

Environmental Product Declaration



Thermostatic operated water valve – AVTA

EPD owner	Danfoss A/S
EPD registration number	EPD-IES-0028418:001
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	2026-04-20
Validity date	2031-04-20

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



General information

EPD author	Danfoss Climate Solutions A/S
Declared unit	One product over its Reference Service Life
Product included	Thermostatic operated water valve, AVTA (003N0032-reference product)
Product covered by the EPD	See Annex
Manufacturing Location	Grodzisk, Poland
Use Location	European Union
Application	The Danfoss range of thermostatic operated water valves includes a series of products for both refrigeration and heating & cooling system.
Mass	[1,78] kg without packaging [2,02] kg with packaging
Dimensions (H×W×D)	[332.6 x 113.2 x 73.9] 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.environdec.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
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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 credibility 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 AVTA 003N0032 and product codes included in Annex. The production location is the Danfoss plant in Grodzisk, Poland. See more information on [Danfoss Product Store](#).

Thermostatic operated water valves are used for proportional regulation of flow quantity, depending on the setting and the sensor temperature. The Danfoss range of thermostatic operated water valves includes a series of products for both refrigeration and heating regulation. The valves are self-acting, i.e. they operate without the supply of auxiliary energy such as electricity or compressed air. The required temperature is maintained constant without unnecessary use of cooling water in cooling systems; hot water or steam in heating systems.

Product information	
UNCPC code	439

This product contains a Substance of Very High Concern (SVHC) from the EU REACH Candidate List. Lead (CAS 7439-92-1) is present above 0.1% w/w, and this information is provided in accordance with REACH Article 33.

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.



Figure 1: Thermostatic operated water valve, AVTA 003N0032

Content declaration

Table 1: Product composition

Material	Mass (kg)	%	Post-consumer scrap (%)
Metals	1,7E+00	95,8%	0%
Steel (excl. stainless steel)	2,9E-02	1,7%	0%
Stainless steel	4,6E-01	25,8%	0%
Aluminum and its alloys	1,4E-01	7,6%	0%
Copper and its alloys (Brass)	1,1E+00	60,7%	0%
Plastics & Rubbers	6,1E-02	3,4%	0%
Natural materials	1,4E-02	0,8%	0%
Electrical/electronic	2,8E-04	0,0%	0%
Other materials	9,1E-04	0,1%	0%
Total product	1,8E+00	100%	0%

Table 2: Packaging composition

Material	Mass (kg)	Mass versus product (%)
Paper and cardboard	2,4E-01	13%
Packaging Total	2,4E-01	13%
Total (Product + Packaging)	2,0E+00	

