

Environmental Product Declaration



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

Cross-linked polyethylene and multilayer piping systems

from

Brass & Fittings, S.L.



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-04328
Publication date:	2021-07-27
Valid until:	2026-07-25

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): <i>PCR 2019:14 Construction products, version 1.11</i>
PCR review was conducted by: The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com . Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via info@environdec.com .
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input checked="" type="checkbox"/> External <input type="checkbox"/> Internal Covering <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier: Tecnalia R&I Certificacion, SL Auditor: Cristina Gazulla Santos info@tecnaliacertificacion.com Accredited by: ENAC n°125/C-PR283 accreditation.
Procedure for follow-up of data during EPD validity involves third party verifier: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.

Company information

Owner of the EPD: Brass & Fittings, S.L.

Description of the organisation:

Brass & Fittings is a company that, under the Pressman brand, since 2003 has been researching, innovating and distributing the highest quality plastic pipe and underfloor heating products that are marketed through the professional sales channel.

With an eye on offering sustainable, efficient and reliable installation solutions for professionals, Brass & Fittings products are characterized by providing high added value to their customers. With this objective, the effort to share knowledge about products, materials and applications is explained, in a way that contributes to the development of the sector or to the improvement of energy efficiency in its field of work.

Similarly, by carrying out training actions with its customers, the innovation generated by the company reaches to end users in an appropriate way to favour the objective of sustainable development.

Since its inception, B&F has focused on the quality of all its products, which is accredited by the twelve AENOR certifications that guarantee that its pipeline products and water circulation products comply with current regulations.

In particular, it has the relevant certifications for the following product ranges:

- Plastics piping systems for hot and cold water installations - Crosslinked polyethylene (PE-X). (UNE EN ISO 15875)
- Multilayer piping systems for hot and cold water installations inside buildings. (UNE EN ISO 21003)
- Plastics piping systems for hot and cold water installations - Polyethylene of raised temperature resistance (PE-RT) (UNE EN ISO 22391)
- Water based surface embedded heating and cooling systems (UNE EN ISO 1264)

Additionally, it also has certifications for its electroweldable polyethylene accessories, copper accessories and flexible hoses.

Name and location of production site:

Avenida Alcalde Francisco Caballero (pol ind Cogullada), 16
50014 Zaragoza (España)

Contact:

Jose Miguel Azcona Gaztelu
Quality department
jmazcona@saltoki.es

Product information

Product name: cross-linked polyethylene and multilayer piping systems

Product identification and product description: This EPD covers our main piping systems PEX-a cross-linked polyethylene pipes and the multilayer systems PERT-AL-PERT and PE-AL-PEX-b. The system PEX refers to cross-linked polyethylene material and PERT refers to polyethylene material of raised temperature resistance. The multilayers pipes are compound of five-layer which materials from inside to outside are respectively PE or PERT, adhesive, aluminium, adhesive, PE or PEX-b. Plastic pipes can be used inside buildings in plumbing, cold water and domestic hot water installations and in heating and air conditioning installations of any kind.

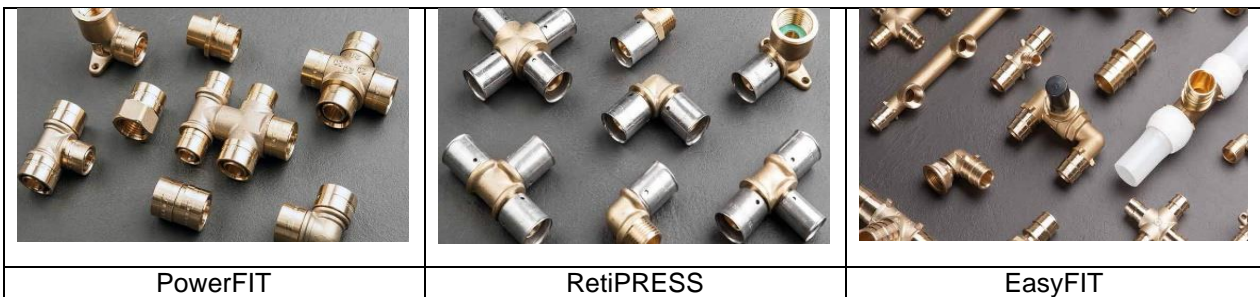
		
PEX-a cross-linked polyethylene pipes	PERT-AL-PERT multilayer pipes	PE-AL-PEX-b multilayer pipes

The characteristics of the pipes analyzed are as follows:

CHARACTERISTIC	PEX-a	PERT-AL-PERT	PE-AL-PEX-b
PHYSICAL			
Density	951 kg/m ³	>930 kg/m ³	>930 kg/m ³
Crosslinking Degree	>70% peso	-	-
Rugosity	0,007 mm	0,007 mm	0,007 mm
THERMAL			
Maximum service temperature	95 °C	95 °C	95 °C
Maximum point temperature	110 °C	110 °C	110 °C
Heat behavior	120 °C; 1h.	120 °C; 1h.	120 °C; 1h.
Coefficient of linear expansion	0,026 mm/m °K	0,025 mm/m °K	0,025 mm/m °K
Specific heat at 23 °C	2,3 KJ/Kg-K	-	-
Thermal conductivity	0,35-0,38 W/m-K	0,43 W/m-K	0,43 W/m-K
Temperatura VICAT	130-132 °C	-	-
MECHANICAL			
Tensile strength	>22 N/mm ²	>25 N/mm ²	>25 N/mm ²
Elongation at break	>400 %	>400 %	>400 %
Modulus of elasticity at 20 °C	>800 N/mm ²	-	-
Resistance to internal pressure			
s=4,8 Mpa, 95 °C	>1 hours	>1 hours	>1 hours
s =4,7 Mpa, 95 °C	>22 hours	>22 hours	>22 hours
s =4,6 Mpa, 95 °C	>165 hours	>165 hours	>165 hours
s =4,4 Mpa, 95 °C	>1.000 hours	>1.000 hours	>1.000 hours
s =2,5 Mpa, 110 °C	>1 year	>1 year	>1 year

These pipes can be combined with 5 types of accessories:

- **Powerfit:** Pipeline system for hot and cold water installations, with cross-linked polyethylene polyethylene pipe, brass fitting and sliding sleeve joint type.
- **Retipres:** Pipeline system for hot and cold water installations, with cross-linked polyethylene polyethylene pipe, brass fitting and with press fitting joint type.
- **MultiPress:** Pipeline system for hot and cold water installations, with multilayer pipe, brass fitting and with press fitting joint type.
- **EasyFit:** Pipeline system for hot and cold water installations, with cross-linked polyethylene polyethylene pipe, , brass fitting and with expansion ring joint type.
- **PushFit:** Pipeline system for hot and cold water installations, with cross-linked polyethylene polyethylene pipe and multilayer pipe and without tools joint type.



All this families are intended for building and construction applications. The combinations analyzed in this EPD are the following:

- PEX-a pipes and Retipres fittings
- PEX-a pipes and PowerFit fittings
- PEX-a pipes and EasyFit fittings
- PEX-a pipes and PushFit fittings
- PERT-AL-PERT and PushFit fittings
- PERT-AL-PERT and MultiPress fittings
- PE-AL-PEX-b and PushFit fittings
- PE-AL-PEX-b and MultiPress fittings

PEX pipes are designed and produced complied with standard UNE-EN ISO 15875.

PERT-AL-PERT and PE-AL-PEX-b pipes are designed and produced complied with standard UNE EN ISO-21003.

