

ENVIRONMENTAL PRODUCT DECLARATION

Manual Valves

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

Products included in the EPD:

Manual Valves

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

EPD of multiple products based on several representative products

EPD Owner
Cimberio S.p.a

Programme
International EPD System
www.environdec.com

Programme operator
EPD International AB

Registration number
EPD-IES-0026253:002

Version date
2025-10-24

Validity date
2030-10-24



EPD
INTERNATIONAL EPD SYSTEM



GENERAL INFORMATION

Programme information

Programme	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

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)	
Product Category Rules (PCR)	PCR 2019:14 Construction products (EN 15804+A2) (2.0.1)
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 .

Verification

LCA accountability	contatti@nexta.bureauveritas.com , contatti@nexta.bureauveritas.com , Cimberio S.p.a
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via	☒ EPD verification through an individual EPD verification ☐ EPD verification through EPD Process Certification* ☐ EPD verification through a fully pre-verified tool
Third-party verifier	Vito D'Incognito (Take Care International)
Approved by	International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier	☐ Yes ☒ No
*EPD Process Certification involves an accredited certification body certifying and periodically auditing the EPD process and conducting external and independent verification of EPDs that are regularly published. More information can be found in the General Programme Instructions on www.environdec.com . International EPD System.	

Ownership and limitations on use of 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.

Ownership

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

INFORMATION ABOUT EPD OWNER

EPD Owner	Cimberio S.p.a
Contact person name	Tiziano Guidetti
Contact person e-mail	tguidetti@cimberio.it
Organisation address	Italy San Maurizio D'Opaglio 28017 Via Torchio 57

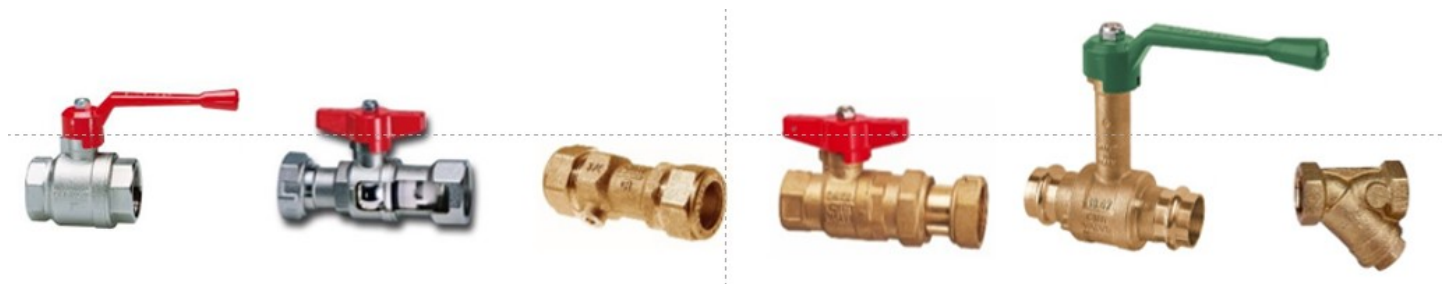
Description of the organisation of the EPD Owner

Cimberio S.p.A. is an Italian company specializing in the design and production of valves and components for plumbing, heating, air conditioning, and industrial systems. Founded in 1957 and headquartered in San Maurizio d'Opaglio, Italy. The company offers a wide range of products, including ball valves, check valves, balancing valves, and thermostatic valves, serving both residential and commercial markets. With a strong international presence, Cimberio S.p.A. combines advanced manufacturing techniques with strict quality control to meet the highest standards of performance and reliability.