Figure 2: Product material composition overview

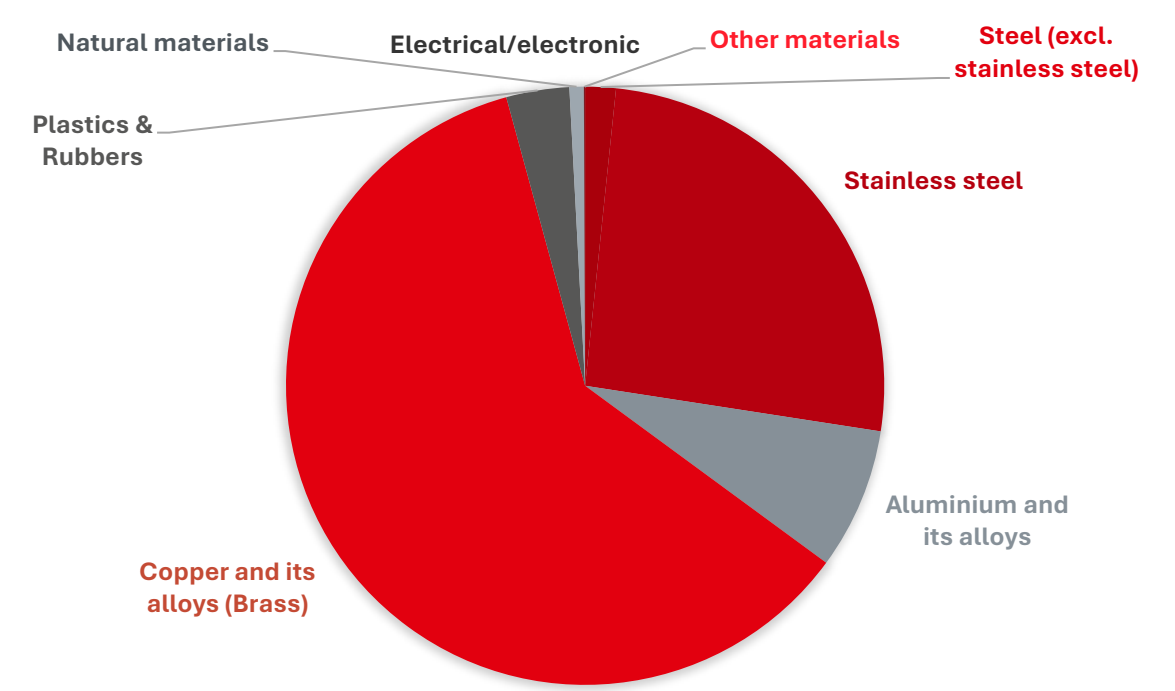


Table 3: Biogenic and recycled content overview

Biogenic content in the product [kg]	/
Biogenic content in the packaging [kg]	2,4E-01

LCA Information

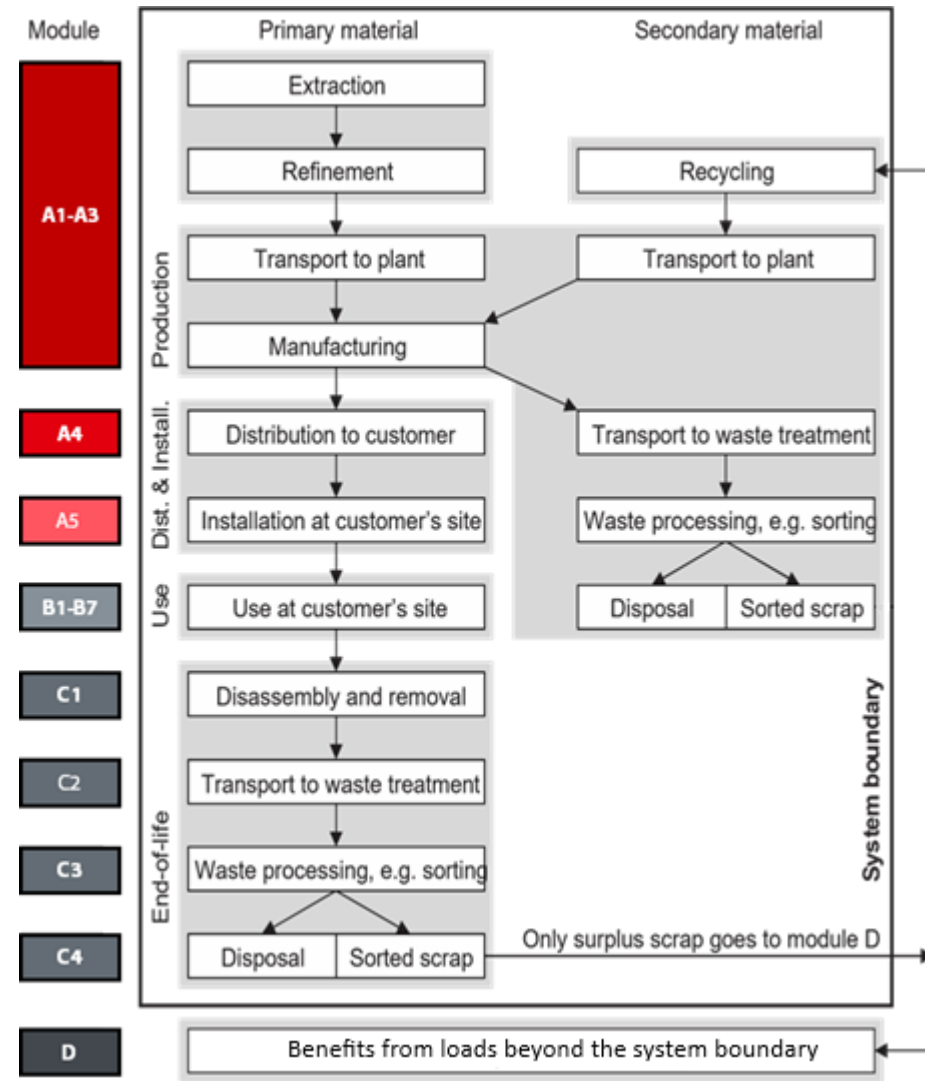
An EPD is a document used to communicate transparently, the quantified environmental impacts of a product over its lifecycle stages. This quantification is done by performing a Life Cycle Assessment (LCA) in line with a consistent set of rules known as a PCR (Product Category Rules).