UN CPC code: 36320 - Tubes, pipes and hoses, and fittings therefore, of plastics

LCA information

Declared unit: 1 kg of piping systems. The results of this EPD are representative of the weighted average cross-linked polyethylene and multilayer piping systems and fittings. It is based on 1kg product output to calculate the impact on environment in the phases of material supply, transport, manufacturing, packaging and end of life of the product. The combinations analyzed in this EPD are the following:

- 1 kg of PEX-a pipes and Retipres fittings
- 1 kg of PEX-a pipes and PowerFit fittings
- 1 kg of PEX-a pipes and EasyFit fittings
- 1 kg of PEX-a pipes and PushFit fittings
- 1 kg of PERT-AL-PERT and PushFit fittings
- 1 kg of PERT-AL-PERT and MultiPress fittings
- 1 kg of PE-AL-PEX-b and PushFit fittings
- 1 kg of PE-AL-PEX-b and MultiPress fittings

Reference service life: RSL is not relevant for this EPD

Time representativeness: 2020

Database(s) and LCA software used: All the data used to model the process and obtain the Life Cycle Inventory are specific data and have been obtained by measurements made during the year 2020. They are representative of the different processes implemented during the manufacturing process. The data has been measured directly at production factories. In addition, the most complete and highest quality European life cycle inventory database, Ecoinvent 3.6, has been used, as this database contains the most extensive and updated information and its scope coincides with the geographical, technological and temporal area of the project. The LCA was modelled with Simapro 9.1.1.1.

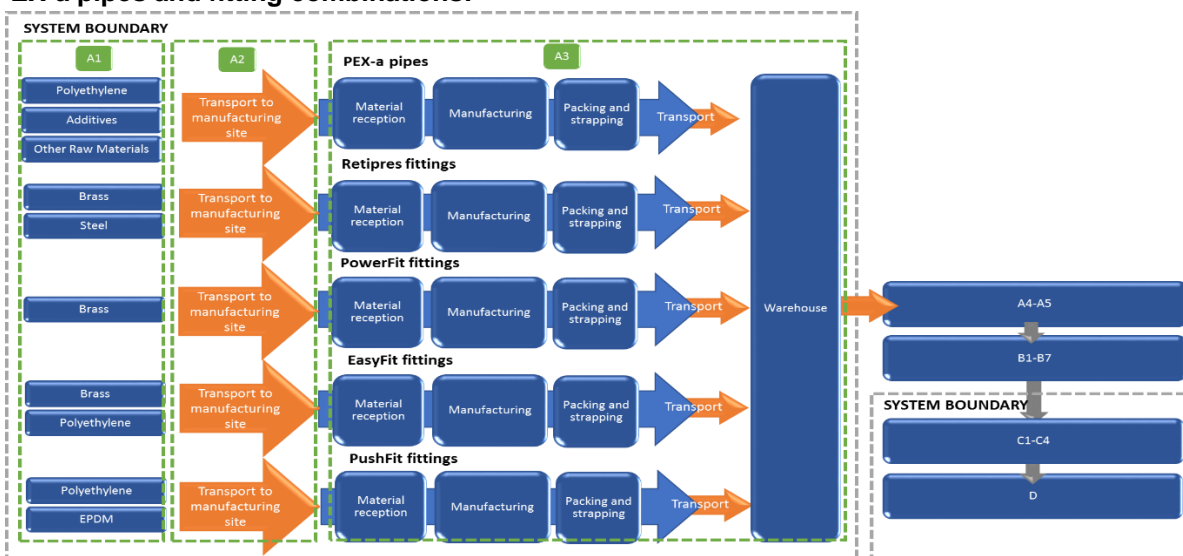
Description of system boundaries:

Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D). The life cycle stages A4-A5, B1-B7 were excluded from the LCA study.

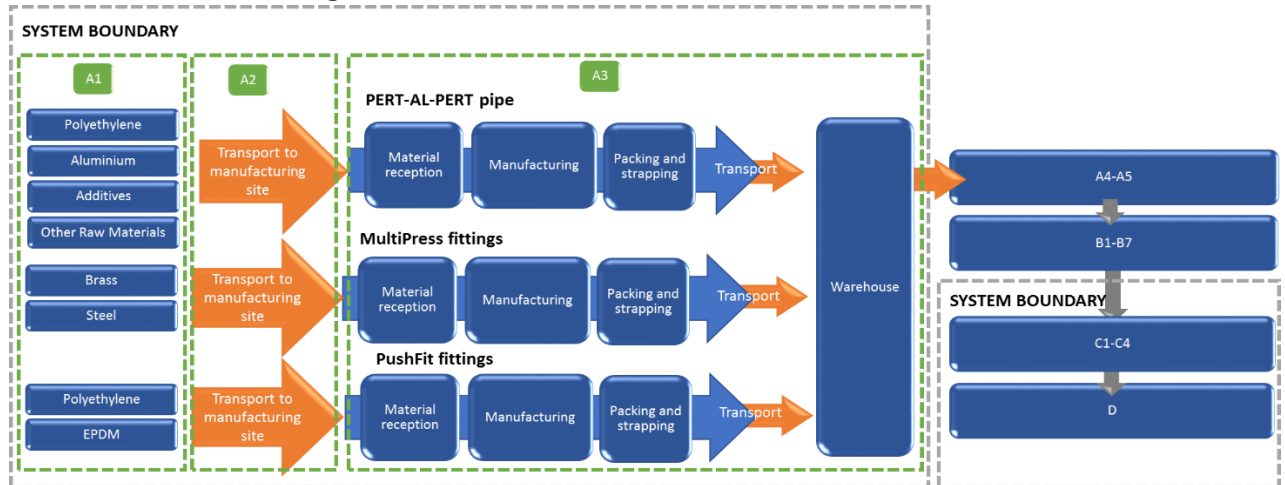
System diagram:

The diagrams for the different combinations of systems analysed in this EPD are shown below:

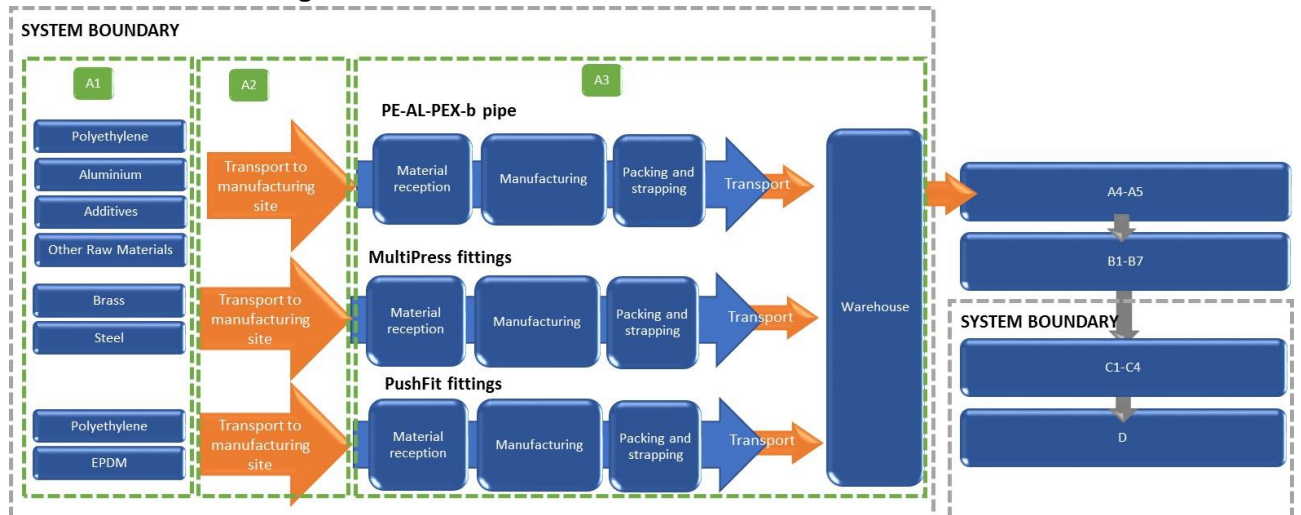
PEX-a pipes and fitting combinations:



PERT-AL-PERT and fitting combinations:



PE-AL-PEX-b and fitting combinations:



Manufacturing process:

The production takes place in following steps:

➤ **PEX-a pipes and fitting combinations:**

The manufacturing process of PEX pipes begins with the extrusion of polyethylene resin and additives. Subsequently the tube is rolled up and introduced into the crosslinking sauna. The pipes are cut and packed for further shipping to the warehouse.