PRODUCT INFORMATION

Product name	Manual Valves
Product identification	Metal valves non-motorized
Product description	Cimberio S.p.A. manufactures a comprehensive range of non-motorized brass valves designed for hydraulic, heating, and industrial applications. These manually operated valves are built from high-quality brass to ensure reliability, long lasting and resistance to corrosion. Among the key products are ball valves, check valves, and balancing valves, all engineered for straightforward and safe manual operation.
Technical purpose of product	Cimberio's brass valves stand out for their precise construction and compliance with performance standards. They are widely used in both residential and industrial systems—for potable water distribution as well as thermal fluid control—and are valued for their versatility and ease of installation
Manufacturing or service provision description	The production process begins with the manufacturing of raw brass and bronze components, which are created through casting and hot forging-operations performed by external subcontractors. Once these raw pieces are delivered, they undergo mechanical processing and are subsequently assembled with various valve components, such as handles, gaskets, balls, and fittings. Depending on the specific type of valve being produced, certain parts and components may receive additional surface treatments, including chrome plating or powder coating, to enhance durability and performance.
Material properties	Volumetric mass density: 8730 kg/m ³
Manufacturing site	Cimberio S.p.A Via Verdi 13 Italy Pogno 28076
Manufacturing site 2	Cimberio S.p.A Via Torchio 57 Italy San Maurizio D'Opaglio 28017
UN CPC code	415. Semi-finished products of copper, nickel, aluminium, lead, zinc and tin or their alloys
Geographical scope(s)	Global
Actual or technical lifespan	10 year(s)

PRODUCT IMAGES



CONTENT DECLARATION

Content declaration of multiple products	For each material, the total quantity used in all valves was calculated and expressed as a proportion of the overall weight of the sampled valves. In this approach, each BoM contributes to the average according to both the valve's total weight and the relative amount of each material it contains. This method ensures that the resulting composition represents a "average valve", reflecting the diversity of material mixes and the varying masses of the valve types considered.
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 ¹ , kg C/declared unit
CW617N-DW	0.48	0	0	0
CC491K	0.14	0	0	0
CW511L-DW	0.05	0	0	0
CC770S	0.07	0	0	0
CW602N-M	0.07	0	0	0
CW614N	0.05	0	0	0
CC754S	0.04	0	0	0
Steel	0.05	0	0	0
Aluminium	0.02	1.4	0	0
Plastic	0.02	0	0	0
Other materials	0.01	0	0	0
Total	1.00	1.4	0	0
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂			

PACKAGING MATERIALS			
Material name	Mass, kg	Mass-% (versus the product)	Biogenic material ¹ , kg C/declared unit
Paper	0.05	4.4	0.02
Wood	0.01	0.9	0.01
Plastic	0.01	0.3	0
Total	0.07	5.60	0.03

Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂
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HAZARDOUS AND TOXIC SUBSTANCES			
Hazardous/Toxic substances from the candidate list	EC No.	CAS No.	Mass per functional or declared unit %
Lead	231-100-4	7439-92-1	1.7

LCA INFORMATION

EPD based on declared or functional unit	Declared unit
Declared unit and reference flow	1 kg of manual valves Mass: 1 kg
Conversion factor to mass	1
Are infrastructure or capital goods included in any upstream, core or downstream processes?	☐ Yes ☒ No
Data sources used for this EPD	ecoinvent database (general) ecoinvent 3.10 database
LCA Software	SimaPro SimaPro 9.6
Version of the EN 15804 reference package	EF Reference Package 3.1
Characterisation methods	EN 15804+A2 (version 1.01), LHV Cumulative Energy Demand (CED) (version 1.01), ReCiPe 2016 Midpoint (H), version 1.09, EDIP 2003 version 1.07
Technology description including background system	Manual valves. Families included: Balancing valves, ball valves, valves for aqueduct use, mini ball cocks, gas valves and industrial valves. The declared unit is defined as 1 kg of average valves. The average content declaration was determined through a weighted average across different bills of materials (BoMs). For each material, the total quantity used in all valves was calculated and expressed as a proportion of the overall weight of the sampled valves. In this approach, each BoM contributes to the average according to both the valve's total weight and the relative amount of each material it contains. The valves stand out for their precise construction and compliance with performance standards. They are widely used in both residential and industrial systems—for potable water distribution as well as thermal fluid control—and are valued for their versatility and ease of installation.
Scrap (recycled material) inputs contribution level	Less than 10% of the GWP-GHG results in modules A1-A3 come from scrap inputs