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 4: 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	EU 27	EU 27	PL	EU 27	EU 27	-	-	-	-	-	-	-	EU 27	EU 27	EU 27	EU 27	EU 27
Share of primary data	< 10 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products	19 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Figure 3: Modular structure used in this EPD (EN15804+A2)



LCA Information

Product and packaging (A1-A3)

Final manufacturing occurs in the Grodzisk plant, Poland. The facility is certified according to ISO 14001, 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 site uses PPAs for its electricity consumption (photovoltaic), GWPT of 2,73E-02 kgCO2eq/kWh.

Shipping and installation (A4-A5)

Distribution is assumed to occur to customers within European Union. Transportation at 1800 km distance by truck is assumed between the factory and the final customer.

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 5: Overview of LCA study

Assumptions	
Reference service life	10 years
Intended market	European Union - The baseline scenario involves the distribution, installation, and end-of-life in European Union.
Use-phase	One average factor has been applied, representing a conservative scenario as the grid will decarbonize over time
Use of Proxy and supplier specific data	n-Butane R600 was cut-off due to limitations in the software and due to being below the cut off (less than 1 %).
Data	LCA for Experts (Sphera) database version 2025.2.
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 6: 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	0,07%
Transport of raw materials to manufacturing site	Database	Sphera my professional database 2025.2	2024	Primary data	4,12%
Other	Database	Sphera my professional database 2025.2	2024	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					4,19%

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 7: 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 Thermostatic operated water valve, AVTA 003N0032. Figure 4 presents the environmental impact of the Thermostatic operated water valve, AVTA 003N0032 across a number of environmental impact categories (following EN 15804+A2:2019) per life cycle stage, over its full life cycle, including Global Warming Potential.

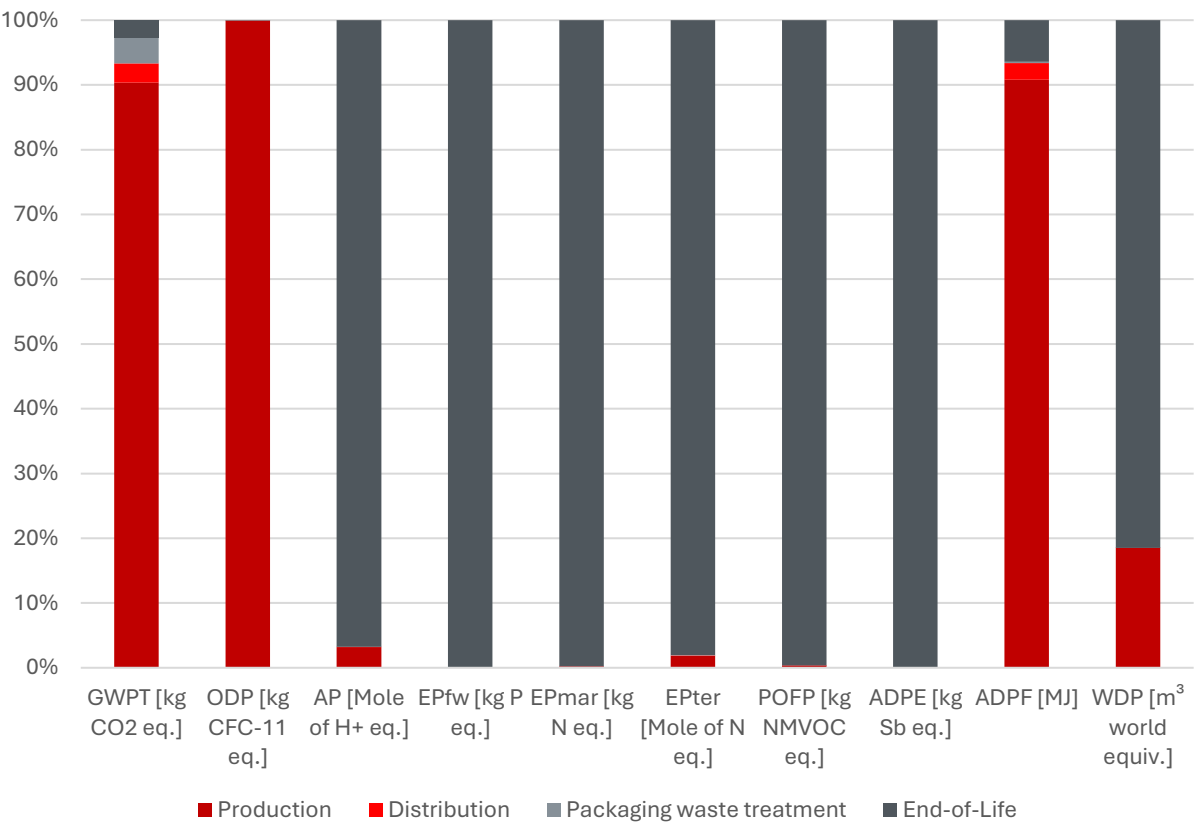
The environmental performance results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. The results of the end-of-life stage (module C) should be considered when using the results of the production stage (modules A1-A3).