In the case of fittings, the metal elements are forged, machined and then assembled. In the case of plastic elements, the raw material is injected and subsequently assembled.

The Transport of raw materials to each manufacturing site takes place by road and boat. The final products are delivered to Brass & Fittings's warehouse from for each manufacturing site by truck.

➤ ***PERT-AL-PERT and fitting combinations:***

The manufacturing process of PERT-AL-PERT pipes begins with the extrusion of polyethylene resin and additives. A layer of adhesive is spread on the outer surface and the aluminum layer is welded. A new layer of adhesive is given, the outer polyethylene layer is extruded and the tube is rolled up. The pipes are cut and packed for further shipping to the warehouse.

In the case of fittings, the metal elements are forged, machined and then assembled. In the case of plastic elements, the raw material is injected and subsequently assembled.

The Transport of raw materials to each manufacturing site takes place by road and boat. The final products are delivered to Brass & Fittings's warehouse from for each manufacturing site by truck.

➤ ***PE-AL-PEX-b and fitting combinations:***

The manufacturing process of PE-AL-PEX-b pipes begins with the extrusion of polyethylene resin and additives. A layer of adhesive is spread on the outer surface and the aluminum layer is welded. A new layer of adhesive is given and the outer polyethylene layer is extruded. Subsequently the tube is rolled up and introduced into the crosslinking sauna. The pipes are cut and packed for further shipping to the warehouse.

In the case of fittings, the metal elements are forged, machined and then assembled. In the case of plastic elements, the raw material is injected and subsequently assembled.

The Transport of raw materials to each manufacturing site takes place by road and boat. The final products are delivered to Brass & Fittings's warehouse from for each manufacturing site by truck.

More information: For more information please contact jmazcona@saltoki.es

Author of the Life Cycle Assessment:

IK ingenieria
Av. Cervantes 51, Edif. 10, planta 5, dpto.
748970 Basauri, Bizkaia (Spain)

Data quality

The environmental impact of the steel profiles and accessories has been calculated based on the international standards established for the development of environmental product declarations, such as ISO 14025 for the preparation of the environmental product declaration, ISO 14040 and ISO 14044 for the preparation of the life cycle analysis, UNE-EN 15804_2012+A2_2020 (MARCH 2020) and the Product Category Rules PCR "2019:14 CONSTRUCTION PRODUCTS" (Version 1.1) of the CPC 42190. Data has been collected in 2020 and is representative of that year. Data for raw material supply, transport to fabrication plant and production (A1-A3) is based on specific consumption data for the each production factory. Generic background datasets were used for the downstream processes. SimaPro v9.1.1.1. software was used to prepare the life cycle analysis together with the Ecoinvent 3.6 database. Characterization factors from EN15804: 2012 + A2:2019.

Assumptions

The following assumptions have been made in this EPD:

- ✓ It does not include the manufacturing processes of the capital goods or spare parts and/or maintenance with a life of more than three years.
- ✓ The environmental impact of infrastructure for general management, office, and headquarters operations is not included.
- ✓ The impact caused by people (common activities, travel for work...) will not be considered.
- ✓ The processes associated with fuel production are intrinsically included in the indicators in ECOINVENT's database used in carrying out the LCA.
- ✓ The environmental impact of external transport has been calculated using lorries from the ECOINVENT 3.6 database. These lorries have been selected to reflect the most realistic scenario possible.

Cut-off rules

The standard ISO 14025 and the PCR "2019:14 CONSTRUCTION PRODUCTS" indicate that the life cycle inventory data should include a minimum of 95% of the total inputs (materials and energy) for each stage. This cut-off rule does not apply for hazardous materials and substances. No such cut-off criteria have been taken into account in this study.

Allocation

The consumption of materials and energy, as well as machine maintenance and auxiliary materials, have been allocated by the total tons of profiles and accessories produced.

LCA Scenarios and additional technical information

These are representative end of life scenarios for the analyzed product systems:

Dismantling/demolition (module C1):

Since they are not products with a structural use, the energy consumption of this phase is considered not relevant.

Transport (module C2)

With a collection rate of 100%, the transports are carried out by lorry (EURO 5) over 50 km.

Waste processing (modules C3 and C4)

Due to the complexity of separating the product at the end of its life for its correct management, it has been considered that 100% of the pipes are sent to landfill. Only the recovery of the brass parts of the accessories is considered, due to its economic value.

Recyclability potentials (module D)

Module D contains credits from the recycling of the brass in module C3. For the recycling process is considered that the brass is collected and recycled for use in substitution of virgin metal.

LCA Scenarios for end of life

Processes	Per Declared unit	
Collection process specified by type	0,56-100	Kg collected separately
	0,00-0,54	Kg collected with mixed construction waste
Recovery system specified by type	0,00	Kg for reuse
	0,00-0,54	Kg for recycling
	0,00	Kg for energy recovery
Disposal specified by type	0,56-100	Kg for final disposal
Assumptions for scenario transportation	lorry 16-32 metric ton, EURO5 Consumption: 0,03kg/km Distnace:50 km	

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	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x	
Geography	GLO	GLO	GLO	ND	ND	ND	ND	ND	ND	ND	ND	ND	GLO	GLO	GLO	GLO	GLO	
Specific data used	>95%							-	-	-	-	-	-	-	-	-	-	
Variation – products	-					-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	-					-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	PEX-a and RetiPress			PEX-a and PowerFit			PEX-a and EasyFit			PEX-a and PushFit		
	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Polyethylene	4,36E-01	0,00%	0,00%	4,26E-01	0,00%	0,00%	5,81E-01	0,00%	0,00%	6,54E-01	0,00%	0,00%
Additives	3,89E-03	0,00%	0,00%	3,80E-03	0,00%	0,00%	4,95E-03	0,00%	0,00%	5,83E-03	0,00%	0,00%
Brass	5,31E-01	0,00%	0,00%	5,70E-01	0,00%	0,00%	3,61E-01	0,00%	0,00%	3,40E-01	0,00%	0,00%
Steel	2,88E-02	0,00%	0,00%	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%
Polysulfone	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%	5,28E-02	0,00%	0,00%	0,00E+00	0,00%	0,00%
Aluminum	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%
Adhesive	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%
EPDM	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%	0,00E+00	0,00%	0,00%
TOTAL	1,00E+00	0,00%	0,00%	1,00E+00	0,00%	0,00%	1,00E+00	0,00%	0,00%	1,00E+00	0,00%	0,00%
Packaging materials Plastic	Weight, kg	Weight-% (versus the product)		Weight, kg	Weight-% (versus the product)		Weight, kg	Weight-% (versus the product)		Weight, kg	Weight-% (versus the product)	
	5,16E-03	0,52%		4,92E-03	0,49%		2,16E-02	2,16%		1,64E-02	1,64%	
Paper	0,00E+00	0,00%		0,00E+00	0,00%		0,00E+00	0,00%		0,00E+00	0,00%	
Paperboard	2,13E-02	2,13%		1,48E-02	1,48%		2,62E-02	2,62%		2,28E-02	2,28%	
TOTAL	2,64E-02	2,64%		1,97E-02	1,97%		4,78E-02	4,78%		3,92E-02	3,92%	

