

Environmental Product Declaration



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

[Valve]

EPD of multiple products, based on average results of the included products
Products included are listed in Appendix 1.

from

[JINAN MEIDE CASTING CO., LTD.]



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0022900
Publication date:	2025-06-13
Valid until:	2030-06-13

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



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <i>PCR 2019:14, Construction Products, Version 1.3.4 valid until: 2025.6.20</i>
PCR review was conducted by: <i>The Technical Committee of the International EPD® System lead by IVL Swedish Environmental Research Institute and Secretariat of the International EPD System. The review panel may be contacted via info@environdec.com</i>
Life Cycle Assessment (LCA)
LCA accountability: <i>JINAN MEIDE CASTING CO., LTD.</i>
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by accredited certification body Third-party verification: <i><Pin Tian, Bureau Veritas Certification Sweden AB></i> is an approved certification body accountable for the third-party verification The certification body is accredited by: <i>< Bureau Veritas Certification Sweden AB, accredited by SWEDEC with accreditation number 1236></i>
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation

factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: JINAN MEIDE CASTING CO., LTD.

Contact: Joe Zuo, zhiqiang.zuo@meide-casting.com

Description of the organisation: JINAN MEIDE CASTING CO., LTD. (Meide Group), established in 1961, is a global leader in fluid conveyance solutions with diversified operations across 140+ countries. Specializing in water supply, fire protection, gas systems, and infrastructure projects (e.g., New York World Trade Center, Shanghai Tower), the group operates nine manufacturing bases in China (Jinan, Linyi, Tai'an, etc.) and overseas (Thailand, Vietnam, Poland), supported by 22 digital factories and 2 overseas representative offices. Spanning 3.8 km² with 12,000+ employees (2,000+ overseas), it drives innovation through its national R&D center, 900+ patents, and leadership in drafting 100+ industry standards. Recognized as a "Top 100 Chinese Light Industry Enterprise" and "Green Foundry Demonstration Company," Meide Group holds 400+ honors for technological excellence and operational integrity.

Product-related or management system-related certifications: JINAN MEIDE CASTING CO., LTD. International is certified for: ISO 9001, ISO 14001, ISO 45001 [

Name and location of production site(s): JINAN MEIDE CASTING CO., LTD. No.2 Meide Street, Meigui Town, Pingyin County Jinan Shandong 250400 CN

Product information

Product name: Valve

Product identification: Valve

Product description: Valves are pipeline accessories used to open and close pipelines, control flow direction, regulate and control the parameters of the conveying medium (temperature, pressure, and flow). According to their functions, they can be divided into shut-off valves, check valves, regulating valves, etc.

UN CPC code: 412

Geographical scope: Global

LCA information

Functional unit / declared unit: 1 kg of Valve

Reference service life: Not applicable

Time representativeness: Data input was collected in January 2024 - December 2024.

Database(s) and LCA software used: Ecoinvent v3.11, SimaPro 10.2.0.0

Description of system boundaries: Cradle to gate, with options (A1-A3, A4, A5, C1-C4, D)

The following information describes the scenarios in the different modules of the EPD.

Module A1-A3 = Sourcing of raw materials from China. Prioritize using primary data and use database data when the quality of primary data is poor or missing. Electricity is matched based on regions, and the emission factor of State Grid electricity used is refer to "Electricity, medium voltage {CN-NCGC}| market for electricity, medium voltage | Cut-off, U". Photovoltaic power emission factor is refer to "Electricity, low voltage {CN-SD}| electricity production, photovoltaic, 570kWp open ground installation, multi-Si | Cut-off, U".

Module A4 = Global transportation refers to the actual sea freight distance. Domestic transportation is

calculated based on an average of 1000km. For road transportation, calculations are made based on trucks with a carrying capacity of 16-32 tons. For sea transportation, calculations are made based on container ship.

Module A5 = Based on the average installation time of the product (3 minutes) and the average power of the installation tool (2000W).

