

Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Mini ball valves, ball valves, washing machine taps, fittings and components machined from forging

EPD of multiple products, based on a representative product

from

Eurotermo S.r.l.



Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products from a company
EPD registration number:	EPD-IES-0029232:001
Version date:	2026-05-25
Validity date:	2031-05-24

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see 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	support@environdec.com

Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)	
Product Category Rules (PCR)	Construction Products 2019:14, Version 2.0.1 CEN standard EN 15804 serves as the core Product Category Rules (PCR)
PCR review was conducted by	The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/support.

Third-party Verification

LCA accountability	https://www.eurotermo.com/
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via	☒ Individual EPD verification without a pre-verified LCA/EPD tool Bureau Veritas Italia S.p.A. Viale Monza 347, 20126 Milano (MI) Accredited by: Accredia Accreditation number: 00031VV
Procedure for follow-up of data during EPD validity involves third party verifier	☐ Yes ☒ No

OWNERSHIP AND LIMITATIONS ON USE OF EPD

Ownership

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

Limitations

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Eurotermo S.r.l.

Address: Via Lunga, 18 - 25126 - Brescia – Italy

Contact: Pietro Notarangelo (pietro.notarangelo@eurotermo.com)

<https://www.eurotermo.com/>

Address and contact information of the LCA practitioner commissioned by the EPD owner:

Fedabo S.p.A. S.B. - Via Valeriana n.14 - 25047 Darfo Boario Terme (BS)

Description of the organisation:

Eurotermo S.r.l. is an Italian manufacturer founded in 1982 and part of the Saleri family industrial tradition, which has been active in the Brescia area (North of Italy) since 1895. The company originated from brass processing for plumbing and gas applications and evolved following the development and patenting of one of the first ball valves by Pierino Saleri in the 1950s, which marked the beginning of the company's specialization in valve technology.

Eurotermo operates internationally through long-standing collaborations with leading global groups. Over the last decade, the company has significantly increased its export share, reaching approximately 80% of total production. Manufacturing is fully integrated at the Eurotermo production site in Italy. The company performs all main processing stages in-house, including brass stamping (where applicable), CNC transfer machining, multi-spindle turning, automated assembly, functional testing, and packaging. Eurotermo processes several brass alloys for the production of mini-valves and related components, including CW617N-DW, CW724R, CW511L and CW625N.

Product-related or management system-related certifications:

- UNI-EN ISO 9001:2015 Quality Management System
- UNI-EN ISO 14001:2015 Environmental Management System

PRODUCT INFORMATION

Product name: Mini ball valves, ball valves, washing machine taps, fittings and components.

Product identification: The product covered by this declaration is a three-way mini valve and it represents the representative product that was identified starting from a real product code currently placed on the market. The product identified (1021Y3472-308) is representative of the following product series, that cover the entire production that goes through the stamping phase (followed by machining operations on transfer and multi-spindle machines):

- **MINI BALL VALVES**
 - SERIES: ZEUS – REA – EFESTO – DEMETRA - IRIS – AFRODITE
- **WASHING MACHINE TAPS**
 - SERIES: ATLANTE
- **ANGLE VALVES**
 - SERIES: POSEIDONE
- **DRAIN VALVES**
 - SERIES: ALFEO
- **BALL VALVES**
 - SERIES: ELIO – NEREO
- **H-BLOCK BALL VALVES FOR RADIATORS**
 - SERIES: ATENA

The EPD is representative of ball/multi turn valves from DN6 to DN50 and fittings machined from brass forging.

Further information can be found on the company website <https://www.eurothermo.com/>

UN CPC code:

43240 - Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like

Product description:

The three-way mini valve with compression ends for Ø15 mm copper pipe is used in both residential and industrial installations, for potable water distribution and for thermal fluid regulation in heating systems.