Table 8: 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 4: Breakdown of environmental impacts by life cycle stages with Module D is not included. (See Table 8 for descriptions of environmental impact indicators)



Environmental performance

Of one-unit Thermostatic operated water valve, AVTA 003N0032

			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.	9,6E+00	3,1E-01	4,2E-01	0,0E+00	1,8E-02	2,7E-01	0,0E+00	-5,5E+00
	Fossil (GWPF)	kg CO ₂ eq.	1,0E+01	3,1E-01	2,5E-02	0,0E+00	1,8E-02	2,7E-01	0,0E+00	-5,5E+00
	Biogenic (GWPB)	kg CO ₂ eq.	-3,9E-01	0,0E+00	3,9E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
	Land use & change (GWPLULUC)	kg CO ₂ eq.	1,5E-02	1,3E-03	7,5E-06	0,0E+00	4,4E-07	8,7E-04	0,0E+00	-8,2E-03
	Greenhouse gases (GWP-GHG)	kg CO ₂ eq.	1,0E+01	3,1E-01	2,5E-02	0,0E+00	1,8E-02	2,7E-01	0,0E+00	-5,5E+00
Ozone Depletion Potential	ODP	kg CFC-11 eq.	2,8E-10	1,5E-13	6,3E-15	0,0E+00	2,1E-18	1,5E-13	0,0E+00	-9,6E-11
Acidification of soils and water	AP	Mole of H+ eq.	3,3E-02	5,9E-04	1,5E-04	0,0E+00	2,5E-05	1,4E-03	1,0E+00	-2,3E-02
Eutrophication	Freshwater (EPfw)	kg P eq.	1,8E-05	7,9E-07	3,8E-08	0,0E+00	3,9E-09	5,2E-07	2,0E+00	-5,4E-06
	Marine (EPmar)	kg N eq.	6,9E-03	2,5E-04	7,4E-05	0,0E+00	9,9E-06	6,8E-04	3,0E+00	-3,7E-03
	Terrestrial (EPter)	Mole of N eq.	7,6E-02	2,7E-03	8,0E-04	0,0E+00	1,1E-04	7,4E-03	4,0E+00	-4,1E-02
Photochemical ozone formation	POFP (POFP)	kg NMVOC eq.	1,9E-02	5,5E-04	1,4E-04	0,0E+00	2,4E-05	1,3E-03	5,0E+00	-1,1E-02
Depletion of abiotic resources	Minerals, metals (ADPE)	kg Sb eq.	1,4E-03	2,3E-08	5,3E-09	0,0E+00	6,5E-10	1,5E-08	6,0E+00	-9,9E-04
	Fossil fuels (ADPF)	MJ	1,4E+02	4,1E+00	3,3E-01	0,0E+00	2,6E-01	2,8E+00	7,0E+00	-7,9E+01
Water deprivation	WDP	m ³ world equiv.	1,8E+00	1,3E-03	2,6E-04	0,0E+00	3,1E-05	6,8E-03	8,0E+00	-1,4E+00