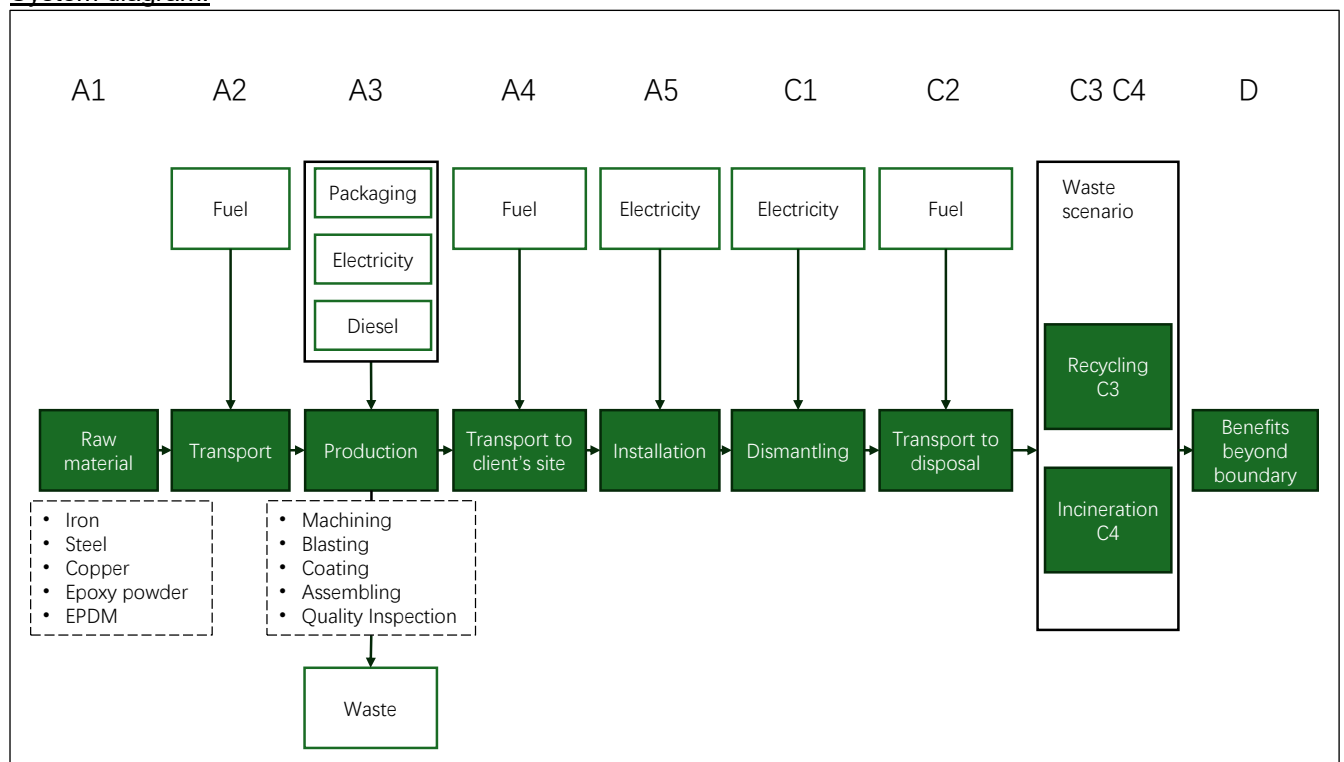
Module C1 = The removal process of the product aligns with its installation phase.

Module C2 = Transportation from dismantling site to waste treatment facility with an average of 50 km. For road transportation, calculations are made based on trucks with a carrying capacity of 16-32 tons.

Module C3, and C4 = Waste treatment of the product. The main component of the product is metal, assuming 85% goes into recycling disposal and 15% goes into incineration disposal without energy recovery. The assumption of 85% recycling rate is referred to the “Annual Research and Consultation Report of Panorama survey and Investment strategy on China Industry”-CIRN and Sweden scenario.

Module D = Benefits beyond the system are tied to the recycling of metals.