Product components	PERT-AL-PERT and PushFit			PERT-AL-PERT and MultiPress			PE-AL-PEX-b and PushFit			PE-AL-PEX-b and MultiPress		
	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Polyethylene	5,60E-01	0,00%	0,00%	4,66E-01	0,00%	0,00%	2,43E-01	0,00%	0,00%	2,04E-01	0,00%	0,00%
Additives	3,97E-03	0,00%	0,00%	3,29E-03	0,00%	0,00%	3,43E-01	0,00%	0,00%	2,86E-01	0,00%	0,00%
Brass	0,00E+00	0,00%	0,00%	2,96E-01	0,00%	0,00%	0,00E+00	0,00%	0,00%	2,69E-01	0,00%	0,00%
Steel	0,00E+00	0,00%	0,00%	2,15E-02	0,00%	0,00%	0,00E+00	0,00%	0,00%	1,95E-02	0,00%	0,00%
Polysulfone	1,80E-01	0,00%	0,00%	0,00E+00	0,00%	0,00%	1,50E-01	0,00%	0,00%	0,00E+00	0,00%	0,00%
Aluminum	2,30E-01	0,00%	0,00%	1,91E-01	0,00%	0,00%	2,17E-01	0,00%	0,00%	1,81E-01	0,00%	0,00%
Adhesive	2,65E-02	0,00%	0,00%	2,20E-02	0,00%	0,00%	4,73E-02	0,00%	0,00%	3,95E-02	0,00%	0,00%
EPDM	0,00E+00	0,00%	0,00%	5,64E-04	0,00%	0,00%	0,00E+00	0,00%	0,00%	5,11E-04	0,00%	0,00%
TOTAL	1,00E+00	0,00%	0,00%	1,00E+00	0,00%	0,00%	1,00E+00	0,00%	0,00%	1,00E+00	0,00%	0,00%
Packaging materials Plastic	Weight, kg	Weight-% (versus the product)		Weight, kg	Weight-% (versus the product)		Weight, kg	Weight-% (versus the product)		Weight, kg	Weight-% (versus the product)	
	2,51E-02	2,51%		1,69E-02	1,69%		1,51E-02	1,51%		9,38E-03	0,94%	
Paper	5,75E-02	5,75%		5,88E-02	5,88%		4,75E-01	47,49%		4,07E-01	40,68%	
Paperboard	1,21E-02	1,21%		0,00E+00	0,00%		1,01E-02	1,01%		0,00E+00	0,00%	
TOTAL	9,47E-02	9,47%		7,57E-02	7,57%		5,00E-01	50,01%		4,16E-01	41,62%	

Packaging: Product packaging includes plastic packing film, paper and cardboard.

No substances included in the Candidate List of Substances of Very High Concern for authorization under REACH Regulations are present in these pipe systems manufactured by Brass&Fittings, either above the threshold for registration with the European Chemicals Agency or above 0,1% (wt/wt).

