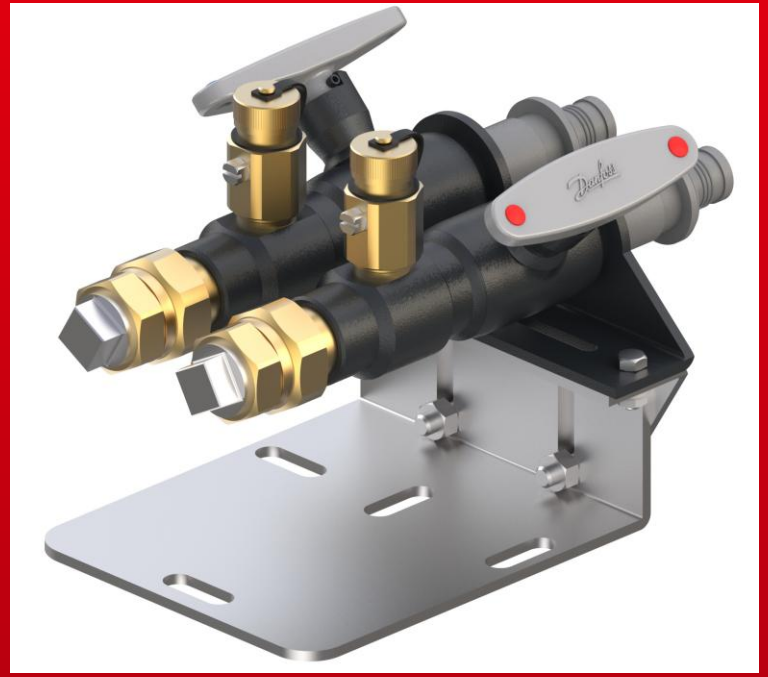
Environmental **Product Declaration**



JIP TWIN Ball valves

EPD owner	Danfoss A/S
EPD registration number	EPD-IES-0029118:001
Programme	The International EPD® System, www.environdec.com
Programme operator	EDP International AB
EPD Type	Cradle to gate with options, modules A4-A5, modules C1–C4, and module D, EPD for multiple products based on worse case results
Version date	2026-04-09
Validity date	2031-04-09

Environmental Product Declaration in accordance with EN 15804.2012+A2:2019/AC:2021 and ISO 14025:2006

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

ECO PLATFORM EPD VERIFIED

EPD INTERNATIONAL EPD SYSTEM

General information

EPD author	Danfoss Climate Solution A/S
Declared unit	One product over its Reference Service Life
Product included	JIP-IP DN20 TWD PN25 T PEX26 DVP LOG (065N7237)
Product covered by the EPD	See Annex 1
Manufacturing Location	Anshan, China
Use Location	European Union
Application	HVAC systems
Mass	4,864 kg without packaging 5,152 kg with packaging
Dimensions (H×W×D)	190 x 120 x 200 mm without packaging
Verification	[X] External [ ] Internal [ ] None
Produced to	PCR 2019:14 version 2.0.1
External verifier	Bureau Veritas Certification Sweden, accredited by SWEDAC accr. No. 1236

Programme information	
Programme	The International EPD® System
Address	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
E-mail	support@environdec.com

General information

Product Category Rules (PCR)	
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)	
Product Category Rules (PCR):	Construction products PCR 2019:14 v. 2.0.1, CPC code: 439
PCR review was conducted by:	The Technical Committee of the International EPD® System. Chair: Rob Rouwette, Greendesk (on behalf of EPD International AB). Contact via support@environdec.com
Verification	
External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via:	
✓ EPD verification through an EPD process certification without a pre-verified LCA/EPD tool	
Third-party verifier	Bureau Veritas Certification Sweden
Accredited by	SWEDAC with accreditation number 1236
*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.envrondec.com. International EPD System	
Procedure for follow-up of data during EPD validity involves third-party verifier: ☐ Yes ✓ No	
Ownership and limitations on use of the EPD	

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

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

Company Information

EPD owner information	
EPD owner	Danfoss A/S
Address	Nordborgvej 81 6430 Nordborg Denmark
E-mail	epd_danfoss@danfoss.com

Danfoss is empowering its customers to make decisions in favor of decarbonization by providing an EPD on its products

By providing transparency in our products, Environmental Product Declarations support data driven decision-making for customers wishing to drive the green transition. Compliant with wide-reaching regulations, EPDs support the creditability of our products footprint through verification.

Find more on our annual report:

Danfoss annual report 2025 | Download the latest annual report | Danfoss

Product information

The reference product used for this EPD is representative of **JIP-IP DN20 TWD PN25 T PEX26 DVP LOG.** The production location is the Danfoss plant in Anshan, China. See more information on Danfoss Product Store.

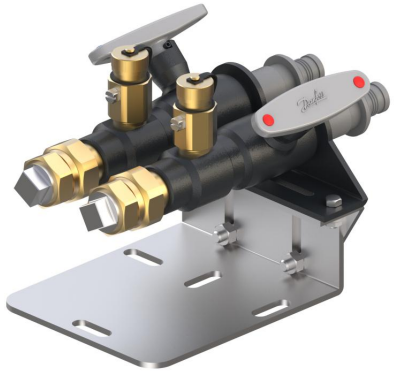
Danfoss Taylor made JIP™ TWIN Ball valves range of reduced bore shut off valves developed for easy and fast connection to the Logstor and Isoplus preinsulated AluPEX, PEXFlextra and Copper pipes in District Heating and District Cooling networks. Branching valve TWIN valve features: Internal thread / AluPEX/PEX Flextra/CuFLEX press fit connection for: • AluPEX pipes 20, 26 and 32 by LOGSTOR • AluPEX (Isoalupex) pipes 20, 25 and 32 by ISOPLUS TWIN ball valves are designed for safe & reliable DH network set up and connection of the subscribers to the DH network with single and double (Twin) pipe connection.