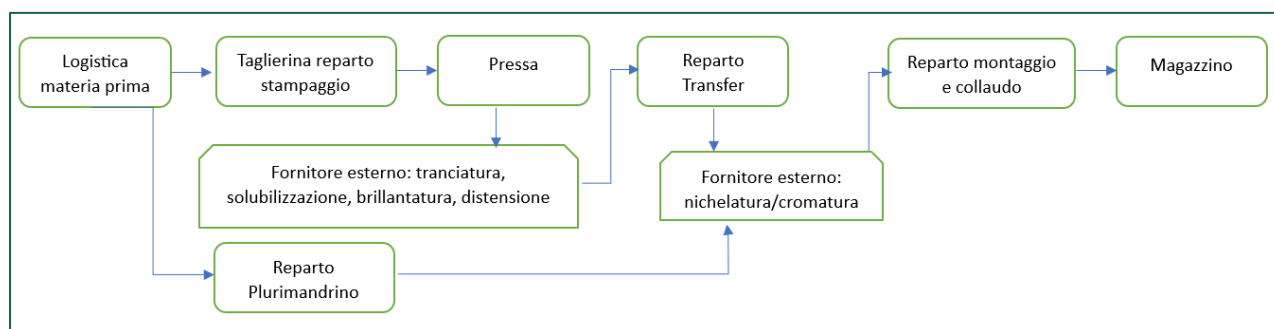
The manufacturing process begins with cutting the brass blank, followed by hot forging to form the valve body. The forged part is then trimmed to remove excess material (this operation is carried out by an external subcontractor).

After trimming, the component undergoes a solution heat treatment, performed by an external supplier, to ensure the required metallurgical properties. The semi-finished body is subsequently processed through transfer machining, where the final functional geometries, sealing surfaces, and internal passages are produced.

A further stress-relief heat treatment is then applied externally to reduce residual stresses generated during machining. The valve body is afterwards subjected to surface finishing (bright polishing) by an external supplier. Where required by the product specification, a surface coating process (chrome plating) is also applied by subcontractors.

The process continues with final assembly and leak testing, including the installation of all valve components. An additional post-assembly step is required to fit the compression nuts and olives.

Finally, the finished valve is packaged for distribution.



Name and location of production site: Via Lunga, 18 - 25126 - Brescia – Italy

CONTENT DECLARATION

Content declaration of multiple products	The declared unit is defined as 1 kg of finished brass mini valves according to the worst-case scenario, plus the related packaging.
Hazardous and toxic substances	The product contains substances from the SVHC candidate list in concentrations exceeding 0.1% of its weight.

PRODUCT CONTENT

Content name	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Brass – CW511L	0.97334	31.3%	0	0
PTFE (polytetrafluoroethylene)	0.00699	0	0	0
EPDM rubber	0.00027	0	0	0
PA6, 30% glass fibre reinforced (PA6 GF30)	0.01935	0	0	0
Carbon steel (C4C)	0.00489	0	0	0
TOTAL	1.00000	31.3%	0	0

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Plastic film - LDPE	0.00023	0.02 %	0
Machine roll - LDPE	0.00536	0.54 %	0
Box - cardboard	0.00720	0.72 %	0.45
Pallet – wood	0.01380	1.38 %	0.47
TOTAL	0.02659	2.66 %	0.92

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO₂.