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
1 kg of piping system: PEX-a pipes and Retipres fittings							
GWP-fossil	kg CO ₂ eq.	8,87E+00	0,00E+00	8,33E-03	0,00E+00	6,46E-02	-1,31E+00
GWP-biogenic	kg CO ₂ eq.	1,85E-03	0,00E+00	4,45E-06	0,00E+00	4,96E-05	3,22E-03
GWP-luluc	kg CO ₂ eq.	9,91E-03	0,00E+00	2,91E-06	0,00E+00	1,06E-06	-2,47E-03
GWP-total	kg CO ₂ eq.	8,88E+00	0,00E+00	8,34E-03	0,00E+00	6,47E-02	-1,31E+00
ODP	kg CFC 11 eq.	5,24E-07	0,00E+00	1,89E-09	0,00E+00	1,57E-09	-7,88E-08
AP	mol H ⁺ eq.	5,33E-01	0,00E+00	3,41E-05	0,00E+00	3,71E-05	-1,76E-01
EP-freshwater	kg PO ₄ ³⁻ eq.	1,29E-02	0,00E+00	2,01E-07	0,00E+00	1,49E-07	-3,40E-03
EP-freshwater	kg P eq.	4,20E-03	0,00E+00	6,54E-08	0,00E+00	4,84E-08	-1,11E-03
EP-marine	kg N eq.	2,95E-02	0,00E+00	1,01E-05	0,00E+00	2,46E-05	-7,76E-03
EP-terrestrial	mol N eq.	4,21E-01	0,00E+00	1,12E-04	0,00E+00	1,49E-04	-1,17E-01
POCP	kg NMVOC eq.	1,14E-01	0,00E+00	3,42E-05	0,00E+00	5,68E-05	-3,17E-02
ADP-minerals&metals*	kg Sb eq.	3,30E-02	0,00E+00	2,26E-07	0,00E+00	3,74E-08	-1,20E-02
ADP-fossil*	MJ	1,21E+02	0,00E+00	1,26E-01	0,00E+00	1,14E-01	-1,34E+01
WDP	m ³ eq	5,80E+00	0,00E+00	3,50E-04	0,00E+00	1,10E-03	-1,46E+00
1 kg of piping system: PEX-a pipes and PowerFit fittings							
GWP-fossil	kg CO ₂ eq.	1,29E+01	0,00E+00	8,33E-03	0,00E+00	6,29E-02	-1,50E+00
GWP-biogenic	kg CO ₂ eq.	-1,16E-02	0,00E+00	4,45E-06	0,00E+00	4,82E-05	3,70E-03
GWP-luluc	kg CO ₂ eq.	1,10E-02	0,00E+00	2,91E-06	0,00E+00	9,81E-07	-2,84E-03
GWP-total	kg CO ₂ eq.	1,29E+01	0,00E+00	8,34E-03	0,00E+00	6,30E-02	-1,50E+00
ODP	kg CFC 11 eq.	7,90E-07	0,00E+00	1,89E-09	0,00E+00	1,45E-09	-9,06E-08
AP	mol H ⁺ eq.	6,08E-01	0,00E+00	3,41E-05	0,00E+00	3,41E-05	-2,02E-01
EP-freshwater	kg PO ₄ ³⁻ eq.	1,46E-02	0,00E+00	2,01E-07	0,00E+00	1,39E-07	-3,91E-03
EP-freshwater	kg P eq.	4,76E-03	0,00E+00	6,54E-08	0,00E+00	4,51E-08	-1,27E-03
EP-marine	kg N eq.	3,43E-02	0,00E+00	1,01E-05	0,00E+00	2,32E-05	-8,91E-03
EP-terrestrial	mol N eq.	4,87E-01	0,00E+00	1,12E-04	0,00E+00	1,37E-04	-1,34E-01
POCP	kg NMVOC eq.	1,32E-01	0,00E+00	3,42E-05	0,00E+00	5,30E-05	-3,65E-02
ADP-minerals&metals*	kg Sb eq.	3,74E-02	0,00E+00	2,26E-07	0,00E+00	3,47E-08	-1,38E-02
ADP-fossil*	MJ	1,71E+02	0,00E+00	1,26E-01	0,00E+00	1,05E-01	-1,54E+01
WDP	m ³ eq	6,51E+00	0,00E+00	3,50E-04	0,00E+00	8,19E-04	-1,68E+00
1 kg of piping system PEX-a pipes and EasyFit fittings							
GWP-fossil	kg CO ₂ eq.	9,12E+00	0,00E+00	8,33E-03	0,00E+00	9,09E-02	-9,47E-01
GWP-biogenic	kg CO ₂ eq.	-1,51E-02	0,00E+00	4,45E-06	0,00E+00	7,13E-05	2,33E-03
GWP-luluc	kg CO ₂ eq.	8,67E-03	0,00E+00	2,91E-06	0,00E+00	1,40E-06	-1,79E-03
GWP-total	kg CO ₂ eq.	9,11E+00	0,00E+00	8,34E-03	0,00E+00	9,10E-02	-9,47E-01
ODP	kg CFC 11 eq.	5,83E-07	0,00E+00	1,89E-09	0,00E+00	2,06E-09	-5,70E-08
AP	mol H ⁺ eq.	3,93E-01	0,00E+00	3,41E-05	0,00E+00	4,92E-05	-1,27E-01
EP-freshwater	kg PO ₄ ³⁻ eq.	9,44E-03	0,00E+00	2,01E-07	0,00E+00	1,98E-07	-2,46E-03
EP-freshwater	kg P eq.	3,08E-03	0,00E+00	6,54E-08	0,00E+00	6,46E-08	-8,02E-04
EP-marine	kg N eq.	2,30E-02	0,00E+00	1,01E-05	0,00E+00	4,16E-05	-5,61E-03
EP-terrestrial	mol N eq.	3,22E-01	0,00E+00	1,12E-04	0,00E+00	1,98E-04	-8,44E-02
POCP	kg NMVOC eq.	8,89E-02	0,00E+00	3,42E-05	0,00E+00	7,66E-05	-2,30E-02
ADP-minerals&metals*	kg Sb eq.	2,38E-02	0,00E+00	2,26E-07	0,00E+00	4,95E-08	-8,67E-03
ADP-fossil*	MJ	1,41E+02	0,00E+00	1,26E-01	0,00E+00	1,51E-01	-9,68E+00
WDP	m ³ eq	5,95E+00	0,00E+00	3,50E-04	0,00E+00	9,15E-04	-1,06E+00
1 kg of piping system PEX-a pipes and PushFit fittings							
GWP-fossil	kg CO ₂ eq.	4,72E+00	0,00E+00	8,33E-03	0,00E+00	1,35E-01	0,00E+00
GWP-biogenic	kg CO ₂ eq.	4,62E-03	0,00E+00	4,45E-06	0,00E+00	1,11E-04	0,00E+00
GWP-luluc	kg CO ₂ eq.	2,74E-03	0,00E+00	2,91E-06	0,00E+00	2,14E-06	0,00E+00
GWP-total	kg CO ₂ eq.	4,73E+00	0,00E+00	8,34E-03	0,00E+00	1,35E-01	0,00E+00
ODP	kg CFC 11 eq.	5,46E-07	0,00E+00	1,89E-09	0,00E+00	3,12E-09	0,00E+00
AP	mol H ⁺ eq.	2,14E-02	0,00E+00	3,41E-05	0,00E+00	7,53E-05	0,00E+00
EP-freshwater	kg PO ₄ ³⁻ eq.	5,13E-04	0,00E+00	2,01E-07	0,00E+00	3,02E-07	0,00E+00
EP-freshwater	kg P eq.	1,67E-04	0,00E+00	6,54E-08	0,00E+00	9,84E-08	0,00E+00
EP-marine	kg N eq.	4,16E-03	0,00E+00	1,01E-05	0,00E+00	8,45E-05	0,00E+00

