



ENGINEERING  
TOMORROW



## Environmental **Product Declaration**



### **Solenoid Valve EV221BW 10-22**

**made from Brass**

**including Coil**

<b>EPD issued</b>	2025-02-03
<b>EPD expires</b>	2030-02-03
<b>EPD author</b>	Danfoss Climate Solutions RAC-RP
<b>EPD type</b>	Cradle-to-gate with options
<b>Declared unit</b>	One product over its Reference Service Life
<b>Products included</b>	Reference product used Solenoid Valve 132U2200 with Solenoid Coil 018F7397 This EPD covers range of Solenoid Valves EV221BW 10-22 with Solenoid Coil. Full list of codes covered in Annex 1
<b>Manufacturing Location</b>	Grodzisk, Poland
<b>Use Location</b>	Europe
<b>Application</b>	Water applications, heating installations and others such as indirect cooling, steam and laundry
<b>Mass</b>	1,236 kg valve and coil without packaging 1,329 kg valve and coil with packaging
<b>Dimensions (H×W×D)</b>	113x90x60 mm
<b>Verification</b>	[ ] External [X] Internal [ ] None
<b>Produced to</b>	<a href="#">Danfoss Product Category Rules</a> (2022-09)
<b>Internal independent verifier</b>	Danfoss Power Electronics & Drives A/S

#### **DISCLAIMER**

This EPD was prepared to the best of knowledge of Danfoss A/S. The life cycle assessment calculations were performed in accordance with ISO 14040 & 14044 and EN15804+A2.

All results were internally reviewed by independent experts. While this declaration has followed the guidance of ISO 14025, it has not been externally verified or registered by an EPD programme and therefore does not fully comply with the ISO 14025 standard.

This EPD has been published by Danfoss A/S on Danfoss Product Store and Danfoss Website. For questions, feedback or requests please contact your Danfoss sales representative.

## Introduction

This Environmental Product Declaration (EPD) follows the Danfoss Product Category Rules (PCR) (2022-09-20). These rules provide a consistent framework for calculating and reporting the environmental performance of Danfoss' products and are aligned with relevant international standards, particularly ISO 14025:2006 and EN 15804+A2:2019.

This document has been produced by Danfoss A/S following an internal verification process, but it is not a third-party verified document.

## What is an EPD?

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).

An EPD provides:

- A product's carbon footprint together with other relevant environmental indicators, including air pollution, water use, energy consumption, and waste, over its life cycle (Module A-C), as well as the expected benefits of reuse and recycling in reducing the impact of future products (Module D). See Table 1 for module descriptions.
- Environmental data allows customers to calculate LCAs and produce EPDs for their products.

## Type of EPD

This EPD is of the type 'cradle-to-grate with options' and includes all relevant modules: production (A1-A3), shipping (A4) and installation (A5); operational energy use (B6); 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 the use, maintenance, repair, replacement, refurbishment (B1-B5), and operational water use (B7) are excluded, following the cut-off rules from EN 15804.

**Table 1:** Modules of the product's life cycle included in the EPD.

Product stage			Installation		Use stage							End-of-life stage				Benefits
Raw materials	Transport	Manufacture	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-install.	Transport	Waste processing	Disposal	Benefits and loads outside system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MNR	MNR	MNR	MNR	MNR	X	MNR	X	X	X	X	X

(X = declared module; MNR = module not relevant)

## Product Description

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Danfoss direct servo-operated solenoid valves are an easy way to control and shut off fluids in fluctuating pressure conditions. The reference products used for this EPD are the Danfoss solenoid valve 132U2200 and the Danfoss coil 018F7397 which is a representative of sales in its range. The EPD covers all product codes listed in Annex Table 2.

The valve type is designed with EPDM seals in, lead-free dezincification resistant Eco brass for drinking water applications such as water supply / main inlet shut-off:

- Houses and large apartments,
- Commercial buildings
- Industrial buildings
- Kitchens and bathrooms
- Zoning

Industrial applications

- Laundry
- Dishwashing
- Dosing machines
- Food processing

See more information about the solenoid valve(132U2200) on the [Danfoss product store](#) and the solenoid coil(018F7397) on [the Danfoss product store](#).



**Figure 1: Solenoid Valve 132U2200 with Solenoid Coil 018F7397.**

The EPD covers all products in the solenoid valve product group referenced in Annex 1. Since the reference product (solenoid valve 132U2200, coil remains the same for all solenoid valves) is the biggest/heaviest in the referenced product group, therefore represents a conservative scenario. This assumption is based on the mass and material composition.