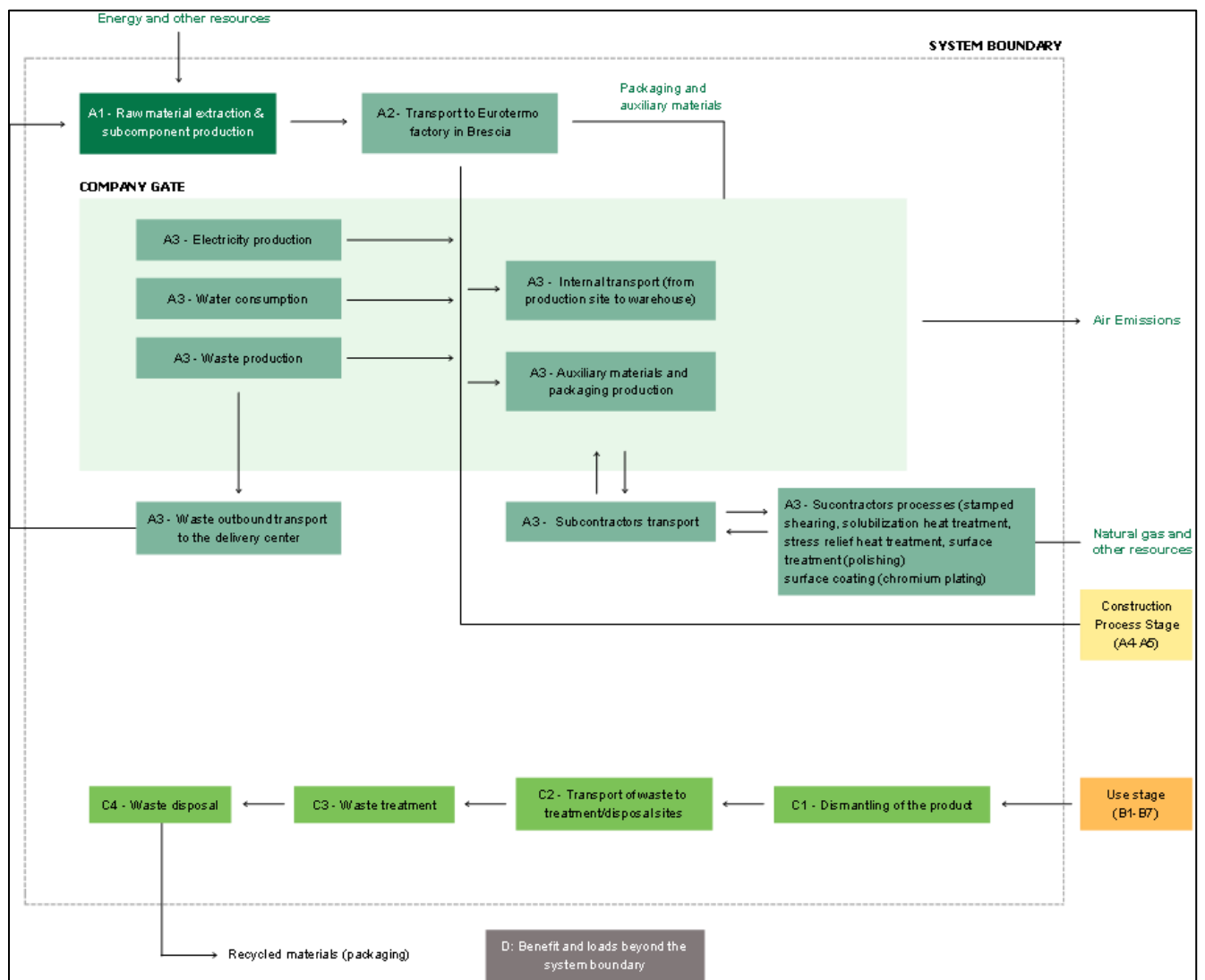
Hazardous substances from the candidate list of SVHC	EC No.	CAS No.	Mass-% per product or declared unit
Lead (Pb)	231-100-4	7439-92-1	Quantity between 0.1 and 2.2 of the weight of the finished product
Bis(α,α-dimethylbenzyl) peroxide	201-279-3	80-43-3	Quantities between 0.25 and 3 of the weight of the finished product