EP-terrestrial	mol N eq.	4,36E-02	0,00E+00	1,12E-04	0,00E+00	3,04E-04	0,00E+00
POCP	kg NMVOC eq.	1,99E-02	0,00E+00	3,42E-05	0,00E+00	1,16E-04	0,00E+00
ADP-minerals&metals*	kg Sb eq.	6,20E-05	0,00E+00	2,26E-07	0,00E+00	7,49E-08	0,00E+00
ADP-fossil*	MJ	1,19E+02	0,00E+00	1,26E-01	0,00E+00	2,28E-01	0,00E+00
WDP	m ³ eq	3,03E+00	0,00E+00	3,50E-04	0,00E+00	1,05E-03	0,00E+00
1 kg of piping system PERT-AL-PERT and PushFit fittings							
GWP-fossil	kg CO ₂ eq.	9,80E+00	0,00E+00	8,33E-03	0,00E+00	1,40E-01	0,00E+00
GWP-biogenic	kg CO ₂ eq.	-1,94E-01	0,00E+00	4,45E-06	0,00E+00	1,10E-04	0,00E+00
GWP-luluc	kg CO ₂ eq.	2,88E-03	0,00E+00	2,91E-06	0,00E+00	2,12E-06	0,00E+00
GWP-total	kg CO ₂ eq.	9,61E+00	0,00E+00	8,34E-03	0,00E+00	1,40E-01	0,00E+00
ODP	kg CFC 11 eq.	5,10E-07	0,00E+00	1,89E-09	0,00E+00	3,11E-09	0,00E+00
AP	mol H ⁺ eq.	5,98E-02	0,00E+00	3,41E-05	0,00E+00	7,48E-05	0,00E+00
EP-freshwater	kg PO ₄ ³⁻ eq.	7,48E-04	0,00E+00	2,01E-07	0,00E+00	2,99E-07	0,00E+00
EP-freshwater	kg P eq.	2,43E-04	0,00E+00	6,54E-08	0,00E+00	9,75E-08	0,00E+00
EP-marine	kg N eq.	1,08E-02	0,00E+00	1,01E-05	0,00E+00	6,94E-05	0,00E+00
EP-terrestrial	mol N eq.	1,19E-01	0,00E+00	1,12E-04	0,00E+00	3,03E-04	0,00E+00
POCP	kg NMVOC eq.	3,78E-02	0,00E+00	3,42E-05	0,00E+00	1,17E-04	0,00E+00
ADP-minerals&metals*	kg Sb eq.	5,64E-05	0,00E+00	2,26E-07	0,00E+00	7,47E-08	0,00E+00
ADP-fossil*	MJ	1,38E+02	0,00E+00	1,26E-01	0,00E+00	2,28E-01	0,00E+00
WDP	m ³ eq	2,37E+00	0,00E+00	3,50E-04	0,00E+00	1,04E-03	0,00E+00
1 kg of piping system PERT-AL-PERT and MultiPress fittings							
GWP-fossil	kg CO ₂ eq.	1,14E+01	0,00E+00	8,33E-03	0,00E+00	9,99E-02	-7,24E-01
GWP-biogenic	kg CO ₂ eq.	-1,64E-01	0,00E+00	4,45E-06	0,00E+00	7,58E-05	1,78E-03
GWP-luluc	kg CO ₂ eq.	6,65E-03	0,00E+00	2,91E-06	0,00E+00	1,52E-06	-1,37E-03
GWP-total	kg CO ₂ eq.	1,12E+01	0,00E+00	8,34E-03	0,00E+00	1,00E-01	-7,24E-01
ODP	kg CFC 11 eq.	4,75E-07	0,00E+00	1,89E-09	0,00E+00	2,25E-09	-4,36E-08
AP	mol H ⁺ eq.	3,32E-01	0,00E+00	3,41E-05	0,00E+00	5,36E-05	-9,73E-02
EP-freshwater	kg PO ₄ ³⁻ eq.	7,44E-03	0,00E+00	2,01E-07	0,00E+00	2,14E-07	-1,88E-03
EP-freshwater	kg P eq.	2,42E-03	0,00E+00	6,54E-08	0,00E+00	6,96E-08	-6,14E-04
EP-marine	kg N eq.	2,36E-02	0,00E+00	1,01E-05	0,00E+00	3,73E-05	-4,29E-03
EP-terrestrial	mol N eq.	3,14E-01	0,00E+00	1,12E-04	0,00E+00	2,16E-04	-6,46E-02
POCP	kg NMVOC eq.	8,60E-02	0,00E+00	3,42E-05	0,00E+00	8,38E-05	-1,76E-02
ADP-minerals&metals*	kg Sb eq.	1,80E-02	0,00E+00	2,26E-07	0,00E+00	5,38E-08	-6,63E-03
ADP-fossil*	MJ	1,35E+02	0,00E+00	1,26E-01	0,00E+00	1,64E-01	-7,40E+00
WDP	m ³ eq	3,92E+00	0,00E+00	3,50E-04	0,00E+00	1,10E-03	-8,08E-01
1 kg of piping system PE-AL-PEX-b and PushFit fittings							
GWP-fossil	kg CO ₂ eq.	1,15E+01	0,00E+00	8,33E-03	0,00E+00	1,41E-01	0,00E+00
GWP-biogenic	kg CO ₂ eq.	-9,23E-01	0,00E+00	4,45E-06	0,00E+00	1,10E-04	0,00E+00
GWP-luluc	kg CO ₂ eq.	6,68E-03	0,00E+00	2,91E-06	0,00E+00	2,11E-06	0,00E+00
GWP-total	kg CO ₂ eq.	1,06E+01	0,00E+00	8,34E-03	0,00E+00	1,41E-01	0,00E+00
ODP	kg CFC 11 eq.	5,76E-07	0,00E+00	1,89E-09	0,00E+00	3,11E-09	0,00E+00
AP	mol H ⁺ eq.	6,69E-02	0,00E+00	3,41E-05	0,00E+00	7,47E-05	0,00E+00
EP-freshwater	kg PO ₄ ³⁻ eq.	1,07E-03	0,00E+00	2,01E-07	0,00E+00	2,99E-07	0,00E+00
EP-freshwater	kg P eq.	3,48E-04	0,00E+00	6,54E-08	0,00E+00	9,73E-08	0,00E+00
EP-marine	kg N eq.	1,19E-02	0,00E+00	1,01E-05	0,00E+00	6,66E-05	0,00E+00
EP-terrestrial	mol N eq.	1,32E-01	0,00E+00	1,12E-04	0,00E+00	3,02E-04	0,00E+00
POCP	kg NMVOC eq.	4,12E-02	0,00E+00	3,42E-05	0,00E+00	1,17E-04	0,00E+00
ADP-minerals&metals*	kg Sb eq.	7,86E-05	0,00E+00	2,26E-07	0,00E+00	7,47E-08	0,00E+00
ADP-fossil*	MJ	1,61E+02	0,00E+00	1,26E-01	0,00E+00	2,28E-01	0,00E+00
WDP	m ³ eq	1,46E+01	0,00E+00	3,50E-04	0,00E+00	1,04E-03	0,00E+00
1 kg of piping system PE-AL-PEX-b and MultiPress fittings							
GWP-fossil	kg CO ₂ eq.	1,26E+01	0,00E+00	8,33E-03	0,00E+00	1,04E-01	-6,41E-01
GWP-biogenic	kg CO ₂ eq.	-7,74E-01	0,00E+00	4,45E-06	0,00E+00	7,90E-05	1,58E-03
GWP-luluc	kg CO ₂ eq.	9,51E-03	0,00E+00	2,91E-06	0,00E+00	1,58E-06	-1,21E-03
GWP-total	kg CO ₂ eq.	1,18E+01	0,00E+00	8,34E-03	0,00E+00	1,04E-01	-6,40E-01
ODP	kg CFC 11 eq.	5,42E-07	0,00E+00	1,89E-09	0,00E+00	2,35E-09	-3,86E-08
AP	mol H ⁺ eq.	3,12E-01	0,00E+00	3,41E-05	0,00E+00	5,58E-05	-8,61E-02
EP-freshwater	kg PO ₄ ³⁻ eq.	7,08E-03	0,00E+00	2,01E-07	0,00E+00	2,22E-07	-1,67E-03
EP-freshwater	kg P eq.	2,31E-03	0,00E+00	6,54E-08	0,00E+00	7,25E-08	-5,43E-04
EP-marine	kg N eq.	2,34E-02	0,00E+00	1,01E-05	0,00E+00	3,88E-05	-3,80E-03
EP-terrestrial	mol N eq.	3,06E-01	0,00E+00	1,12E-04	0,00E+00	2,25E-04	-5,71E-02
POCP	kg NMVOC eq.	8,43E-02	0,00E+00	3,42E-05	0,00E+00	8,73E-05	-1,55E-02

ADP-minerals&metals*	kg Sb eq.	1,63E-02	0,00E+00	2,26E-07	0,00E+00	5,60E-08	-5,87E-03
ADP-fossil*	MJ	1,55E+02	0,00E+00	1,26E-01	0,00E+00	1,71E-01	-6,55E+00
WDP	m ³ eq	1,40E+01	0,00E+00	3,50E-04	0,00E+00	1,13E-03	-7,14E-01
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						

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit						
Indicator	A1-A3	C1	C2	C3	C4	D
1 kg of piping system: PEX-a pipes and Retipres fittings						
GWP-GHG ¹	8,66E+00	0,00E+00	8,26E-03	0,00E+00	5,51E-02	-1,28E+00
1 kg of piping system: PEX-a pipes and PowerFit fittings						
GWP-GHG ¹	1,26E+01	0,00E+00	8,26E-03	0,00E+00	5,37E-02	-1,47E+00
1 kg of piping system PEX-a pipes and EasyFit fittings						
GWP-GHG ¹	8,89E+00	0,00E+00	8,26E-03	0,00E+00	7,76E-02	-9,23E-01
1 kg of piping system PEX-a pipes and PushFit fittings						
GWP-GHG ¹	4,55E+00	0,00E+00	8,26E-03	0,00E+00	1,15E-01	0,00E+00
1 kg of piping system PERT-AL-PERT and PushFit fittings						
GWP-GHG ¹	9,45E+00	0,00E+00	8,26E-03	0,00E+00	1,19E-01	0,00E+00
1 kg of piping system PERT-AL-PERT and MultiPress fittings						
GWP-GHG ¹	1,10E+01	0,00E+00	8,26E-03	0,00E+00	8,53E-02	-7,06E-01
1 kg of piping system PE-AL-PEX-b and PushFit fittings						
GWP-GHG ¹	1,11E+01	0,00E+00	8,26E-03	0,00E+00	1,20E-01	0,00E+00
1 kg of piping system PE-AL-PEX-b and MultiPress fittings						
GWP-GHG ¹	1,22E+01	0,00E+00	8,26E-03	0,00E+00	8,89E-02	-6,25E-01

Use of resources

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
1 kg of piping system: PEX-a pipes and Retipres fittings							
PERE	MJ	1,81E+01	0,00E+00	1,77E-03	0,00E+00	4,07E-03	-4,07E+00
PERM	MJ	3,29E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,84E+01	0,00E+00	1,77E-03	0,00E+00	4,07E-03	-4,07E+00
PENRE	MJ	1,02E+02	0,00E+00	1,26E-01	0,00E+00	1,14E-01	-1,34E+01
PENRM	MJ.	1,88E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,21E+02	0,00E+00	1,26E-01	0,00E+00	1,14E-01	-1,34E+01
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

¹ 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.