Danfoss standard JIP™ TWIN Ball valves is a range of reduced bore shut off valves developed for District Heating and District Cooling networks, with circulating medium. It is a range of steel ball valves with fully welded body.

The EPD document present the Danfoss JIP® TWIN ball valves product family, which are devided into six main groups with following features shown in the Table 1 below:

Table 1: Properties of the JIP TWIN Ball valves product family

TYPE	JIP IP		JIP IC	JIP II		JIP IW	JIP WD	JIP WW
	1		2	3		4	5	6
DN	20	15-25	15-25	20	15-32	15-32	15-20	15-32
PN	25	40	16	25	40	40	40	40
Pipe Connection 1	Internal thread		Internal thread	Internal thread		Internal thread	Welding	Welding
Pipe Connection 2	AluPEX press fit CuFLEX press fit PEX, PE-RT		Copper	Internal thread		Welding	Detach-able end	Welding



1. JIP IP internal thread / AluPEX press fit / PEX press fit / PE-RT / CuFLEX press fit

2. JIP IC Internal threas / copper

3. JIP II Internal thread

4. JIP IW Internal thread / welded

Figure 1: JIP TWIN Ball valves

Product information

The principle of operating for all product codes listed in the Table 1 is the same. They differ in size, weight and material. The LCA calculation was performed for the product code with the largest total mass (product code 065N7237).

When calculating the environmental impact of all products listed in the LCA document (see Annex 2, Table A2), a scalar factor is determined for each product code based on its mass.

Product information	
UNCPC code	439

The product does not contain any substances from the Candidate List of Substances of Very High Concern for Authorisation of the European Union's REACH Regulation (EC 1907/2006) above the threshold of 0.1% weight/weight.

This Environmental Product Declaration (EPD) follows the PCR 2.0.1 Construction products. These rules provide a consistent framework for calculating and reporting the environmental performance of Danfoss' product and is aligned with relevant standards, particularly ISO 14025:2006, EN 15804+A2: 2019 and EN 50598-3:2015.

This document has been produced by Danfoss A/S and an external third-party verification is conducted.

5. JIP WD welded

6. JIP WW welded

Figure 2: JIP TWIN Ball valves

Content declaration

Table 2: Product composition

Material	Mass (kg)	%	Post-consumer scrap (%)
Metals	**4,78E+00**	**98,4%**	**0%**
Steel (excl. stainless steel)	3,53E+00	72,6%	0%
Stainless steel	1,48E-01	3,1%	0%
Aluminium and its alloys	1,12E-01	2,3%	0%
Copper and its alloys (Brass)	9,92E-01	20,4%	0%
Plastics & Rubbers	**6,6E-02**	**1,4%**	**0%**
PTFE	5,0E-02	1,0%	0%
EPDM	2,0E-03	0,1%	0%
PET	4,0E-03	0,1%	0%
LDPE+HDPE	1,0E-02	0,2%	0%
Other materials	**1,0E-02**	**0,2%**	**0%**
Silicon	1,0E-02	0,2%	0%
Product Total	**4,9E+00**	**100,0%**	**0%**

Table 3: Packaging composition

Material	Mass (kg)	Mass versus product (%)
Packaging-Paper and cardboard	2,8E-01	97,6%
Packaging-Polyethylene	7,0E-03	2,4%
Packaging Total	**2,9E-01**	**100,0%**
Total (Product + Packaging)	**5,1E+00**	

Figure 3: Product material composition overview

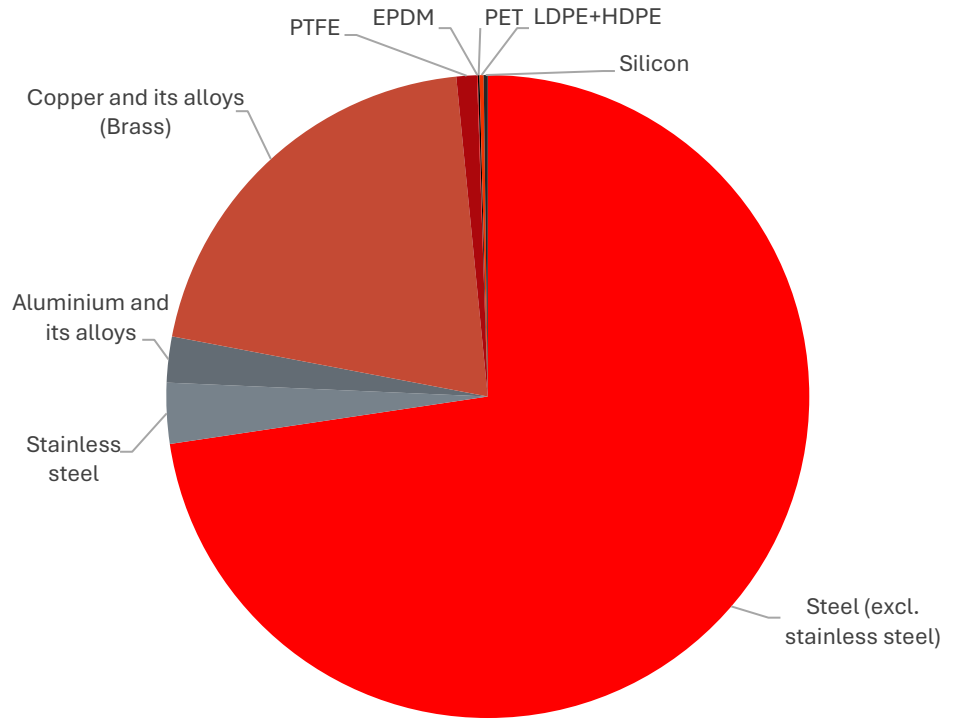


Table 4: Biogenic and recycled content overview

Biogenic content in the product [kg]	**0**
Biogenic content in the packaging [kg]	**1,2E-01**

