,00E+00
ADP-minerals&metals (kg Sb eq.) [1]	9,97E-04	1,78E-06	1,09E-05	0,00E+00	0,00E+00	1,27E-06	0,00E+00	4,82E-08	1,01E-03	0,00E+00
ADP-fossil (MJ) [1]	6,09E+01	1,02E+00	3,24E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	6,57E+01	0,00E+00
WDP (m^3) [1]	2,37E+00	3,25E-03	5,56E-02	0,00E+00	0,00E+00	1,58E-03	0,00E+00	6,60E-03	2,44E+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]	3,72E+00	6,92E-02	2,29E-01	0,00E+00	0,00E+00	2,68E-02	0,00E+00	5,15E-03	4,05E+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)	1,35E+01	1,13E-02	4,36E-01	0,00E+00	0,00E+00	6,16E-03	0,00E+00	1,19E-03	1,39E+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)	1,51E+01	1,13E-02	4,53E-01	0,00E+00	0,00E+00	6,16E-03	0,00E+00	1,19E-03	1,56E+01	0,00E+00
PENRE (MJ)	6,09E+01	1,02E+00	3,24E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	6,57E+01	0,00E+00
PENRM (MJ)	9,07E+00	0,00E+00	9,16E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,16E+00	0,00E+00
PENRT (MJ)	6,99E+01	1,02E+00	3,33E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	7,48E+01	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)	5,09E-02	1,92E-04	1,35E-03	0,00E+00	0,00E+00	7,88E-05	0,00E+00	1,64E-04	5,27E-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)	5,97E-05	2,64E-06	2,11E-06	0,00E+00	0,00E+00	1,08E-06	0,00E+00	2,20E-07	6,57E-05	0,00E+00
Non-hazardous waste disposed (kg)	1,16E+00	4,67E-02	1,46E-01	0,00E+00	0,00E+00	1,17E-02	0,00E+00	1,00E+00	2,36E+00	0,00E+00
Radioactive waste disposed (kg)	1,13E-04	6,75E-06	9,99E-06	0,00E+00	0,00E+00	2,44E-06	0,00E+00	9,67E-07	1,33E-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

Transition fittings with brass inclusion

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Polyethylene	0,29	0	0
Carbon black	0,007	0	0
Brass	0,70	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	

Some brass components contain lead in concentration 3,5% weight/weight (Source: Eurostandard declaration of 06/06/2019, https://www.eurostandard.it/wp-content/uploads/2020/11/REACH_dichiarazione_rev0.pdf).
The lead (N.CE 231-100-4, N. CAS 7439-92-1) is included in candidate list of ECHA as SVHC.

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.)	5,76E+00	6,99E-02	2,54E-01	0,00E+00	0,00E+00	2,71E-02	0,00E+00	5,27E-03	6,12E+00	0,00E+00
GWP-biogenic (kg CO_2 eq.)	2,36E-02	2,50E-05	1,37E-03	0,00E+00	0,00E+00	8,00E-06	0,00E+00	1,04E-05	2,50E-02	0,00E+00
GWP-luluc (kg CO_2 eq)	5,87E-03	2,59E-05	4,54E-04	0,00E+00	0,00E+00	1,54E-05	0,00E+00	1,47E-06	6,37E-03	0,00E+00
GWP-total (kg CO_2 eq)	5,79E+00	7,00E-02	2,56E-01	0,00E+00	0,00E+00	2,71E-02	0,00E+00	5,28E-03	6,15E+00	0,00E+00
ODP (kg CFC 11 eq.)	4,43E-07	1,51E-08	1,57E-08	0,00E+00	0,00E+00	5,46E-09	0,00E+00	2,17E-09	4,82E-07	0,00E+00
AP (mol H^+ eq.)	2,88E-01	3,74E-04	3,90E-03	0,00E+00	0,00E+00	1,32E-04	0,00E+00	5,00E-05	2,92E-01	0,00E+00
EP-freshwater (kg PO_4^{3-} eq.)	1,39E-02	4,29E-05	2,36E-04	0,00E+00	0,00E+00	1,65E-05	0,00E+00	6,66E-06	1,42E-02	0,00E+00
EP-freshwater (kg P eq)	2,29E-03	6,31E-07	3,35E-05	0,00E+00	0,00E+00	3,38E-07	0,00E+00	5,90E-08	2,32E-03	0,00E+00
EP-marine (kg N eq.)	1,53E-02	1,05E-04	3,26E-04	0,00E+00	0,00E+00	4,03E-05	0,00E+00	1,72E-05	1,58E-02	0,00E+00
EP-terrestrial (mol N eq.)	2,22E-01	1,16E-03	4,17E-03	0,00E+00	0,00E+00	4,46E-04	0,00E+00	1,90E-04	2,28E-01	0,00E+00
POCP (kg NMVOC eq.)	6,04E-02	3,41E-04	1,14E-03	0,00E+00	0,00E+00	1,29E-04	0,00E+00	5,51E-05	6,21E-02	0,00E+00
ADP-minerals&metals (kg Sb eq.) [1]	1,81E-02	1,78E-06	1,82E-04	0,00E+00	0,00E+00	1,27E-06	0,00E+00	4,82E-08	1,83E-02	0,00E+00
ADP-fossil (MJ) [1]	8,62E+01	1,02E+00	3,50E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	9,13E+01	0,00E+00
WDP (m^3) [1]	4,00E+00	3,25E-03	7,20E-02	0,00E+00	0,00E+00	1,58E-03	0,00E+00	6,60E-03	4,08E+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]	5,58E+00	6,92E-02	2,48E-01	0,00E+00	0,00E+00	2,68E-02	0,00E+00	5,15E-03	5,93E+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)	1,69E+01	1,13E-02	4,70E-01	0,00E+00	0,00E+00	6,16E-03	0,00E+00	1,19E-03	1,74E+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)	1,85E+01	1,13E-02	4,87E-01	0,00E+00	0,00E+00	6,16E-03	0,00E+00	1,19E-03	1,90E+01	0,00E+00
PENRE (MJ)	8,62E+01	1,02E+00	3,50E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	9,13E+01	0,00E+00
PENRM (MJ)	1,38E+01	0,00E+00	1,40E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,40E+01	0,00E+00
PENRT (MJ)	1,00E+02	1,02E+00	3,64E+00	0,00E+00	0,00E+00	3,89E-01	0,00E+00	1,47E-01	1,05E+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)	1,84E-01	1,92E-04	2,68E-03	0,00E+00	0,00E+00	7,88E-05	0,00E+00	1,64E-04	1,87E-01	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)	2,29E-03	2,64E-06	2,44E-05	0,00E+00	0,00E+00	1,08E-06	0,00E+00	2,20E-07	2,32E-03	0,00E+00
Non-hazardous waste disposed (kg)	1,15E+00	4,67E-02	1,46E-01	0,00E+00	0,00E+00	1,17E-02	0,00E+00	1,00E+00	2,36E+00	0,00E+00
Radioactive waste disposed (kg)	1,63E-04	6,75E-06	1,06E-05	0,00E+00	0,00E+00	2,44E-06	0,00E+00	9,67E-07	1,84E-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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