System diagram:



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

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	x	x	x	x	x	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	CN	CN	CN	GLO	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	36.1%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Specific data used - the proportion of primary data in the raw material acquisition stage is 23.7%, the proportion of primary data transported upstream to the manufacturing site is 1.6%, the proportion of primary data in the manufacturing stage is 10.8%, and the total proportion of primary data in stages A1-A3 is 36.1%

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Iron	8.79E-01	13%	0
Steel	1.05E-01	0	0
Copper	9.95E-04	0	0
Epoxy powder	1.18E-02	0	0
EPDM	2.20E-03	0	0
Painting	9.44E-04	0	0
TOTAL	1		
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Pallet	8.75E-02	8.7%	
Plastic	2.78E-03	0.3%	
Corrugated box	1.12E-02	1.1%	
TOTAL	1.01E-01		

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
/			

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	4.00E+00	1.03E-01	1.38E-02	1.38E-02	7.75E-03	5.36E-02	2.67E-03	-1.83E+00
GWP-biogenic	kg CO ₂ eq.	2.28E-03	5.02E-05	2.94E-05	2.94E-05	2.59E-05	5.48E-06	1.30E-06	-8.18E-04
GWP-luluc	kg CO ₂ eq.	-1.95E-02	2.57E-05	8.33E-05	8.33E-05	1.35E-05	1.08E-05	3.41E-06	-2.66E-03
GWP-total	kg CO ₂ eq.	3.98E+00	1.03E-01	1.39E-02	1.39E-02	7.79E-03	5.36E-02	2.68E-03	-1.84E+00
ODP	kg CFC 11 eq.	1.75E-08	1.44E-09	1.00E-10	1.00E-10	1.24E-10	7.96E-10	5.59E-11	-9.79E-09
AP	mol H ⁺ eq.	2.53E-02	9.72E-04	7.31E-05	7.31E-05	3.57E-05	4.79E-04	1.50E-05	-7.49E-03
EP-freshwater	kg N eq.	1.39E-03	9.43E-06	6.98E-06	6.98E-06	8.31E-07	1.73E-06	1.96E-06	-1.26E-03
EP-marine	kg P eq.	5.19E-03	2.40E-04	1.40E-05	1.40E-05	1.34E-05	2.23E-04	5.73E-06	-1.66E-03
EP-terrestrial	mol N eq.	5.59E-02	2.65E-03	1.41E-04	1.41E-04	1.44E-04	2.44E-03	6.26E-05	-1.78E-02
POCP	kg NMVOC eq.	1.63E-02	8.50E-04	4.20E-05	4.20E-05	4.99E-05	7.30E-04	2.15E-05	-5.96E-03
ADP-minerals&metals*	kg Sb eq.	3.18E-05	2.75E-07	8.39E-08	8.39E-08	2.50E-08	1.91E-08	7.51E-09	-1.67E-05
ADP-fossil*	MJ	4.29E+01	1.41E+00	1.85E-01	1.85E-01	1.10E-01	6.97E-01	4.39E-02	-1.92E+01
WDP*	m ³	5.24E-01	6.07E-03	2.06E-03	2.06E-03	5.46E-04	1.51E-03	1.17E-03	-4.57E-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.

Additional mandatory and voluntary impact category indicators

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	4.01E+00	1.03E-01	1.38E-02	1.38E-02	7.78E-03	5.36E-02	2.68E-03	-1.84E+00

Resource use indicators

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERM	MJ	3.98E+00	1.81E-02	2.92E-02	2.92E-02	1.67E-03	4.39E-03	8.80E-04	-2.15E+00
PERT	MJ	3.98E+00	1.81E-02	2.92E-02	2.92E-02	1.67E-03	4.39E-03	8.80E-04	-2.15E+00
PENRE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRM	MJ	4.57E+01	1.50E+00	1.97E-01	1.97E-01	1.17E-01	7.42E-01	4.68E-02	-2.04E+01
PENRT	MJ	4.57E+01	1.50E+00	1.97E-01	1.97E-01	1.17E-01	7.42E-01	4.68E-02	-2.04E+01
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	5.05E-01	6.02E-03	2.00E-03	2.00E-03	5.43E-04	1.49E-03	1.17E-03	-4.15E-01
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								

¹ 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.