LCA Information

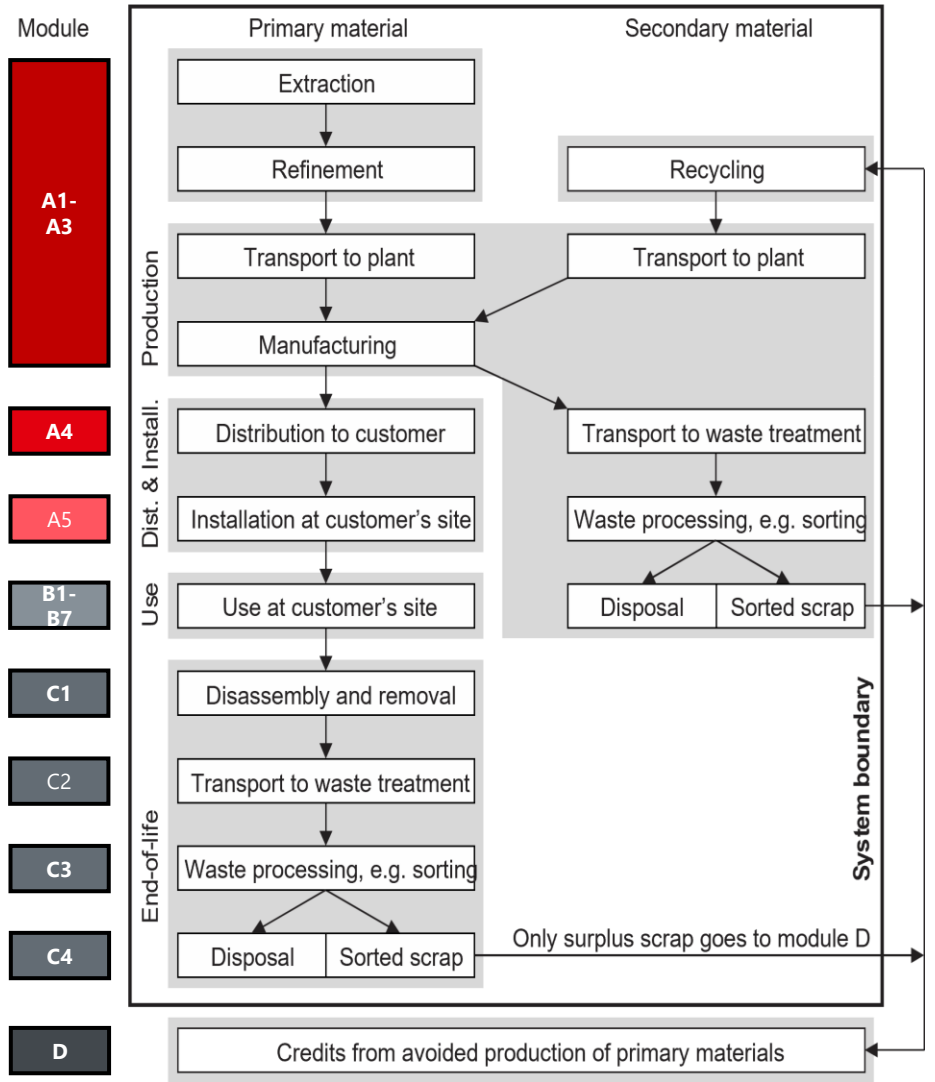
An EPD is a document used to communicate transparently, the quantified environmental impacts of a product over its lifecycle stages. This quantification is done by performing a Life Cycle Assessment (LCA) in line with a consistent set of rules known as a PCR (Product Category Rules).

This EPD is of the type 'cradle-to-gate with options' and includes all relevant modules: production (A1-A3), shipping (A4) and installation (A5); deconstruction (C1), waste collection and transport (C2), treatment (C3) and disposal (C4). It also includes potential net benefits to future products from recycling or reusing post-consumer waste (D). The codes in brackets are the module labels from EN 15804+A2. Modules concerning use, maintenance, repair, replacement, refurbishment (B1-B5) and operational water use (B7) are excluded, following the cut-off rules from EN 15804.

Table 5: Module of the product's life cycle included in the EPD

	Production stage			Installation		Use stage							End-of-life-stage				Benefits
	Raw materials	Transport	Manufacture	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Optional energy use	Optional water use	De-installation	Transport	Waste processing	Disposal	Benefits and loads outside system boundaries
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Module declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	CN	CN	CN	EU-27	EU 27	-	-	-	-	-	-	-	EU-27	EU-27	EU-27	EU-27	EU-27
Primary data used	17,2%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products	70%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Figure 4: Modular structure used in this EPD (EN15804+A2)



LCA Information

Product and packaging (A1-A3)

Final manufacturing occurs in the Anshan plant, China. The facility is certified according to IATF 16949, ISO 14001, ISO 45001, and ISO 9001. Where waste generated on-site is recyclable, it is separated and recycled. For further information, see here. The product is shipped in the packaging. All packaging materials can be safely recycled or incinerated if appropriate local facilities are available. The on-site data was gathered for 2025. The components are manufactured in Denmark and China. Anshan plant uses grid electricity with a GWPT of 7,53E-01 kgCO2eq/kWh.