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 2023, with data collection carried out at the beginning of 2024. 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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DATA QUALITY ASSESSMENT					
Process name	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Raw material valve	Database	Ecoinvent 3.11	2023	Secondary data	16.3%
Raw material packaging	Database	Ecoinvent 3.11	2023	Primary data	0.9%
Transport raw material	Database	Ecoinvent 3.11	2023	Primary data	0.5%
Transport packaging	Database	Ecoinvent 3.11	2023	Primary data	3.5%
Transports Subcontractors	Database	Ecoinvent 3.11	2023	Primary data	0.2%
Energy (Phv, Gas, W)	Database	Ecoinvent 3.11	2023	Primary data	1.3%
Electricity	Database	Ecoinvent 3.11	2023	Primary data	4.3%
Metal Working	Database	Ecoinvent 3.11	2023	Secondary data	0.09%
Transport waste	Database	Ecoinvent 3.11	2023	Primary data	0.2%
Waste treatment	Database	Ecoinvent 3.11	2023	Primary data	0.1%
Total share of primary data, of GWP-GHG results for A1-A3					27.39%
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 (A5 FOR SERVICES)	
Type of electricity mix	Residual electricity mix on the market

Energy sources	Hydro	0%
	Wind	0.43%
	Solar	6.21%
	Biomass	0.63%
	Geothermal	0%
	Waste	0%
	Nuclear	4.4%
	Natural gas	58.22%
	Coal	22.72%
	Oil	3.76%
	Peat	0.05%
	Other	3.57%
Climate impact (GWP-GHG):	0.68 kg CO ₂ eq./kWh	

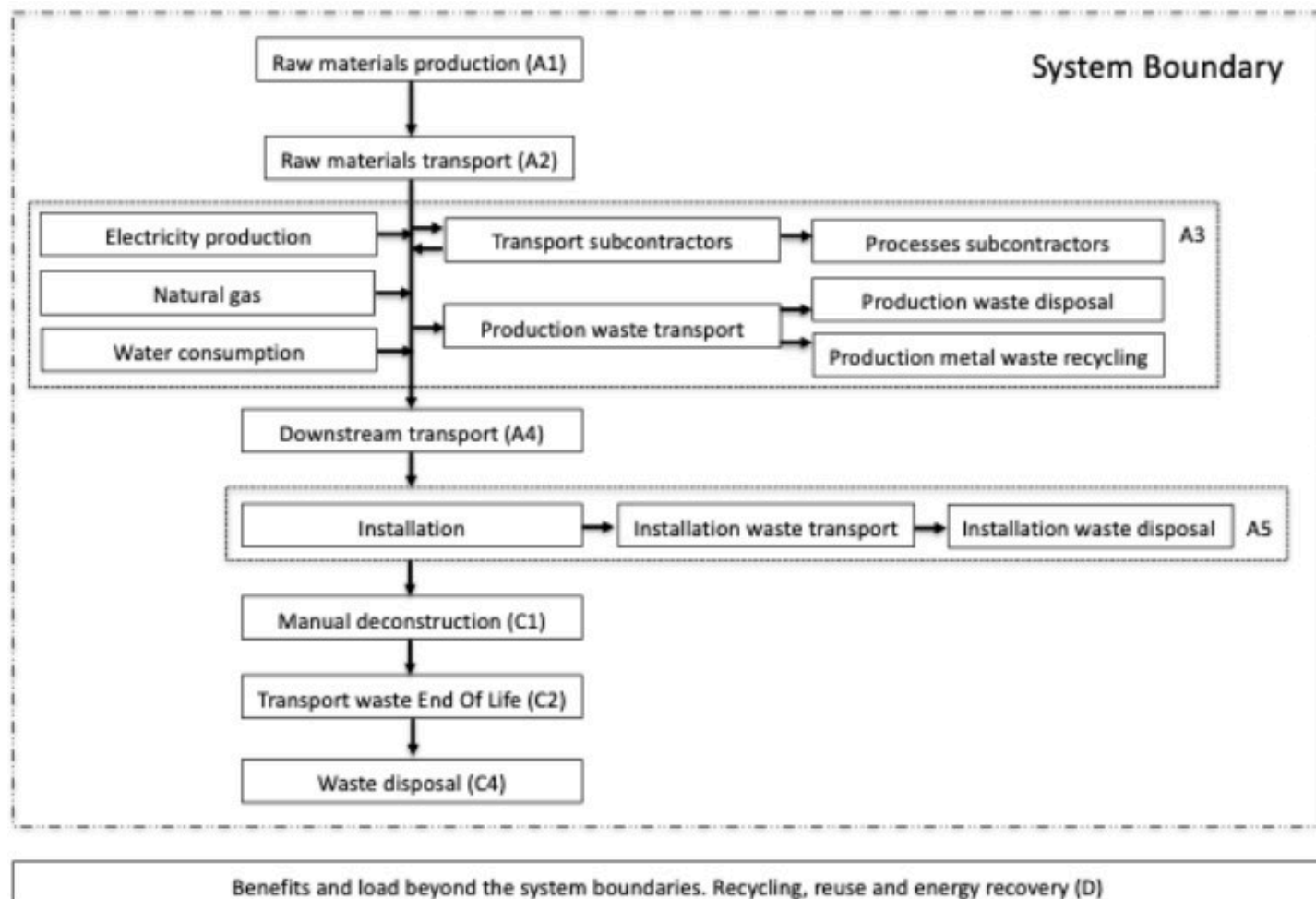
Method used to calculate residual electricity mix	Residual electricity mix on the Italian market
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SYSTEM BOUNDARY