LCA INFORMATION

EPD based on declared or functional unit	Declared unit
Declared unit and reference flow	1 kg of valves Mass: 1 kg
Conversion factor to mass	1
Time representativeness	2025
Geographical scope	Global
Description of system boundaries	Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)
Are infrastructure or capital goods included in any upstream, core or downstream processes?	No
Data sources used for this EPD	ecoinvent database (general) ecoinvent 3.11 database
LCA Software	SimaPro Craft 10.2.0.2
Version of the EN 15804 reference package	EF Reference Package 3.1
Characterisation method	EN 15804 +A2 LCIA & LCI indicators V1.01
Cut-off rules	The LCA includes more than 95–99% of total mass and energy flows and environmental impacts for the considered life-cycle stages (A1–A3, C1–C4, and Module D). In accordance with the PCR, excluded items include: • water consumption from outsourced processing • electricity from warehouse • personnel business travel and commuting • R&D activities • infrastructure and capital goods
Allocation rules	Mass-based allocation criteria were applied to auxiliary materials, water consumption, air emissions, and waste generation to calculate impacts per declared unit. These streams have been normalised to production output using mass ratios and throughput data. No allocation between co-products was performed.

Process flow diagram

Process flow diagram of the product system, divided into the life-cycle stages and modules (or other division of the product life cycle, if defined in the PCR), showing the main processes included and the system boundary of the LCA. The diagram shall make it clear when the end-of-waste state is reached for main input flows of reused/recycled materials and recovered energy, and for output flows of reused/recycled materials and recovered energy exiting the end-of-life stage.



Data quality assessment

Description of data quality assessment and reference years	The quality of the data used for this EPD, in terms of time, geography and technology representativeness according to EN 15804:2012+A2:2019, Annex E, E2, is considered fair. Primary data refer to 2025, with data collection carried out at the beginning of 2026. For some processes, generic and proxy data from Ecoinvent 3.11 were used to ensure methodological consistency. Proxy data refer to modified or combined datasets adjusted to better represent specific materials and manufacturing conditions.
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Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1 - A3
Raw material	EPD	EPD-IES-0002583	2023	Secondary data	N/A
Inbound transport	Database	Ecoinvent 3.11	2024	Primary data	0.20%
Process consumption (electricity, water)	Database	Ecoinvent 3.11	2024	Primary data	5.40%
Process consumption of subcontractors (electricity, heat, materials)	Database	Ecoinvent 3.11	2024	Secondary data	N/A
Subcontractors' transports	Database	Ecoinvent 3.11	2024	Secondary data	N/A
Auxiliary materials	Database	Ecoinvent 3.11	2024	Secondary data	N/A
Emissions into the atmosphere	Database	Ecoinvent 3.11	2024	Primary data	0.00%
Finished product's packaging	Database	Ecoinvent 3.11	2024	Secondary data	N/A
Internal transport	Database	Ecoinvent 3.11	2024	Primary data	0.00%

Wastes and their transport to the collection point	Database	Ecoinvent 3.11	2024	Primary data	0.19%
Outbound transport to brass remelting wire mills	Database	Ecoinvent 3.11	2024	Primary data	0.09%
Total share of primary data, of GWP-GHG results for A1-A3					5.88%
Note	The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.				

ELECTRICITY USED IN THE MANUFACTURING PROCESS IN A3		
Type of electricity mix	Residual electricity mix on the domestic market	
Energy sources	RE Hydro	1.21%
	RE Wind	0.39%
	RE Solar	7.14%
	RE Biomass	0.75%
	RE Geothermal	0.00%
	RE Unspecified	0.00%
	Nuclear	4.73%
	FO Natural gas	7.33%
	FO Coal	9.16%
	FO Oil	0.44%
	FO Lignite	0.09%
	FO Unspecified	68.77%
Climate impact (GWP-GHG)	0.71 kg CO ₂ eq./kWh	

Method used to calculate residual electricity mix	Residual electricity mix on the Italian market
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System boundary

Description of the System boundary	Type a) Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)
Excluded modules?	Yes, there are excluded modules
Justification for omission of modules	B modules are excluded from the analyses since no use phase maintenance, repair or replacement and energy consumption is expected during the technical lifetime.