### Reference Service Life

For this EPD the reference service life (RSL) of the product is considered to be 1 year.

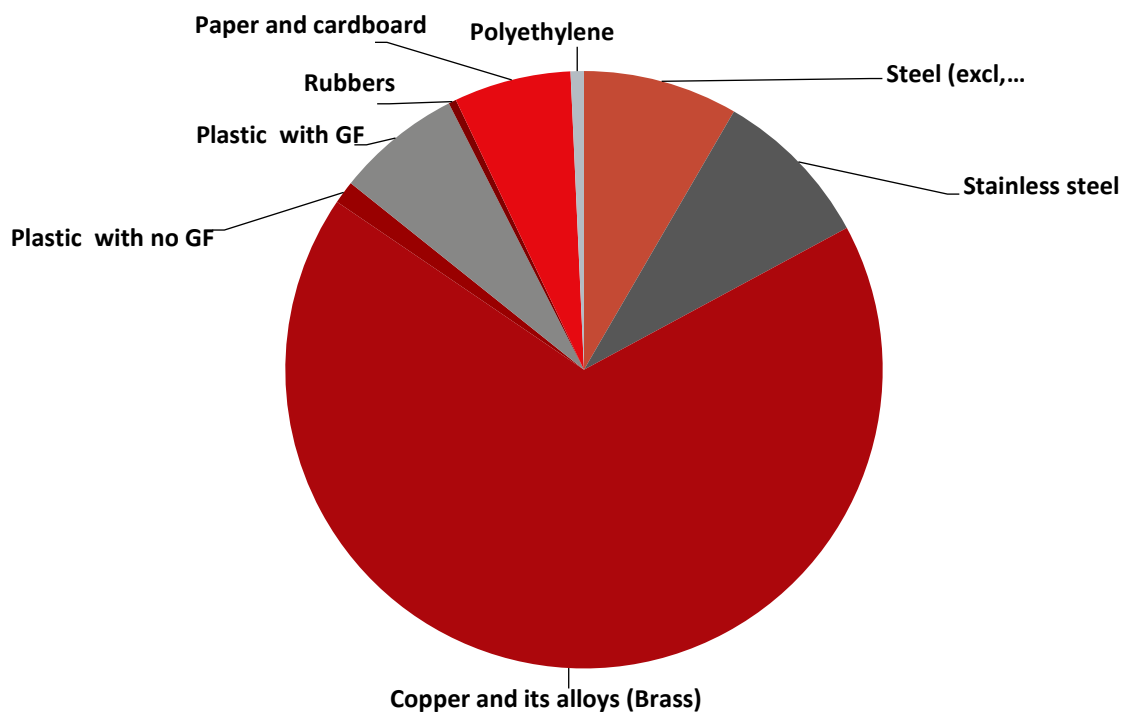
### Intended market.

The intended market of this study is Europe, and the baseline scenario involves the distribution, installation, and end-of-life in Europe.

## Product Description

**Table 2:** Product composition

Material	Mass (kg)	(%)
<b>Metals</b>	<b>1,120</b>	<b>90,6%</b>
Steel (excl, stainless steel)	0,111	9,0%
Stainless steel	0,116	9,4%
Copper and its alloys (Brass)	0,893	72,3%
<b>Plastics &amp; Rubbers</b>	<b>0,112</b>	<b>9,1%</b>
Plastic with no GF	0,016	1,3%
Plastic with GF	0,090	7,3%
Rubbers	0,006	0,4%
<b>Natural materials</b>	<b>0,004</b>	<b>0,3%</b>
Paper and cardboard	0,004	0,3%
<b>Total product</b>	<b>1,236</b>	<b>100,0%</b>
Paper and cardboard	0,084	89,8%
Polyethylene	0,010	10,2%
<b>Packaging Total</b>	<b>0,094</b>	<b>100%</b>
<b>Total (Product + Packaging)</b>	<b>1,329</b>	