Shipping and installation (A4-A5)

Distribution is assumed to occur to customers within the European Union. The product is delivered from the final Danfoss production location in Anshan, China, to the central warehouse of finished products (CDC) in Rodekro, Denmark a distance of 6026 km by sea and 500 km by truck. From the CDC location the product is delivered to the EU Market. For the estimated transport distance of transport from the CDC to the EU market, 2000 km by truck is considered.

Module A5 includes disposal of packaging materials only. The product is assumed to be installed by hand. Energy use in handheld tools during installation is not included as it falls under the cut-off criteria.

Table 6: Overview of LCA study

Assumptions	
Reference service life	10 years
Intended market	The European UnionThe baseline scenario involves the distribution, installation, and end-of-life in the European Union
Use-phase	The Danfoss JIP® TWIN Ball valves are the mechanical products and do not require additional power supply to operate. There is no effect on the carbon footprint due to operation.
Use of Proxy and supplier specific data	No supplier speciifc data was used . Datasets from Sphera LCA software were used for this LCA.
Data	LCA for Experts (Sphera) database version 2026.1.
Data quality	A data quality assessment that complies with EN 15941 and EN15804 annex E, was performed and reported in the LCA report per dataset. Data quality of the selected datasets is generally assessed as good and very good in terms of geographical, time and technology representativeness and applicability. The data was collected for a period from January to December 2025.
Allocation and cut-off criteria	The allocation is done in accordance with EN 15804+A2. All major raw materials and essential energy are included. All hazardous materials and substances are considered in the inventory. Data sets within the system boundary are complete and fulfil the criteria for the exclusion of inputs and output criteria.

LCA Information

Table 7: Share of primary data, of GWP-GHG in A1-A3

Process	Source type	Source	Reference year	Data category	Primary data share (%)
Generation of electricity used in manufacturing of product	Database	Sphera my professional database 2025.2	2024	Primary data	**12,2%**
Transport of raw materials to manufacturing site	Database	Sphera my professional database 2025.2	2025	Primary data	**5,0%**
Other	Database	Sphera my professional database 2025.2	2025	Secondary data	**0,0%**
Total share of primary data, of GWP-GHG results for A1-A3					**17,2%**

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.

LCA Information

End-of-life (C1-C4)

The standard end-of-life procedure from EN 50598-3 has been applied. In line with EN 15804+A2, only the 'net scrap' (i.e., the leftover recyclable materials remaining after inputs of recycled content required in the manufacturing phase are first satisfied) is used to calculate the benefits and loads beyond the system boundary (Module D). For this EPD the 100% recycling scenario has been applied, due to being the most conservative in comparison to 100% landfill (based on sensitivity analysis). This is due to the composition of the product, that results in lower GWPT from landfill in comparison to recycling (processing of waste).

Benefits and loads beyond the system boundary (D)

Module D considers the net benefit of recycling (including energy recovery) of materials in the product and packaging, taking account of losses in the recycling process and the recycled material used in the production of the product. Module D covers a 100% recycling scenario, as described above.

Table 8: Characterization methods of environmental performance

Environmental impact indicators	Characterization methods
GWPT	Carbon footprint-total, GWP100, EN 15804. Version: August 2021
GWPF	Carbon footprint-fossil, GWP100, EN 15804. Version: August 2021
GWPB	Carbon footprint-biogenic, GWP100, EN 15804. Version: August 2021
GWPLULUC	Carbon footprint-land use and land use change, GWP100, EN 15804. Version: August 2021
ODP	Depletion potential of the stratospheric ozone layer, ODP, EN 15804. Version: August 2021
AP	Acidification potential, AP, CML 2001 non baseline (fate not included). Version: January 2016
EPfw	Eutrophication potential- aquatic freshwater, Ep, aquatic marine, EUTREND model EN 15804. Version: August 2021
Epmar	Eutrophication potential- aquatic marine, EP, aquatic marine, EUTREND model EN 15804. Version: August 2021
Epter	Eutrophication potential- terrestrial, EP, aquatic marine, EUTREND model EN 15804. Version: August 2021
POCP	Photochemical ozone creation potential, POPCP, LOTOS-EUROS as applied in ReCiPe, EN15804. Version: August 2021
ADPE	Depletion of abiotic resources – minerals and metals, EPD minerals & metals, EN 15804, Version: August 2021.
ADPF	Depletion of abiotic resources – fossil fuels, EPD fossil resources, EN 15804, Version: August 2021.
WDP	Water deprivation potential (deprivation-weighted water consumption), Water deprivation (Available water remaining (AWARE), EN 15804

Environmental performance

This section presents the environmental performance of one-unit JIP-IP DN20 TWD PN25 T PEX26 DVP LOG. Figure 5 presents the environmental impact of the JIP-IP DN20 TWD PN25 T PEX26 DVP LOG across a number of environmental impact categories (following EN 15804+A2:2019) per life cycle stage, over its full 10-years life cycle, including Global Warming Potential.