Waste indicators

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.80E-04	8.94E-06	5.65E-07	5.65E-07	7.37E-07	4.86E-06	3.19E-07	-1.67E-04
Non-hazardous waste disposed	kg	2.91E-01	6.54E-02	5.85E-04	5.85E-04	6.98E-03	4.72E-04	1.01E-01	-1.32E-01
Radioactive waste disposed	kg	1.99E-05	2.59E-07	4.74E-07	4.74E-07	2.40E-08	7.30E-08	1.27E-08	-1.64E-05

Output flow indicators

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	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	0.00E+00	0.00E+00
Material for recycling	kg	4.90E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.50E-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	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	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	0.00E+00	0.00E+00

Additional environmental information

Cut-off criteria:

The general rules apply for the exclusion of inputs and outputs in the LCA which complies with 15804:2012+A2:2019. 6.3.6. In cases of insufficient input data or data gaps for a unit process, the cutoff criteria shall be 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input of that. The total neglected input flows, e.g., per module A1-A3, A4-A5, and B1-B5, B6-B7, C1-C4 and module D shall be a maximum of 5 % of energy usage and mass.

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation rules:

Allocation is made according to the proportion of the target product's output to the total output of the entire factory. During the calculation process, the consumption of energy/resources and the generation of waste, etc., are all apportioned based on this principle.

References

General Programme Instructions of the International EPD® System. Version 4.0.

PCR 2019:14. CONSTRUCTION PRODUCTS. VERSION 1.3.4

ISO 14040:2006 Environmental management - Life cycle assessment-Principles and Framework

ISO 14044:2006 Environmental management - Life cycle assessment – Requirements and guidelines

EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declaration -

Core rules for the product category of construction products

Appendix 1

Included products

No.	Product Model	Size	No.	Product Model	Size	No.	Product Model	Size
1	XZ01X	DN25-DN600	35	D381X80	DN25-DN600	69	H24X	DN25-DN600
2	XZ31X		36	D381X9		70	DH87X	
3	XZ81X		37	D381XB		71	H44X2/H44X2A	
4	XZ41X		38	D381X80		72	H44T2/H44T2A	
5	XZ51X		39	XD311X		73	DH77XSR	
6	Z85X		40	XD371X9		74	DH77X	
7	Z01X		41	XD371XB		75	HSB4X	
8	Z05X		42	XD371XG		76	H44X	
9	Z05XC		43	XD371XLB		77	HC41X	
10	Z31X		44	XD381X		78	DH87XP	
11	Z35X		45	XD381X4		79	DH74X	
12	Z35XC		46	XD381X9		80	H44J	
13	Z41X		47	XD381XB		81	HD41X	
14	Z45X		48	XD381XG		82	HC42X	
15	Z45XL		49	XD381XC		83	HC42T	
16	Z45XC		50	XD381X4-C		84	DH77J	
17	Z55X		51	D81X4		85	DHB44F	
18	Z81X		52	XD371X		86	LHS41X	
19	Z85X		53	XD371XG		87	J41H	
20	Z85XC		54	XD371XL		88	ARVX	
21	ZA5XC		55	XD371XLG		89	V8	
22	ZB5XC		56	XD311X		90	V4	
23	Z45T		57	D342X		91	ARVX	
24	Z41T		58	D342X4		92	ZSJZYS	
25	Z45XC-2		59	D41X4		93	YLKG	
26	Z35XC-2		60	D341X4		94	SSF	
27	D71X4		61	D71XK		95	SSF-J	
28	D371X		62	D371XK		96	SSZ	
29	D371X9		63	D371X4		97	SSZ2	
30	D371XB		64	D71XLV4				
31	D371XLB		65	D371XLV4				
32	D371XL		66	SN				
33	D371XLV9		67	H84X				
34	D381X		68	H84XF4				