**Figure 2:** Material Composition Overview

## Overview of LCA study

### Data quality

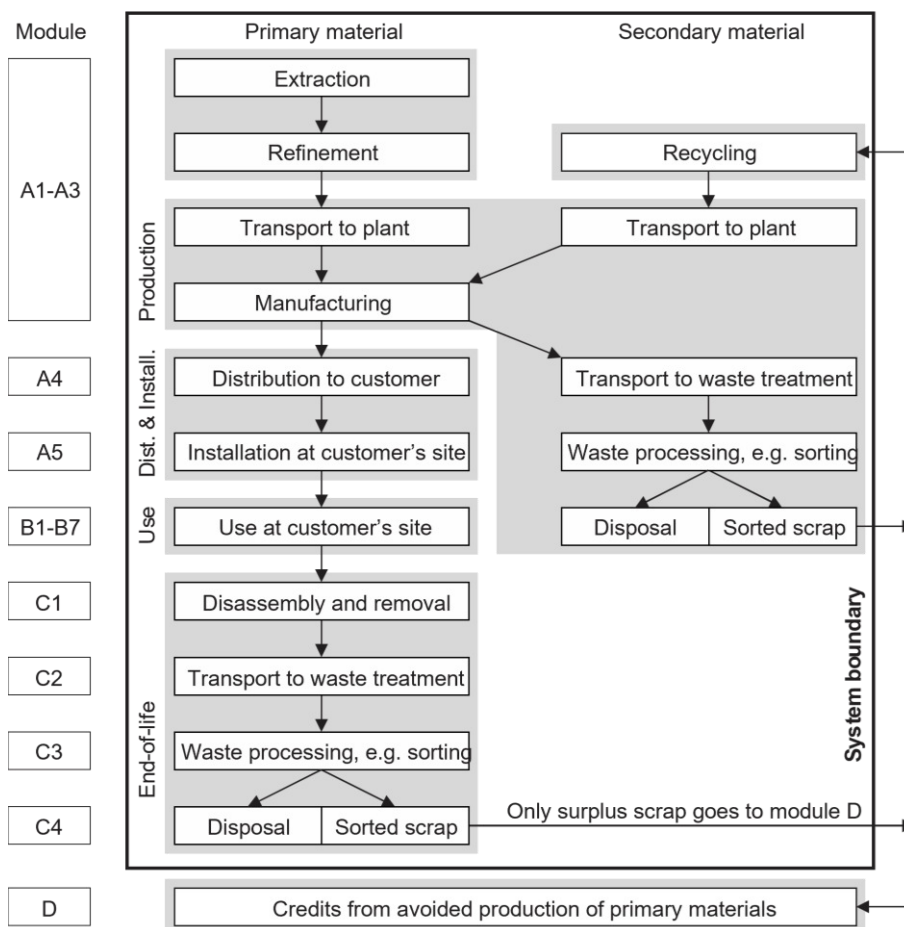
The data quality of the selected datasets is generally assessed as good and very good in terms of geographical, time, and technology representativeness and applicability. Background data is from LCA software LCA for Experts (Sphera) database version 2024.2.

### Allocation and cut-off criteria

The allocation is made following the provisions of EN 15804+A2. All major raw materials and all the essential energy are included. All hazardous materials and substances are considered in the inventory. Data sets within the system boundary are complete and fulfill the criteria for the exclusion of inputs and output criteria. No known material or energy flows were ignored, including those which fell below the limit of 1%. Accordingly, the total sum of input flows ignored is certainly less than 5% of the energy and mass applied.

### System boundaries

The results in this EPD are split into life cycle modules following EN 15804 (Figure 3): production (A1-A3), distribution (A4), (A5) installation, use (B6), and the end of the product's life (C1-C4). Module D represents environmental benefits and loads that occur beyond the system boundary (i.e., in future products).



**Figure 3:** Modular structure used in this EPD (following EN 15804+A2)

## Overview of LCA study

### Product and packaging manufacture (A1-A3)

Final manufacturing occurs in the Grodzisk plant, in Poland, data was collected for the year 2024. The facility is certified according to ISO 14001& ISO 900. Where waste generated on-site is recyclable, it is separated and recycled. For further information, [see here](#). All packaging materials can be safely recycled or incinerated if appropriate local facilities are available.

**Table 3:** Biogenic carbon content in the product and packaging

	Total (excluding recycling)
Biogenic carbon content in product [kg]	1,66E-03
Biogenic carbon content in accompanying packaging [kg]	4,04E-02

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO<sub>2</sub>.

### Shipping and installation (A4-A5)

Distribution to customers is assumed to be in central Europe, Stuttgart. Transportation at 1140 km distance by truck is assumed between the factory Poland Grodzisk and the final customer.

Module A5 includes disposal of packaging materials only, the benefits from e.g., energy recovered after plastic incineration are allocated to module D. The product is assumed to be installed by hand and there is no loss of product during installation. Energy use in handheld tools during installation is not included as it falls under the cut-off criteria.