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	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	EU27	EU27	ITA	ND	ND	ND	ND	ND	ND	ND	ND	ND	GLO	GLO	GLO	GLO	EU27
Share of primary data	5.88%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	>10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

DEFAULT SCENARIO

Reference service life

Description of the default scenario in reference service life	Average RSL of 20 years
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Module C: End-of-life

Explanatory name of the default scenario in module C	Landfill
Description of the default scenario in module C	At the end of their service life, valves are manually removed from the system and undergo a structured end-of-life process.

Module C1: Dismantling of the product

The removal of the product is a manual operation and therefore the C1 module is set to zero.

Module C2: Transport of waste to treatment/disposal points

In the absence of specific data regarding the distance between the end-of-life location of the product and the collection center, the distance suggested by the applied PCR¹ was used, equal to 80 km. The mean of transport suggested by the applied PCR was also used, which is 16-32 tonne lorry (EURO 5).

Flow	Quantity	UoM	Characterization factor
End-of-life product transport	80	kg*km	Ecoinvent 3.11 – transport, freight, lorry, 16 – 32 metric ton, diesel, EURO 5 – RER

¹ See Table 4 – Default data for modelling modules C1,C2,C3 and C4 – Section 4.8.4 PCR Construction Products 2019:14 (v. 2.0.1)

Module C3: Waste treatment

Since the end-of-life scenario considered is 100% landfill and the valve is disposed of without any pre-treatment operations (such as sorting or mechanical processing), Module C3 is not applicable. No waste treatment processes (e.g., sorting, loading/unloading activities, or related diesel and electricity consumption) are included in the system boundaries.

Module C4: Waste disposal

All valves dismantled have been sent to the sanitary landfill.

Module D: beyond product life cycle scenario

In Module D, a substitution logic is applied (the “avoided burden” approach). Since the product under analysis, at the end of its life, must be disposed of, as it cannot be recovered (100% landfill scenario), potential benefits and loads beyond the system boundary are calculated with respect to the packaging of the finished product. The approach is based on the quantity of recycled packaging materials and/or recovered energy, assuming that they can substitute the production of equivalent virgin materials. According to UNI EN 15804, the calculation of loads and benefits beyond the system boundary per unit of output data from Module D is based on the following equation:

$$e_{\text{module D1}} = \sum_i (M_{MR,out,i} - M_{MR,in,i}) \times (E_{MR,after\ EoW\ out,i} - E_{VMSub\ out,i}) \times \left(\frac{Q_{R,out}}{Q_{Sub}} \right) \times Y$$

ENVIRONMENTAL PERFORMANCE

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	1.77E+01	0.00E+00	1.52E-02	0.00E+00	1.67E-02	-1.12E-05
GWP-fossil	kg CO ₂ eq.	1.76E+01	0.00E+00	1.52E-02	0.00E+00	1.67E-02	-1.29E-05
GWP-biogenic	kg CO ₂ eq.	1.09E-01	0.00E+00	1.00E-05	0.00E+00	7.16E-05	1.95E-06
GWP-luluc	kg CO ₂ eq.	2.47E-02	0.00E+00	5.05E-06	0.00E+00	1.83E-05	-2.62E-07
ODP	kg CFC 11 eq.	2.49E-05	0.00E+00	3.32E-10	0.00E+00	3.45E-10	-6.11E-13
AP	mol H ⁺ eq.	2.21E-01	0.00E+00	4.89E-05	0.00E+00	1.04E-04	-4.79E-08
EP-freshwater	kg P eq.	6.97E-03	0.00E+00	1.04E-06	0.00E+00	2.38E-06	-4.44E-09
EP-marine	kg N eq.	5.29E-02	0.00E+00	1.65E-05	0.00E+00	4.28E-05	-1.86E-08
EP-terrestrial	mol N eq.	7.52E-01	0.00E+00	1.79E-04	0.00E+00	4.13E-04	-1.40E-07
POCP	kg NMVOC eq.	1.68E-01	0.00E+00	7.41E-05	0.00E+00	1.37E-04	-7.91E-08
ADP-minerals&metals ¹	kg Sb eq.	3.84E-03	0.00E+00	5.12E-08	0.00E+00	3.64E-08	-5.80E-11
ADP-fossil ¹	MJ	2.26E+02	0.00E+00	2.16E-01	0.00E+00	3.18E-01	-3.78E-04
WDP ¹	m ³	1.71E+01	0.00E+00	1.09E-03	0.00E+00	-1.62E-01	-6.41E-06
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						
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). The environmental performance results are relative expressions and do not predict impacts on category endpoint, the exceeding of thresholds, safety margins or risks.						
¹ 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						