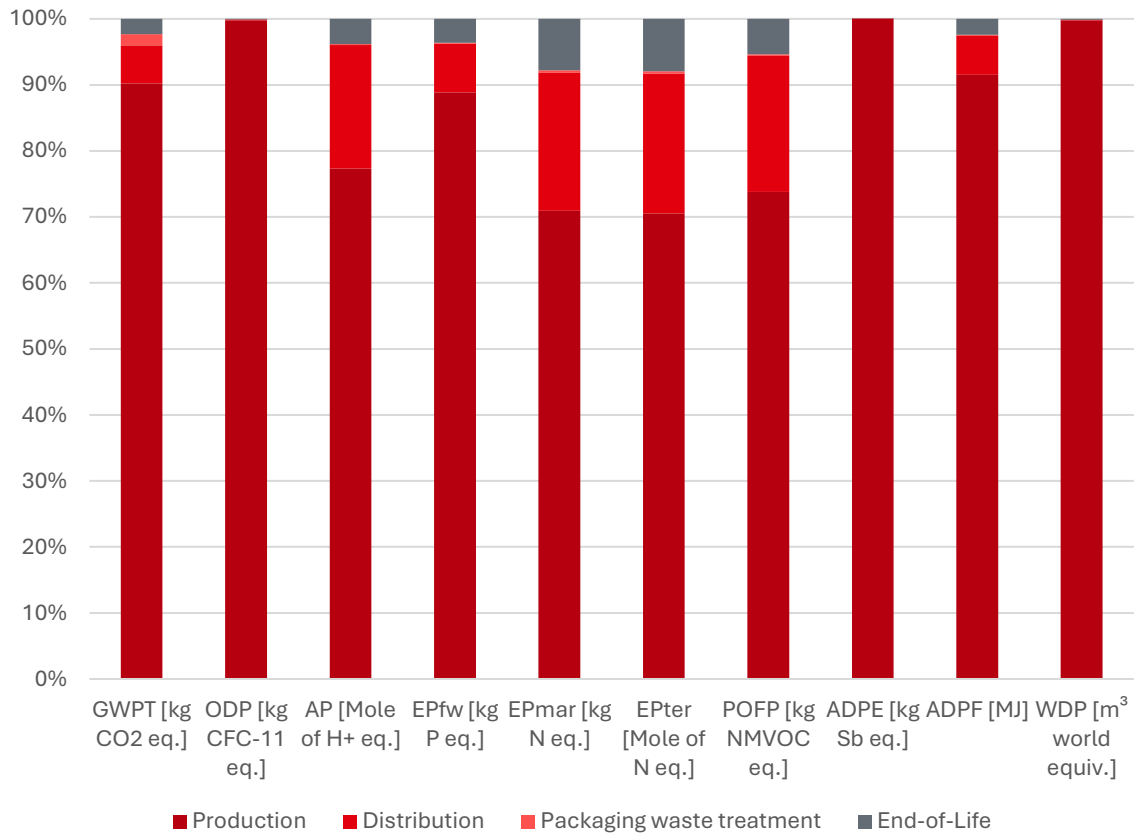
The environmental performance results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. The results of the end-of-life stage (module C) should be considered when using the results of the production stage (modules A1-A3).

Table 9: Environmental impact indicators results per declared unit

Acronym	Indicator
GWPT	Carbon footprint (Global Warming Potential) – total
ODP	Depletion potential of the stratospheric ozone layer
AP	Acidification potential
EPfw	Eutrophication potential – aquatic freshwater
EPmar	Eutrophication potential – aquatic marine
EPter	Eutrophication potential – terrestrial
POFP	Summer smog (photochemical ozone formation potential)
ADPE*	Depletion of abiotic resources – minerals and metals
ADPF*	Depletion of abiotic resources – fossil fuels
WDP*	Water deprivation potential (deprivation-weighted water consumption)

***Disclaimer for ADPE, ADPF, WDP:** The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Figure 5: Breakdown of environmental impacts by life cycle stages with Module D is not included. (See Table 10 for descriptions of environmental impact indicators)



Environmental performance

Of one-unit JIP-IP DN20 TWD PN25 T PEX26 DVP LOG

			Production	Distribution	Packaging waste treatment	End-of-Life				Benefits & Loads
			A1-A3	A4	A5	C1	C2	C3	C4	D
			Manufacture of the product from 'cradle-to-gate'	Transport of the product to the customer	Installation of the product and disposal of used packaging	Deinstallation of the product from the site	Transport of the product to waste treatment	Processing waste for recycling	Disposal of waste that cannot be recycled (through landfill and incineration)	Potential benefits and loads beyond the system boundary due to reuse, recycling, and energy recovery
Impact category	**Environmental Impact indicators**	**Unit**								
Global Warming Potential	**Total (GWPT)**	kg CO_2 eq.	2,6E+01	1,6E+00	4,7E-01	0,0E+00	4,9E-02	6,1E-01	0,0E+00	-1,1E+01
	Fossil (GWPF)	kg CO_2 eq.	2,6E+01	1,6E+00	2,9E-02	0,0E+00	4,9E-02	6,1E-01	0,0E+00	-1,1E+01
	Biogenic (GWPB)	kg CO_2 eq.	-4,4E-01	0,0E+00	4,4E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
	Land use & change (GWPLULUC)	kg CO_2 eq.	5,0E-02	1,2E-02	1,6E-05	0,0E+00	1,2E-06	5,8E-03	0,0E+00	-9,1E-03
	Greenhouse gases (GWP-GHG)	kg CO_2 eq.	2,6E+01	1,6E+00	2,9E-02	0,0E+00	4,9E-02	6,1E-01	0,0E+00	-1,1E+01
Ozone Depletion Potential	**ODP**	kg CFC-11 eq.	1,5E-10	2,4E-13	6,1E-15	0,0E+00	5,8E-18	1,3E-13	0,0E+00	-4,5E-11
Acidification of soils and water	**AP**	Mole of H+ eq.	7,7E-02	1,9E-02	1,7E-04	0,0E+00	7,0E-05	3,7E-03	0,0E+00	-3,1E-02
Eutrophication	**Freshwater (EPfw)**	kg P eq.	3,8E-05	3,2E-06	5,4E-08	0,0E+00	1,1E-08	1,5E-06	0,0E+00	-9,2E-06
	Marine (EPmar)	kg N eq.	1,7E-02	4,9E-03	8,6E-05	0,0E+00	2,7E-05	1,8E-03	0,0E+00	-6,2E-03
	Terrestrial (EPter)	Mole of N eq.	1,8E-01	5,4E-02	9,4E-04	0,0E+00	3,0E-04	2,0E-02	0,0E+00	-6,8E-02
Photochemical ozone formation	**POFP (POFP)**	kg NMVOC eq.	4,8E-02	1,3E-02	1,6E-04	0,0E+00	6,4E-05	3,4E-03	0,0E+00	-2,0E-02
Depletion of abiotic resources	**Minerals, metals (ADPE)**	kg Sb eq.	1,5E-03	8,7E-08	4,7E-09	0,0E+00	1,8E-09	3,8E-08	0,0E+00	-1,0E-03
	Fossil fuels (ADPF)	MJ	3,1E+02	2,0E+01	3,8E-01	0,0E+00	7,2E-01	7,5E+00	0,0E+00	-1,2E+02
Water deprivation	**WDP**	m^3 world equiv.	5,5E+00	6,1E-03	4,0E-04	0,0E+00	8,4E-05	6,2E-03	0,0E+00	-9,4E-01