### Use phase (B1-B7)

The scope of this study is targeting the European market, therefore, the product under study is sold and used through the European market. Sales also occur outside of the European market, which is important to note considering the impact the electricity grid mix can have on the emissions in the use phase. However, for this assessment, an average of EU-27 CO<sub>2</sub> factor from *LCA for Experts*© database version 2024.2. is applied. This factor will differ, depending on the country and share of renewables and fossil energy sources in the corresponding local electricity grid.

The use phase is bound on the application and customer usage; therefore, three duty rates have been defined (0,1%, 1% & 10%) and the overall consumption over its lifetime of 1 year. The results in this EPD express duty rate of 10%. This range of duty rates (0,1%, 1% & 10%) is typical for leak detection, shut-off, heating installations, water inlet, steam, and laundry amongst other applications.

**Table 4:** CO<sub>2</sub> emissions per use phase location.

Location of use	Use phase, kgCO <sub>2</sub> eq
EU-27 (Baseline scenario)	4,01E+00

The scope of this study is targeted at the European market; therefore, the product under study is sold and used in Europe. To represent the European market for this assessment, the European electricity grid mix CO<sub>2</sub> factor from the *LCA for Experts* database (2024.2) is applied.

## Overview of LCA study

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The major limitation of the impact calculations for the use phase is that the electricity grid mix in use is assumed to remain at the same carbon intensity over time. Following the plans for the decarbonization of the grid across Europe, the environmental impacts are expected to decrease over time within the course of the next 10 years. However, as decarbonization will occur in the future and as the pace of decarbonization is uncertain, the use of the emission intensity of today's grid should prove to be a "worst-case", conservative assumption.

### End-of-life (C1-C4)

The following end-of-life procedure has been applied:

- Manual dismantling is used to separate recyclable bulk materials, e.g., bulk metals and plastics.
- Shredding is used for the remaining parts, such as printed circuit board assemblies.
- Ferrous metals, non-ferrous metals, and bulk plastics are recovered through recycling.
- The remaining materials go to either energy recovery or landfill.

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 an average scenario with 50% of the product sent to recycling and 50% of the product sent to landfill (C3, C4, D) was used.

This scenario is designed to represent an average end-of-life scenario.

For the EPD this average scenario was chosen as it is assumed that it represents the majority of cases on average.

1. Recycling scenario with 100% of the product sent to recycling at the end-of-life, excluding fractions that cannot be recycled or incinerated (e.g., glass reinforcing in glass-filled plastics) and are sent to landfill.

This scenario illustrates best-case performance. It assumes a 100% collection rate and the best available recycling technologies. Under this scenario, electrical cables, and all metals, flat glass, and unreinforced plastics found within the body and chassis of the product are recycled. Printed circuit board assemblies are incinerated, and the copper and precious metals (gold, silver, palladium, and platinum) are recycled.