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG ²	kg CO ₂ eq.	1.76E+01	0.00E+00	1.52E-02	0.00E+00	1.67E-02	-1.31E-05
<i>Acronyms</i>	GWP-GHG = Global warming potential greenhouse gas.						
<i>General disclaimer</i>	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). The environmental performance results are relative expressions and do not predict impacts on category endpoint, the exceeding of thresholds, safety margins or risks.						
² <i>Disclaimer</i>	The GWP-GHG indicator is termed GWP-IOBC/GHG in the ILCD+EPD+ data format. The indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO ₂ is set to zero.						

Additional voluntary environmental performance indicators according to EN 15804

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Particulate matter emissions (PM) ¹	Disease incidence	1.61E-06	0.00E+00	1.22E-09	0.00E+00	2.13E-09	-3.81E-13
Ionizing radiation, human health (IRP) ³	kBq U235 eq.	9.12E-01	0.00E+00	2.57E-04	0.00E+00	4.72E-04	-1.12E-06
Eco-toxicity - freshwater (ETP-fw) ¹	CTUe	1.79E+03	0.00E+00	2.87E-02	0.00E+00	1.28E+02	-6.43E-05
Human toxicity, cancer effect (HTP-c) ¹	CTUh	3.67E-08	0.00E+00	2.60E-12	0.00E+00	9.21E-12	-2.49E-15
Human toxicity, non-cancer effects (HTP-nc) ¹	CTUh	9.37E-07	0.00E+00	1.35E-10	0.00E+00	1.76E-09	-7.53E-14
Land use related impacts/Soil quality (SQP) ¹	dimensionless	1.54E+02	0.00E+00	1.28E-01	0.00E+00	6.10E-01	-2.58E-04
<i>Acronyms</i>	PM = Potential incidence of disease due to particulate matter emissions; IRP = Potential human exposure efficiency relative to U235; ETP-fw = Potential comparative toxic unit for ecosystems; HTP-c = Potential comparative toxic unit for humans; HTP-nc = Potential comparative toxic unit for humans; SQP = Potential soil quality index.						
<i>General disclaimer</i>	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). The environmental performance results are relative expressions and do not predict impacts on category endpoint, the exceeding of thresholds, safety margins or risks.						
³ <i>Disclaimer</i>	This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						
¹ <i>Disclaimer</i>	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.						

² This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Resource use indicators

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	4.27E+01	0.00E+00	3.51E-03	0.00E+00	7.14E-03	-5.10E-05
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	4.27E+01	0.00E+00	3.51E-03	0.00E+00	7.14E-03	-5.10E-05
PENRE	MJ	2.26E+02	0.00E+00	2.16E-01	0.00E+00	3.18E-01	-3.80E-04
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.26E+02	0.00E+00	2.16E-01	0.00E+00	3.18E-01	-3.80E-04
SM	kg	1.12E+00	0.00E+00	9.64E-05	0.00E+00	1.17E-04	-6.16E-06
RSF	MJ	8.80E-03	0.00E+00	1.27E-06	0.00E+00	1.99E-06	-5.77E-07
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	4.37E-01	0.00E+00	2.70E-05	0.00E+00	-3.76E-03	-1.53E-07
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						
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). The environmental performance results are relative expressions and do not predict impacts on category endpoint, the exceeding of thresholds, safety margins or risks.						