FW	m ³	1,46E-01	0,00E+00	1,32E-05	0,00E+00	1,39E-04	-3,58E-02
1 kg of piping system: PEX-a pipes and PowerFit fittings							
PERE	MJ	1,97E+01	0,00E+00	1,77E-03	0,00E+00	3,94E-03	-4,68E+00
PERM	MJ	2,29E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,99E+01	0,00E+00	1,77E-03	0,00E+00	3,94E-03	-4,68E+00
PENRE	MJ	1,53E+02	0,00E+00	1,26E-01	0,00E+00	1,05E-01	-1,54E+01
PENRM	MJ	1,84E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,71E+02	0,00E+00	1,26E-01	0,00E+00	1,05E-01	-1,54E+01
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,64E-01	0,00E+00	1,32E-05	0,00E+00	1,30E-04	-4,12E-02
1 kg of piping system PEX-a pipes and EasyFit fittings							
PERE	MJ	1,41E+01	0,00E+00	1,77E-03	0,00E+00	5,93E-03	-2,95E+00
PERM	MJ	4,20E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,45E+01	0,00E+00	1,77E-03	0,00E+00	5,93E-03	-2,95E+00
PENRE	MJ	1,15E+02	0,00E+00	1,26E-01	0,00E+00	1,51E-01	-9,68E+00
PENRM	MJ	2,57E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,41E+02	0,00E+00	1,26E-01	0,00E+00	1,51E-01	-9,68E+00
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,44E-01	0,00E+00	1,32E-05	0,00E+00	1,86E-04	-2,59E-02
1 kg of piping system PEX-a pipes and PushFit fittings							
PERE	MJ	2,90E+00	0,00E+00	1,77E-03	0,00E+00	9,54E-03	0,00E+00
PERM	MJ	3,63E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	3,27E+00	0,00E+00	1,77E-03	0,00E+00	9,54E-03	0,00E+00
PENRE	MJ	8,12E+01	0,00E+00	1,26E-01	0,00E+00	2,28E-01	0,00E+00
PENRM	MJ	3,81E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,19E+02	0,00E+00	1,26E-01	0,00E+00	2,28E-01	0,00E+00
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	6,57E-02	0,00E+00	1,32E-05	0,00E+00	2,83E-04	0,00E+00
1 kg of piping system PERT-AL-PERT and PushFit fittings							
PERE	MJ	6,14E+00	0,00E+00	1,77E-03	0,00E+00	9,28E-03	0,00E+00
PERM	MJ	1,11E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	7,25E+00	0,00E+00	1,77E-03	0,00E+00	9,28E-03	0,00E+00
PENRE	MJ	1,08E+02	0,00E+00	1,26E-01	0,00E+00	2,28E-01	0,00E+00
PENRM	MJ	3,01E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,38E+02	0,00E+00	1,26E-01	0,00E+00	2,28E-01	0,00E+00
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	5,78E-02	0,00E+00	1,32E-05	0,00E+00	2,82E-04	0,00E+00
1 kg of piping system PERT-AL-PERT and MultiPress fittings							
PERE	MJ	1,39E+01	0,00E+00	1,77E-03	0,00E+00	6,24E-03	-2,25E+00
PERM	MJ	9,30E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,49E+01	0,00E+00	1,77E-03	0,00E+00	6,24E-03	-2,25E+00
PENRE	MJ	1,15E+02	0,00E+00	1,26E-01	0,00E+00	1,64E-01	-7,40E+00
PENRM	MJ	2,08E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,35E+02	0,00E+00	1,26E-01	0,00E+00	1,64E-01	-7,40E+00
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

FW	m ³	1,01E-01	0,00E+00	1,32E-05	0,00E+00	2,02E-04	-1,98E-02
1 kg of piping system PE-AL-PEX-b and PushFit fittings							
PERE	MJ	2,18E+01	0,00E+00	1,77E-03	0,00E+00	9,23E-03	0,00E+00
PERM	MJ	4,95E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,22E+01	0,00E+00	1,77E-03	0,00E+00	9,23E-03	0,00E+00
PENRE	MJ	1,44E+02	0,00E+00	1,26E-01	0,00E+00	2,28E-01	0,00E+00
PENRM	MJ	1,70E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,61E+02	0,00E+00	1,26E-01	0,00E+00	2,28E-01	0,00E+00
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	3,52E-01	0,00E+00	1,32E-05	0,00E+00	2,82E-04	0,00E+00
1 kg of piping system PE-AL-PEX-b and MultiPress fittings							
PERE	MJ	2,62E+01	0,00E+00	1,77E-03	0,00E+00	6,50E-03	-1,99E+00
PERM	MJ	4,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,67E+01	0,00E+00	1,77E-03	0,00E+00	6,50E-03	-1,99E+00
PENRE	MJ	1,45E+02	0,00E+00	1,26E-01	0,00E+00	1,71E-01	-6,55E+00
PENRM	MJ	1,08E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,55E+02	0,00E+00	1,26E-01	0,00E+00	1,71E-01	-6,55E+00
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	3,43E-01	0,00E+00	1,32E-05	0,00E+00	2,10E-04	-1,75E-02
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 resources; 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 declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
1 kg of piping system: PEX-a pipes and Retipres fittings							
Hazardous waste disposed	kg	4,15E-03	0,00E+00	3,29E-07	0,00E+00	1,40E-07	-1,50E-03
Non-hazardous waste disposed	kg	2,72E+00	0,00E+00	6,01E-03	0,00E+00	5,20E-01	-5,50E-01
Radioactive waste disposed	kg	2,95E-04	0,00E+00	8,57E-07	0,00E+00	7,44E-07	-3,27E-05
1 kg of piping system: PEX-a pipes and PowerFit fittings							
Hazardous waste disposed	kg	4,71E-03	0,00E+00	3,29E-07	0,00E+00	1,27E-07	-1,72E-03
Non-hazardous waste disposed	kg	2,68E+00	0,00E+00	6,01E-03	0,00E+00	4,61E-01	-6,32E-01
Radioactive waste disposed	kg	3,20E-04	0,00E+00	8,57E-07	0,00E+00	6,87E-07	-3,76E-05
1 kg of piping system PEX-a pipes and EasyFit fittings							
Hazardous waste disposed	kg	3,01E-03	0,00E+00	3,29E-07	0,00E+00	1,81E-07	-1,08E-03
Non-hazardous waste disposed	kg	1,86E+00	0,00E+00	6,01E-03	0,00E+00	6,61E-01	-3,98E-01
Radioactive waste disposed	kg	2,53E-04	0,00E+00	8,57E-07	0,00E+00	9,86E-07	-2,37E-05
1 kg of piping system PEX-a pipes and PushFit fittings							
Hazardous waste disposed	kg	5,21E-05	0,00E+00	3,29E-07	0,00E+00	2,73E-07	0,00E+00
Non-hazardous waste disposed	kg	6,01E-01	0,00E+00	6,01E-03	0,00E+00	1,00E+00	0,00E+00
Radioactive waste disposed	kg	1,44E-04	0,00E+00	8,57E-07	0,00E+00	1,50E-06	0,00E+00