Table 9: Environmental impact indicators results per declared unit



Environmental performance

Of one-unit Thermostatic operated water valve, AVTA
003N0032

		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	4,7E-07	5,3E-09	8,9E-10	0,0E+00	1,5E-10	9,7E-09	0,0E+00	-3,0E-07
Potential human exposure efficiency relative to U235 (IRP)**	kBq U235 eq.	1,5E+00	8,4E-04	7,3E-05	0,0E+00	4,0E-05	7,1E-04	0,0E+00	-6,9E-01
Potential Comparative Toxic Unit for ecosystems (fresh water) (ETPfw)*	[CTUe]	4,7E+01	3,5E+00	3,0E-01	0,0E+00	1,9E-01	2,4E+00	0,0E+00	-4,0E+01
Potential Comparative Toxic Unit for humans (cancer) (HTPc)*	CTUh	5,2E-09	6,9E-11	4,9E-12	0,0E+00	3,5E-12	4,8E-11	0,0E+00	4,2E-06
Potential Comparative Toxic Unit for humans (non-cancer) (HTPnc)*	CTUh	7,6E-08	3,6E-09	1,4E-10	0,0E+00	1,2E-10	2,4E-09	0,0E+00	-7,0E-08
Potential soil quality index (SQP)*	Dimensionless	1,5E+02	1,1E+00	4,6E-02	0,0E+00	6,7E-04	7,4E-01	0,0E+00	-1,6E+01

Table 11: 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 $GWP-GHG = GWP + GWPLULUC$



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.
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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

How to read the table and determine the GWPT (Global Warming Potential Total)

1. Determine the code for identifying GWPT
2. Multiply the corresponding factor with the sum of values from A1 -C4

Example:

Product Code: AVTA 15 – 003N2182

Conversion Factor : 0 ,81

GWPT A1-A3: **9,6E+00** KgCO₂eq/ Valve

Climate Change A1 - A3: 0,81 x 9,6E+00 KgCO₂eq = **7,8E+00 KgCO₂eq**

GWPT A1-C4: **1,1E+01** kg CO₂ –eq/Valve

Climate Change A1 – C4: 0,81 x 1,1E+01 KgCO₂eq = **8,6E+00 KgCO₂eq**

- For other product code covered by this EPD document, a scale factor is used. The scalar factor is used to recalculate the environmental indicators(for example GWPT) for each product code. Since all the products are made from the same material and produced in the same location, the factor is calculated based on the net weight difference.





Annex

Table A1: Products covered by this EPD

Product code	Description	Conversion Factor (GWPT)	GWPT (A1-A3)	GWPT (A1-C4)
AVTA 15	003N2182	0,81	7,8E+00	8,6E+00
AVTA 15	003N2132	0,82	7,9E+00	8,7E+00
AVTA 10	003N1162	0,83	8,0E+00	8,8E+00
AVTA 15	003N2162	0,83	8,0E+00	8,8E+00
AVTA 20	003N3162	0,83	8,0E+00	8,8E+00
AVTA 10	003N1132	0,84	8,0E+00	8,9E+00
AVTA 20	003N3182	0,84	8,1E+00	8,9E+00
AVTA 20	003N3132	0,84	8,1E+00	9,0E+00
AVTA 10	003N1182	0,84	8,1E+00	9,0E+00
AVTA 25	003N4162	0,88	8,5E+00	9,4E+00
AVTA 20	003N3165	0,89	8,6E+00	9,5E+00
AVTA 20	003N0041	0,89	8,6E+00	9,5E+00
AVTA 25	003N4182	0,89	8,6E+00	9,5E+00
AVTA 25	003N4132	0,90	8,6E+00	9,5E+00
AVTA 25	003N4183	0,91	8,8E+00	9,7E+00
AVTA 25	003N4165	0,94	9,0E+00	1,0E+01
AVTA 25	003N0032	1,00	9,6E+00	1,1E+01

- For other product code covered by this EPD document, a scale factor is used. The scalar factor is used to recalculate the environmental indicators(for example GWPT) for each product code. Since all the products are made from the same material and produced in the same location, the factor is calculated based on the net weight difference.



Version history

Original version of the EPD, 2026-04-20



SUMMARY



INTRO



PRODUCT



LCA



RESULTS



ADDITIONAL INFORMATION



REFERENCES



Danfoss