Waste indicators

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	4.10E-01	0.00E+00	3.09E-04	0.00E+00	1.58E-03	-5.02E-07
Non-hazardous waste disposed	kg	8.70E+00	0.00E+00	6.63E-03	0.00E+00	2.85E+00	-1.52E-04
Radioactive waste disposed	kg	8.28E-05	0.00E+00	6.35E-08	0.00E+00	1.15E-07	-2.85E-10
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed						
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). The environmental performance results are relative expressions and do not predict impacts on category endpoint, the exceeding of thresholds, safety margins or risks.						

Output flow indicators

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
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	2.08E-02	0.00E+00	2.58E-06	0.00E+00	6.33E-06	5.30E-06
Materials for energy recovery	kg	3.73E-06	0.00E+00	1.37E-08	0.00E+00	2.28E-08	-2.79E-11
Exported energy, electricity	MJ	3.42E-01	0.00E+00	4.24E-05	0.00E+00	9.15E-04	-1.88E-07
Exported energy, thermal	MJ	9.44E-03	0.00E+00	5.20E-05	0.00E+00	8.47E-05	-5.36E-08
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). The environmental performance results are relative expressions and do not predict impacts on category endpoint, the exceeding of thresholds, safety margins or risks.						

INFORMATIONS RELATED TO EPDS OF MULTIPLE PRODUCTS

Justification for why this is representative	For the development of the EPD of multiple products, the representative product was identified starting from a real product code currently placed on the market, selected through extraction from the company's management system. This product code was used as the basis for the LCA modelling. In order to ensure representativeness of the entire product range and to adopt a conservative approach, specific worst-case assumptions were applied to the selected product.
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Percentage change in results relative to the best- and worst-case scenarios

LCA RESULTS PER DECLARED UNIT (MODULE A1-A3)	Unit	Best case (A1-A3)	Representative product (A1-A3)	Worst case (A1-A3)	% variation of the best-case scenario compared to the representative product	% variation of the best-case scenario compared to the representative product
Global warming potential - total (GWP-total)	kg CO ₂ eq	1.73E+01	1.77E+01	2.60E+01	-2%	47%
Global warming potential - fossil fuels (GWP-fossil)	kg CO ₂ eq	1.73E+01	1.76E+01	2.61E+01	-2%	48%
Global warming potential - biogenic (GWP-biogenic)	kg CO ₂ eq	4.17E-02	1.09E-01	-9.47E-02	-62%	-187%
Global warming potential - land use and land use change (GWP-luluc)	kg CO ₂ eq	2.47E-02	2.47E-02	3.20E-02	0%	29%
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	1.47E-05	2.49E-05	2.51E-05	-41%	1%
Acidification potential, accumulated exceedance (AP)	mol H ⁺ eq	2.07E-01	2.21E-01	4.14E-01	-6%	87%
Eutrophication potential - freshwater (EP-freshwater)	kg P eq	6.91E-03	6.97E-03	1.42E-02	-1%	104%
Eutrophication potential - marine (EP-marine)	kg N eq	5.26E-02	5.29E-02	1.07E-01	0%	103%
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq	7.50E-01	7.52E-01	1.59E+00	0%	112%
Photochemical ozone creation potential (POCP)	kg NMVOC eq	1.67E-01	1.68E-01	3.35E-01	0%	100%