Description of the System boundary	b) Cradle to gate with options, modules C1-C4, module D and with optional modules (A1-A3 + C + D and additional modules).
Excluded modules	Yes, there is an excluded module, or 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			Construction process stage		Use stage							End of life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport to site	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	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	Europe	Europe	Italy	Global	Global	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Global	Global	Global	Global	Global
Share of specific data	27%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	46%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disclaimer	The share of specific/primary data and both variations (products and sites) refer to GWP-GHG results only.																

Process flow diagram(s) related images



DEFAULT SCENARIO

Name of the default scenario	Cradle-to-grave scenario with landfill of products
Description of the default scenario	The LCA study, applying a cradle-to-gate with option methodology (A1-A3, A4, A5, C1-C4 and D). B modules are excluded from the analyses since no use phase maintenance, repair or replacement and energy consumption is expected during the technical lifetime. At the end of their service life, valves are manually removed from the system and undergo a structured end-of-life process. This begins with the deconstruction phase, through the use of diesel building machine (C1: 100%), followed by the transportation of all valves to the appropriate dismantling and treatment locations (C2). All valves dismantled have been sent to the sanitary landfill (C4: 100%). Some materials, instead, are sent for incineration with energy recovery (waste from packaging sent to incineration as disposal, Module A5).

Module A4: Transport to the building site

Explanatory name of the default scenario in module A4	Global transport
Description of the default scenario in module A4	For module A4 the downstream national transport, the distance has been calculated using the postcode of the final Italian destination. For international shipping instead, the distance has been calculated considering the city of the final destination. It has been repropotioned the weight of each transport with the sum of total production and the raw weight of packaging

Module A5: Installation in the building

Explanatory name of the default scenario in module A5	Installation
Description of the default scenario in module A5	For module A5, transport and waste disposal was considered. About the transport of packaging waste, an estimated 80 km. Since the installation is manual, a zero impact was considered. For the disposal of packaging, these have been grouped into four categories: 1. Waste paperboard; 2. Waste boxboard; 3. Waste plastic; 4. Waste wood. Most of products have been distributed in Europe (more than 80% of total distribution), so it plausible representative the EoL in Europe.

Reference service life

Description of the default scenario in reference service life	Average RSL of 10 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. This begins with the deconstruction phase, through the use of diesel building machine (C1: 100%), followed by the transportation of all valves to the appropriate dismantling and treatment locations (C2). All valves dismantled have been sent to the sanitary landfill (C4: 100%).

Module D: Beyond product life cycle

Explanatory name of the default scenario in module D	Module D
Description of the default scenario in module D	In module D a substitution logic is applied ("avoided burden" approach), where benefits are calculated on the basis of the amount of recycled materials or recovered energy, assuming that they can replace virgin resources. It has been used data Eurostat to compute weight of recycled packaging.