Table 10: Environmental impact indicators results per declared unit

Environmental performance

Of one-unit JIP-IP DN20 TWD PN25 T PEX26 DVP LOG

		Production	Distribution	Packaging waste treatment	End-of-Life				Benefits & Loads
		A1-A3	A4	A5	C1	C2	C3	C4	D
Resource Use indicator	**Unit**								
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	1,1E+02	1,1E+00	1,5E-02	0,0E+00	2,4E-03	5,8E-01	0,0E+00	-2,3E+01
Use of renewable primary energy resources used as raw materials (PERM)	MJ	8,2E-02	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	1,1E+02	1,1E+00	1,5E-02	0,0E+00	2,4E-03	5,8E-01	0,0E+00	-2,3E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	3,1E+02	2,0E+01	3,8E-01	0,0E+00	7,2E-01	7,5E+00	0,0E+00	-1,2E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	4,2E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	3,1E+02	2,0E+01	3,8E-01	0,0E+00	7,2E-01	7,5E+00	0,0E+00	-1,2E+02
Use of secondary material (SM)	kg	3,8E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Use of renewable secondary fuels (RSF)	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Net use of fresh water (FW)	m^3	1,5E-01	5,7E-04	1,7E-05	0,0E+00	3,8E-06	3,6E-04	0,0E+00	-4,5E-02
Waste categories and output flows indicators	**Unit**								
Hazardous waste disposed (HWD)	kg	3,8E-07	7,9E-10	6,4E-11	0,0E+00	4,9E-12	3,3E-10	0,0E+00	-7,6E-05
Non-hazardous waste disposed (NHWD)	kg	3,8E-01	2,5E-03	3,9E-05	0,0E+00	7,2E-05	8,4E-01	0,0E+00	-3,1E-01
Radioactive waste disposed (RWD)	kg	1,3E-02	3,4E-05	1,2E-06	0,0E+00	7,7E-07	1,6E-05	0,0E+00	-4,8E-03
Components for reuse (CRU)	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Materials for recycling (MFR)	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	4,9E+00	0,0E+00	-3,9E-03
Materials for energy recovery (MER)	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Exported energy (electrical) (EEE)	MJ	1,4E-02	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Exported energy (thermal) (EET)	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00

Table 11: Resource use, waste categories, and output flows result per declared unit.

Environmental performance

Of one-unit JIP-IP DN20 TWD PN25 T PEX26 DVP LOG

		Production	Distribution	Packaging waste treatment	End-of-Life				Benefits & Loads
		A1-A3	A4	A5	C1	C2	C3	C4	D
Additional indicators	**Unit**								
Potential incidence of disease due to particulate matter emissions (PM)	Disease incidences	9,5E-07	3,1E-07	1,0E-09	0,0E+00	4,1E-10	2,5E-08	0,0E+00	-4,5E-07
Potential human exposure efficiency relative to U235 (IRP)**	kBq U235 eq.	1,6E+00	4,9E-03	9,7E-05	0,0E+00	1,1E-04	2,2E-03	0,0E+00	-8,3E-01
Potential Comparative Toxic Unit for ecosystems (fresh water) (ETPfw)*	[CTUe]	8,6E+01	2,3E+01	2,7E-01	0,0E+00	5,3E-01	9,6E+00	0,0E+00	-4,7E+01
Potential Comparative Toxic Unit for humans (cancer) (HTPc)*	CTUh	5,4E-09	3,2E-10	4,3E-12	0,0E+00	9,7E-12	1,3E-10	0,0E+00	4,3E-06
Potential Comparative Toxic Unit for humans (non-cancer) (HTPnc)*	CTUh	1,2E-07	1,5E-08	1,4E-10	0,0E+00	3,2E-10	7,2E-09	0,0E+00	-5,8E-08
Potential soil quality index (SQP)*	Dimensionless	9,0E+01	6,4E+00	5,7E-02	0,0E+00	1,8E-03	3,2E+00	0,0E+00	-1,1E+01

Table 12: Additional indicators* results per declared unit.