Abiotic depletion potential - non-fossil resources (ADPE)	kg Sb eq	3.81E-03	3.84E-03	5.60E-03	-1%	46%
Abiotic depletion potential - fossil resources (ADPF)	MJ	2.33E+02	2.26E+02	3.17E+02	3%	41%
Water (user) deprivation potential (WDP)	m3 depriv.	1.65E+01	1.71E+01	5.65E+01	-3%	231%
Global warming potential (GWP-GHG)	kg CO2 eq	1.73E+01	1.76E+01	2.61E+01	-2%	48%
Particulate matter emissions (PM)	disease inc.	1.56E-06	1.61E-06	3.40E-06	-3%	112%
Ionizing radiation, human health (IRP)	kBq U-235 eq	9.15E-01	9.12E-01	9.30E-01	0%	2%
Eco-toxicity - freshwater (ETP-fw)	CTUe	1.78E+03	1.79E+03	3.34E+03	0%	87%
Human toxicity, cancer effect (HTP-c)	CTUh	3.53E-08	3.67E-08	5.01E-08	-4%	36%
Human toxicity, non-cancer effects (HTP-nc)	CTUh	9.31E-07	9.37E-07	1.05E-06	-1%	12%
Land use related impacts/Soil quality (SQP)	Pt	1.58E+02	1.54E+02	3.06E+02	2%	99%
Use of renewable primary energy as energy carrier (PERE)	MJ (LHV)	4.14E+01	4.27E+01	7.87E+01	-3%	84%
Use of renewable primary energy resources used as raw materials (PERM)	MJ (LHV)	0.00E+00	0.00E+00	0.00E+00	-	-
Total use of renewable primary energy (PERT)	MJ (LHV)	4.14E+01	4.27E+01	7.87E+01	-3%	84%
Use of non renewable primary energy as energy carrier (PENRE)	MJ (LHV)	2.33E+02	2.26E+02	3.17E+02	3%	41%
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ (LHV)	0.00E+00	0.00E+00	0.00E+00	-	-
Total use of non renewable primary energy resource (PENRT)	MJ (LHV)	2.33E+02	2.26E+02	3.17E+02	3%	41%
Use of secondary material (SM)	kg	1.08E+00	1.12E+00	5.21E-01	-4%	-54%
Use of renewable secondary fuels (RSF)	MJ (LHV)	2.82E-02	8.80E-03	8.84E-03	221%	0%
Use of non-renewable secondary fuels (NRSF)	MJ (LHV)	0.00E+00	0.00E+00	0.00E+00	-	-
Net use of fresh water (FW)	m3	4.23E-01	4.37E-01	1.32E+00	-3%	201%
Hazardous waste disposed (HWD)	kg	2.32E-01	4.10E-01	3.77E-01	-43%	-8%
Non-hazardous waste disposed (NHWD)	kg	8.82E+00	8.70E+00	7.82E+00	1%	-10%
Radioactive waste disposed (RWD)	kg	8.18E-05	8.28E-05	7.03E-05	-1%	-15%
Components for re-use (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	-	-
Materials for recycling (MFR)	kg	5.04E-03	2.08E-02	2.05E-02	-76%	-1%
Materials for energy recovery (MER)	kg	1.62E-06	3.73E-06	3.83E-06	-56%	3%
Exported electrical energy (EEE)	MJ	4.31E-01	3.42E-01	2.41E-01	26%	-30%
Exported thermal energy (EET)	MJ	1.10E-02	9.44E-03	2.26E-02	17%	139%

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
EPD	Environmental Product Declaration
ETS	Emission Trading System
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central product classification
GHG	Greenhouse Gas
PCR	Product Category Rule
PdR	Gas Delivery Point
POD	Point of Delivery

REFERENCES

- LCA Study of Mini ball valves, ball valves, washing machine taps, fittings and components machined from forging
- ISPRA - Table of national standard parameters 2025
- UNI EN ISO 14040:21 Environmental management - Life cycle assessment - Principles and framework;
- UNI EN ISO 14044:21 Environmental management - Life cycle assessment - Definition of the objective and scope and inventory analysis, life cycle impact assessment, life cycle interpretation;
- UNI EN ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures
- General Programme Instructions 5.0.1 (The International EPD System)
- PCR 2019:14 – Construction Products (v. 2.0.1) – valid until 2030-04-07
- EN 15804:2012+A2:2019/AC:2021: “Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products”
- AIB (2024) Residual Mix - <https://www.aib-net.org/facts/european-residual-mix/2024>

VERSION HISTORY

Original Version of the EPD, 2026-05-25