ENVIRONMENTAL PERFORMANCE

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

Mandatory environmental performance indicators according to EN 15804

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - total	GWP-total	kg CO ₂ eq.	1.02E+1	1.33E+0	1.03E-2	ND	ND	ND	ND	ND	ND	ND	3.99E-4	1.89E-2	0.00E+0	4.79E-1	-4.55E-3
Climate change - fossil	GWP-fossil	kg CO ₂ eq.	1.01E+1	1.32E+0	6.01E-3	ND	ND	ND	ND	ND	ND	ND	3.99E-4	1.89E-2	0.00E+0	1.19E-1	-6.70E-3
Climate change - biogenic	GWP-biogenic	kg CO ₂ eq.	1.10E-1	3.76E-4	4.33E-3	ND	ND	ND	ND	ND	ND	ND	8.07E-8	3.81E-6	0.00E+0	3.60E-1	2.17E-3
Climate change - land use and land-use change	GWP-luluc	kg CO ₂ eq.	1.93E-2	5.76E-4	1.35E-6	ND	ND	ND	ND	ND	ND	ND	4.08E-8	5.89E-6	0.00E+0	1.12E-5	-1.77E-5
Ozone depletion	ODP	kg CFC-11 eq.	1.55E-5	1.94E-8	6.27E-11	ND	ND	ND	ND	ND	ND	ND	5.92E-12	4.14E-10	0.00E+0	5.42E-10	-2.14E-10
Acidification	AP	mol H ⁺ eq.	4.45E-1	1.64E-2	1.73E-5	ND	ND	ND	ND	ND	ND	ND	3.56E-6	3.83E-5	0.00E+0	2.39E-4	-2.83E-5
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	3.34E-3	1.38E-5	7.31E-8	ND	ND	ND	ND	ND	ND	ND	1.39E-9	1.37E-7	0.00E+0	8.50E-6	-3.50E-7
Eutrophication aquatic marine	EP-marine	kg N eq.	2.62E-2	3.46E-3	1.30E-5	ND	ND	ND	ND	ND	ND	ND	1.66E-6	8.81E-6	0.00E+0	2.07E-3	-3.45E-6
Eutrophication terrestrial	EP-terrestrial	mol N eq.	3.67E-1	3.86E-2	6.77E-5	ND	ND	ND	ND	ND	ND	ND	1.82E-5	9.77E-5	0.00E+0	7.33E-4	-4.13E-5
Photochemical ozone formation	POCP	kg NMVOC eq.	1.02E-1	1.20E-2	2.60E-5	ND	ND	ND	ND	ND	ND	ND	5.43E-6	6.13E-5	0.00E+0	3.20E-4	-2.33E-5
Depletion of abiotic resources - minerals and metals	ADP-minerals&metals ¹	kg Sb eq.	3.66E-3	2.63E-6	1.59E-8	ND	ND	ND	ND	ND	ND	ND	1.42E-10	6.44E-8	0.00E+0	3.97E-8	-5.09E-8
Depletion of abiotic resources - fossil fuels	ADP-fossil ¹	MJ, net calorific value	1.26E+2	1.76E+1	4.81E-2	ND	ND	ND	ND	ND	ND	ND	5.19E-3	2.66E-1	0.00E+0	3.64E-1	-1.72E-1
Water use	WDP ¹	m ³ world eq. deprived	6.05E+0	6.29E-2	3.82E-4	ND	ND	ND	ND	ND	ND	ND	1.11E-5	9.44E-4	0.00E+0	-5.44E-4	-1.51E-3
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/A1-A5 for services).																
Disclaimer 1	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 environmental performance indicators

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - GWP-GHG	GWP-GHG ¹	kg CO ₂ eq.	1.02E+1	1.33E+0	7.63E-3	ND	ND	ND	ND	ND	ND	ND	3.99E-4	1.89E-2	0.00E+0	4.79E-1	-6.74E-3
Acronyms	GWP-GHG = Global warming potential greenhouse gas.																
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/A1-A5 for services).																
Disclaimer 1	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

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter emissions	PM	Disease incidence	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Ionizing radiation - human health	IRP ¹	kBq U235 eq.	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Eco-toxicity - freshwater	ETP-fw ²	CTUe	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Human toxicity - cancer effects	HTP-c ²	CTUh	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Human toxicity - non-cancer effects	HTP-nc ²	CTUh	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Land-use related impacts/soil quality	SQP ²	Dimensionless	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Acronyms	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.																
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/A1-A5 for services).																
Disclaimer 1	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.																
Disclaimer 2	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.																