***Disclaimer for ADPE, ADPF, WDP, ETPfw, HTPc, HTPnc, SQP:** The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.
****Disclaimer for ionizing radiation:** 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
*****GWP-GHG** environmental indicator is calculated without the biogenic global warming potential (GWPB), the formula is GWP-GHG=GWPF+GWPLULUC

References

CEN (2015). EN 50598-3:2015:
Ecodesign for power drive systems, motor starters, power electronics and their driven applications – Part 3: Quantitative eco design approach through life cycle assessment including product category rules and the content of environmental declarations.
Brussels, Belgium: European Committee for Standardization.

CEN (2019). EN 15804:2012+A2:2019:
Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
Brussels, Belgium: European Committee for Standardization.

PCR 2019:14 Construction products (EN 15804+A2) (version 2.0.1)

ISO (2006a). ISO 14025:2006:
Environmental labels and declarations – Type III environmental declarations – Principles and procedures.
Geneva, Switzerland: International Organization for Standardization.

ISO (2006b). ISO 14040:2006:
Environmental management – Life cycle assessment – Principles and framework.
Geneva, Switzerland: International Organization for Standardization.

ISO (2006c). ISO 14044:2006:
Environmental management – Life cycle assessment – Requirements and guidelines.
Geneva, Switzerland: International Organization for Standardization.

Abbreviations

Abbreviation	Definition
EPD	Environmental Product Declaration
LCA	Life Cycle Assessment
EoL	End-of-Life
GHG	Greenhouse Gas
GWP	Global Warming Potential
ISO	International Organization for Standardization
PCR	Product Category Rule

Annex 1

The EPD report is prepared for the following product codes shown in Table A2 (Annex 2). The table shows the product codes and the scaling factor relative to the reference product code for which the environmental parameters were calculated. According to the Life Cycle Assessment (LCA) results, the primary difference between the individual product codes of the JIP TWIN Ball valves are related to total mass, material composition and mechanical connection to the pipeline

The scalar factor represents the ration between the largest mass of a representative product (product code 065N7237) in the product group and the mass of the specific product for which the scalar factor is calculated. The scalar factors for each specific product are presented in the Table A2 (Annex 2). By evaluating this approach for a small product, it was found that using certain scalar factors provides a conversative method for calculating the environmental parameters of the entire product family.

Annex 1

Table A1: Product codes covered by the EPD

Product code	Product Designation	Product Weight [Kg]	Scale factor (A1-D)	GWPT A1-A3 [kgCO2-eq]	GWPT [kgCO2-eq]
JIP IP internal thread / AluPEX press fit / PEX press fit / PE-RT / CuFLEX press fit					
065N7237	JIP-IP DN 20 TWD PN25 T PEX26 DVP LOG	4,86	1,00	2,6E+01	1,7E+01
065N4082	JIP-IP DN 20 TWD PN25 T PEX20/26 DVP LOG	4,76	0,98	2,5E+01	1,7E+01
065N4083	JIP-IP DN 20 TWD PN25 T PEX25 DVP ISO	4,75	0,98	2,5E+01	1,7E+01
065N0091	JIP-IP DN 20 TWS PN25 T PEX26 DV LOG	4,35	0,89	2,3E+01	1,5E+01
065N0090	JIP-IP DN 20 TWS PN25 T PEX25 DV ISO	4,32	0,89	2,3E+01	1,5E+01
065N0075	JIP-IP DN 20 TWS PN40 T PEX25 ISO	3,35	0,69	1,8E+01	1,2E+01
065N0085	JIP-IP DN 25 TWS PN40 T PEX32 ISO	3,35	0,69	1,8E+01	1,2E+01
065N0392	JIP-IP DN 25 TWS PN40 T P-FLEX32 LOG	3,35	0,69	1,8E+01	1,2E+01
065N0074	JIP-IP DN 20 TWD 45 PN40 T PEX25 ISO	3,35	0,69	1,8E+01	1,2E+01
065N0084	JIP-IP DN 25 TWD PN40 T PEX32 ISO	3,35	0,69	1,8E+01	1,2E+01
065N0081	JIP-IP DN 15 TWS PN40 T PEX20 LOG	3,20	0,66	1,7E+01	1,1E+01
065N0080	JIP-IP DN 15 TWD PN40 T PEX20 LOG	3,19	0,66	1,7E+01	1,1E+01
065N0395	JIP-IP DN 25 TWD PN40 T P-FLEX32 LOG	3,10	0,64	1,6E+01	1,1E+01
065N7027	JIP-IP DN 25 TWD PN40 T PEX32 LOG	3,10	0,64	1,6E+01	1,1E+01
065N0402	JIP-IP DN 25 TWD PN40 T PE-RT 32 LOG	3,10	0,64	1,6E+01	1,1E+01
065N0394	JIP-IP DN 20 TWD PN40 T P-FLEX25 LOG	2,73	0,56	1,4E+01	9,7E+00
065N7025	JIP-IP DN 20 TWD PN40 T PEX26 LOG	2,73	0,56	1,4E+01	9,7E+00
065N0401	JIP-IP DN 20 TWD PN40 T PE-RT 25 LOG	2,70	0,56	1,4E+01	9,7E+00
065N0064	JIP-IP DN 20 TWD PN40 T PEX20 ISO	2,64	0,54	1,4E+01	9,4E+00
065N4013	JIP-IP DN 20 TWS PN40 T PEX20 LOG	2,58	0,53	1,4E+01	9,2E+00
065N4081	JIP-IP DN 20 TWS PN40 T CU22 LOG	2,50	0,51	1,3E+01	8,9E+00