1 kg of piping system PERT-AL-PERT and PushFit fittings							
Hazardous waste disposed	kg	4,97E-05	0,00E+00	3,29E-07	0,00E+00	2,73E-07	0,00E+00
Non-hazardous waste disposed	kg	1,47E+00	0,00E+00	6,01E-03	0,00E+00	1,00E+00	0,00E+00
Radioactive waste disposed	kg	1,57E-04	0,00E+00	8,57E-07	0,00E+00	1,49E-06	0,00E+00
1 kg of piping system PERT-AL-PERT and MultiPress fittings							
Hazardous waste disposed	kg	2,27E-03	0,00E+00	3,29E-07	0,00E+00	1,99E-07	-8,28E-04
Non-hazardous waste disposed	kg	2,53E+00	0,00E+00	6,01E-03	0,00E+00	7,36E-01	-3,04E-01
Radioactive waste disposed	kg	2,32E-04	0,00E+00	8,57E-07	0,00E+00	1,07E-06	-1,81E-05
1 kg of piping system PE-AL-PEX-b and PushFit fittings							
Hazardous waste disposed	kg	1,26E-03	0,00E+00	3,29E-07	0,00E+00	2,73E-07	0,00E+00
Non-hazardous waste disposed	kg	1,52E+00	0,00E+00	6,01E-03	0,00E+00	1,00E+00	0,00E+00
Radioactive waste disposed	kg	2,24E-04	0,00E+00	8,57E-07	0,00E+00	1,49E-06	0,00E+00
1 kg of piping system PE-AL-PEX-b and MultiPress fittings							
Hazardous waste disposed	kg	3,08E-03	0,00E+00	3,29E-07	0,00E+00	2,07E-07	-7,33E-04
Non-hazardous waste disposed	kg	2,47E+00	0,00E+00	6,01E-03	0,00E+00	7,65E-01	-2,69E-01
Radioactive waste disposed	kg	2,82E-04	0,00E+00	8,57E-07	0,00E+00	1,12E-06	-1,60E-05

Output flows

Indicator	Unit	Results declared unit					
		A1-A3	C1	C2	C3	C4	D
1 kg of piping system: PEX-a pipes and Retipres fittings							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	7,86E-01	0,00E+00	0,00E+00	4,74E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
1 kg of piping system: PEX-a pipes and PowerFit fittings							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	8,85E-01	0,00E+00	0,00E+00	5,43E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
1 kg of piping system PEX-a pipes and EasyFit fittings							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	5,71E-01	0,00E+00	0,00E+00	3,42E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
1 kg of piping system PEX-a pipes and PushFit fittings							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	8,56E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
1 kg of piping system PERT-AL-PERT and PushFit fittings							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	3,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
1 kg of piping system PERT-AL-PERT and MultiPress fittings							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	4,50E-01	0,00E+00	0,00E+00	2,62E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
1 kg of piping system PE-AL-PEX-b and PushFit fittings							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	1,02E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
1 kg of piping system PE-AL-PEX-b and MultiPress fittings							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	3,92E-01	0,00E+00	0,00E+00	2,33E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Information on biogenic carbon content

Results per declared unit					
BIOGENIC CARBON CONTENT	Unit	QUANTITY			
		1 kg of piping system: PEX-a pipes and Retipres fittings	1 kg of piping system: PEX-a pipes and PowerFit fittings	1 kg of piping system PEX-a pipes and EasyFit fittings	1 kg of piping system PEX-a pipes and PushFit fittings
Biogenic carbon content in product	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Biogenic carbon content in packaging	kg C	1,06E-02	7,39E-03	7,61E-03	1,14E-02

Results per declared unit					
BIOGENIC CARBON CONTENT	Unit	QUANTITY			
		1 kg of piping system PERT-AL-PERT and PushFit fittings	1 kg of piping system PERT-AL-PERT and MultiPress fittings	1 kg of piping system PE-AL-PEX-b and PushFit fittings	1 kg of piping system PE-AL-PEX-b and MultiPress fittings
Biogenic carbon content in product	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Biogenic carbon content in packaging	kg C	3,48E-02	2,94E-02	2,43E-01	2,03E-01

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

Additional information

The technical datasheet can be found in the following contact:

Jose Miguel Azcona Gaztelu
Quality department
jmazcona@saltoki.es

Information related to Sector EPD

This is an individual EPD®

Differences versus previous versions

This is the first version of the EPD®.

References

- General Programme Instruction of the International EPD®System. Version 3.01.
- ISO 14020:2000 Environmental labels and declarations-General principles.
- ISO 14025:2010 Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures.
- ISO 14040:2006 Environmental Management-Life Cycle Assessment-Principles and framework.
- ISO 14044:2006 Environmental Management-Life Cycle Assessment-Requirements and guidelines.
- PCR 2019:14 Construction products. version 1.11
- EN 15804:2012+A2:2019 Sustainability of construction works-Environmental Product Declarations-Core rules for the product category of construction products

VERIFICATION STATEMENT CERTIFICATE CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD05501

TECNALIA R&I CERTIFICACION S.L., confirms that independent third-party verification has been conducted of the Environmental Product Declaration (EPD) on behalf of:

TECNALIA R&I CERTIFICACION S.L., confirma que se ha realizado verificación de tercera parte independiente de la Declaración Ambiental de Producto (DAP) en nombre de:

BRASS & FITTINGS, S.L.
Polígono Cogullada
Avenida Alcalde Caballero, 16
50014 - ZARAGOZA (SPAIN)

for the following product(s):
para el siguiente(s) producto(s):

**PIPING SYSTEMS PEX-a CROSS-LINKED POLYETHYLENE AND
MULTILAYER PERT-AL-PERT AND PE-AL-PEX-b.**
**SISTEMAS DE TUBERÍAS DE POLIETILENO ENTRAMADO PEX-a Y DE
MULTICAPA PERT-AL-PERT y PE-AL-PEX-b.**

with registration number **S-P-04328** in the International EPD® System (www.environdec.com)
con número de registro **S-P-04328** en el Sistema Internacional EPD® (www.environdec.com)

it's in conformity with:
es conforme con:

- **ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations.**
- **EN 15804:2012+A2:2019 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products.**
- **General Programme Instructions for the International EPD® System v.3.01.**
- **PCR 2019:14 Construction products v1.11.**
- **UN CPC Code: 54631 - Heating equipment installation services.**

Issued date / Fecha de emisión: 27/07/2021
Update date / Fecha de actualización: 27/07/2021
Valid until / Válido hasta: 25/07/2026
Serial N° / N° Serie: EPD0550100-E



Carlos Nazabal Alsua
Manager

This certificate is not valid without its related EPD.
Este certificado no es válido sin su correspondiente EPD.

El presente certificado está sujeto a modificaciones, suspensiones temporales y retiradas por TECNALIA R&I CERTIFICACION.
This certificate is subject to modifications, temporary suspensions and withdrawals by TECNALIA R&I CERTIFICACION.

El estado de vigencia del certificado puede confirmarse mediante consulta en www.tecnaliacertificacion.com.
The validity of this certificate can be checked through consultation in www.tecnaliacertificacion.com.



ENAC
CERTIFICACIÓN
N° 125/C-PR283