Resource use indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ, net calorific value	2.53E+1	3.82E-1	5.77E-2	ND	ND	ND	ND	ND	ND	ND	8.46E-5	4.71E-3	0.00E+0	2.14E-2	-2.35E-2
PERM	MJ, net calorific value	6.78E-1	0.00E+0	-5.61E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.95E-2
PERT	MJ, net calorific value	2.60E+1	3.82E-1	1.55E-3	ND	ND	ND	ND	ND	ND	ND	8.46E-5	4.71E-3	0.00E+0	2.14E-2	-4.29E-2
PENRE	MJ, net calorific value	1.25E+2	1.76E+1	7.26E-2	ND	ND	ND	ND	ND	ND	ND	1.44E-3	2.66E-1	0.00E+0	3.64E-1	-1.42E-1
PENRM	MJ, net calorific value	4.69E-1	0.00E+0	-2.45E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-2.97E-2
PENRT	MJ, net calorific value	1.26E+2	1.76E+1	4.81E-2	ND	ND	ND	ND	ND	ND	ND	1.44E-3	2.66E-1	0.00E+0	3.64E-1	-1.72E-1
SM	kg	2.59E-1	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	m ³	1.75E-1	2.19E-3	3.51E-6	ND	ND	ND	ND	ND	ND	ND	3.66E-7	3.23E-5	0.00E+0	-3.02E-3	-7.14E-5
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/A1-A5 for services).															

Waste indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	4.93E-3	1.03E-4	3.28E-7	ND	ND	ND	ND	ND	ND	ND	3.61E-8	1.80E-6	0.00E+0	2.28E-6	-1.65E-6
NHWD	kg	1.42E+0	4.02E-1	4.93E-3	ND	ND	ND	ND	ND	ND	ND	3.50E-6	1.08E-2	0.00E+0	1.00E+0	-2.29E-4
RWD	kg	2.83E-4	7.69E-6	3.58E-8	ND	ND	ND	ND	ND	ND	ND	5.43E-10	9.61E-8	0.00E+0	6.70E-7	-6.07E-7
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/A1-A5 for services).															

Output flow indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	kg	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	kg	1.59E-1	0.00E+0	4.19E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	kg	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	MJ, net calorific value	9.87E-5	0.00E+0	1.00E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	MJ, net calorific value	1.33E-3	0.00E+0	2.06E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Acronyms	CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.															
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/A1-A5 for services).															

INFORMATION RELATED TO EPDS OF MULTIPLE PRODUCTS

Justification for why this is representative	The results presented in this EPD represent the average environmental impacts of the family of general valves. Each valve was individually modeled, and the final results were obtained by averaging the impacts of all valves included in the study. For the modelling of each valve, Bill of Materials (BoM) data were used as the primary source for raw materials, raw material transport, and part of the outsourced processing. This approach ensured that inputs and outputs were attributed according to the specific material composition of each product, allowing for a precise and transparent allocation of environmental loads throughout the life cycle. For other life cycle aspects—such as energy consumption, product and transport packaging, waste management, transport of the finished product, and the remaining share of outsourced processing—a physical repartition strategy was applied. These inputs were distributed based on measurable parameters, specifically the mass of total production (manual and motorized valves, in kg), ensuring methodological consistency across all modules (A1–A5, C1–C4, and D). After calculating the environmental impact of each valve, the results were normalized to 1 kg of manual valve, ensuring comparability among different models. The average impact was then calculated by aggregating the results of all valves included in the study. To assess the robustness and representativeness of the averaged values, a sensitivity analysis was performed by identifying, for the main impact categories, the minimum and maximum results obtained among all valves and calculating the percentage difference between them.
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ABBREVIATIONS

EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CPC	Central product classification
SVHC	Substances of Very High Concern

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VERSION HISTORY

New EPD, original version 2025-10-24.

First EPD of the product was published with program operator EPD Norge and mutually accepted as EPD S-P-02103 (valid to 2025-04-29)