Annex 1

Table A1: Product codes covered by the EPD

Product code	Product Designation	Product Weight [Kg]	Scale factor (A1-D)	GWPT A1-A3 [kgCO2-eq]	GWPT [kgCO2-eq]
065N7017	JIP-IP DN 20 TWD PN40 T CU18 LOG	2,50	0,51	1,3E+01	8,9E+00
065N7021	JIP-IP DN 20 TWD 45° PN40 T CU22	2,50	0,51	1,3E+01	8,9E+00
065N0391	JIP-IP DN 20 TWS PN40 T P-FLEX25 LOG	2,45	0,50	1,3E+01	8,7E+00
065N4077	JIP-IP DN 20 TWS PN40 T PEX26 LOG	2,45	0,50	1,3E+01	8,7E+00
065N4053	JIP-IP DN 20 TWD PN40 T PEX20 LOG	1,54	0,32	8,2E+00	5,6E+00
JIP IC internal thread / copper					
065N7280	JIP-IC DN25 TWD PN16 lo	2,67	0,55	1,4E+01	9,6E+00
065N4204	JIP-IC DN25 TW PN16 lo	2,57	0,53	1,4E+01	9,2E+00
065N4205	JIP-IC DN 15 TWD 45 PN16 T Fi18	2,51	0,52	1,3E+01	9,0E+00
065N4195	JIP-IC DN 15 TW PN16 T lo Fi18 C=var.	2,48	0,51	1,3E+01	8,9E+00
065N4071	JIP-IC DN 20 TW PN16 T lo Fi22 C=var.	2,43	0,50	1,3E+01	8,7E+00
065N7279	JIP-IC DN20 TWD 45° PN16 T lo Fi22 C=var	2,42	0,50	1,3E+01	8,7E+00
065N7278	JIP-IC DN15 TWD 45 PN16 T lo Fi18 Cvar.	2,37	0,49	1,3E+01	8,5E+00
JIP II internal thread					
065N7217	JIP-II DN 20 TWD 45° PN25 T rb	4,3	0,87	2,2E+01	1,5E+01
065N0816	JIP-II DN 32 TW PN40 L lo C=var.	3,2	0,66	1,7E+01	1,1E+01
065N7020	JIP-II DN 20 TWD 45° PN40 T C=var. Lg.	2,7	0,56	1,4E+01	9,7E+00
065N0823	JIP-II DN 20 TW PN40 T lo C=var. Lg.	2,6	0,53	1,4E+01	9,2E+00
065N7026	JIP-II DN 25 TWD 45° PN40 T	2,5	0,52	1,3E+01	9,0E+00
065N0811	JIP-II DN 25 TW PN40 T lo C=var.	2,5	0,50	1,3E+01	8,7E+00
065N7022	JIP-II DN 15 TWD 45° PN40 T	2,4	0,49	1,3E+01	8,5E+00
065N0806	JIP-II DN 20 TW PN40 T lo C=var.	2,3	0,47	1,2E+01	8,2E+00

Annex 1

Table A1: Product codes covered by the EPD

Product code	Product Designation	Product Weight [Kg]	Scale factor (A1-D)	GWPT A1-A3 [kgCO2-eq]	GWPT [kgCO2-eq]
065N0801	JIP-II DN 15 TW PN40 T lo C=var.	2,2	0,44	1,1E+01	7,6E+00
065N7024	JIP-II DN 20 TWD 45° PN40 T	2,1	0,44	1,1E+01	7,6E+00
065N7019	JIP-II TWD DN20 PN40 LO	1,5	0,30	7,7E+00	5,2E+00
065N7018	JIP-II TW DN20 PN40 LO	1,4	0,30	7,7E+00	5,2E+00
JIP IW internal thread / welded					
065N0916	JIP-IW DN 32 TW PN40 L lo C=var.	3,7	0,76	1,9E+01	1,3E+01
065N0912	JIP-IW DN 25 TW PN40 T lo XL +90mm	3,4	0,70	1,8E+01	1,2E+01
065N0911	JIP-IW DN 25 TW PN40 T lo C=var.	2,7	0,55	1,4E+01	9,6E+00
065N0901	JIP-IW DN 15 TW PN40 T lo C=var.	2,7	0,54	1,4E+01	9,4E+00
065N7036	JIP-IW DN 25 TWD 45° PN40 T	2,7	0,54	1,4E+01	9,4E+00
065N7034	JIP-IW DN 20 TWD 45° PN40 T	2,5	0,52	1,3E+01	9,0E+00
065N0906	JIP-IW DN 20 TW PN40 T lo C=var.	2,5	0,51	1,3E+01	8,9E+00
065N7032	JIP-IW DN 15 TWD 45° PN40 T	2,1	0,43	1,1E+01	7,5E+00
065N0907	JIP-IW DN 20 TW PN40 T lo XL +90mm	2,0	0,41	1,0E+01	7,1E+00
JIP WD welded					
065N4029	JIP-WD DN 20 TW PN40 L lo	3,2	0,65	1,7E+01	1,1E+01
065N4028	JIP-WD DN 15 TW PN40 L lo	3,0	0,63	1,6E+01	1,1E+01
JIP WW welded					
065N4004	JIP-WW DN 32 TW PN40 L hi C=var.	4,0	0,82	2,1E+01	1,4E+01
065N4003	JIP-WW DN 25 TW PN40 T lo C=var.	3,0	0,62	1,6E+01	1,1E+01
065N4001	JIP-WW DN 15 TW PN40 T lo C=var.	2,7	0,56	1,4E+01	9,7E+00
065N4002	JIP-WW DN 20 TW PN40 T lo C=var.	2,7	0,56	1,4E+01	9,7E+00

Version history

Original version of the EPD, 2026-04-09


Danfoss