2. Landfill scenario with 100% of the product sent to landfill.

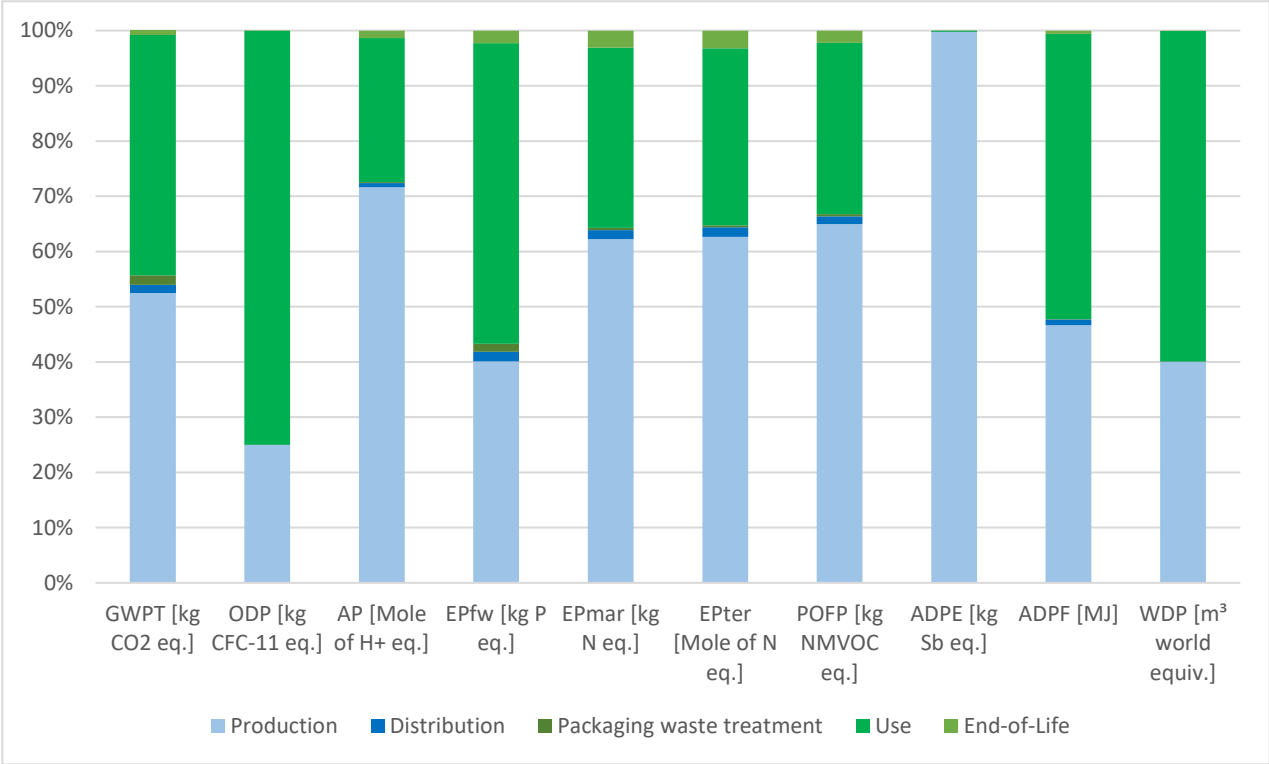
This scenario assumes that the whole product, including its packaging, is landfilled. It is designed to represent a poor end-of-life route where valuable resources are lost.

### 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, considering losses in the recycling process and the recycled material used in the production of the product. Module D covers the two end-of-life scenarios, as described above. It does not cover energy recovery from incineration since the process used in LCA for Experts has an efficiency below 60%. Therefore, the impacts of this process are reported in module C4 and no benefits are claimed in module D.

Environmental performance

This section presents the environmental performance of a one-unit solenoid valve 132U2200 with a one-unit solenoid coil 018F7397. Figure 4 presents the environmental impact of one-unit 132U2200 with one-unit 018F7397 across several environmental impact categories (following EN 15804+A2:2019) per life cycle stage, over its full life cycle of 1 year at a 10% duty rate, including Global Warming Potential.



**Figure 4:** Breakdown of environmental impacts by life cycle stages (see Table 6 for descriptions of environmental impact indicators).



**Table 5 Environmental Impact Indicators - over its full life cycle of 1 year at 10% duty rate**

	Production	Distribution	Packaging waste treatment	Use	End-of-Life				(not included in Figure 4)
Life cycle stages based on EN 15804+A2	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Environmental Impact Indicators \ Description	Manufacture of the product from 'cradle-to-gate'	Transport of the product to the customer	Installation of the product and disposal of used packaging	Use of the product over its lifetime e.g. 10 years	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
GWPT [kg CO2 eq.]	4,84E+00	1,31E-01	1,63E-01	4,01E+00	0,00E+00	1,24E-02	3,91E-02	2,09E-02	-2,47E-01
GWPF [kg CO2 eq.]	4,99E+00	1,29E-01	8,39E-03	4,01E+00	0,00E+00	1,24E-02	3,85E-02	2,09E-02	-2,47E-01
GWPB [kg CO2 eq.]	-1,54E-01	0,00E+00	1,54E-01	3,61E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWPLULUC [kg CO2 eq.]	7,49E-03	2,14E-03	8,19E-06	6,10E-04	0,00E+00	3,04E-07	6,34E-04	3,16E-05	-3,71E-04
ODP [kg CFC-11 eq.]	3,04E-11	1,87E-14	6,81E-15	9,10E-11	0,00E+00	1,47E-18	5,56E-15	1,56E-14	2,81E-12
AP [Mole of H+ eq.]	2,12E-02	2,32E-04	4,70E-05	7,73E-03	0,00E+00	1,76E-05	2,41E-04	1,35E-04	9,55E-04
EPfw [kg P eq.]	1,23E-05	5,43E-07	4,44E-07	1,67E-05	0,00E+00	2,72E-09	1,61E-07	5,44E-07	7,34E-07
EPmar [kg N eq.]	3,68E-03	9,35E-05	2,49E-05	1,93E-03	0,00E+00	6,84E-06	1,18E-04	5,77E-05	-9,80E-05
EPter [Mole of N eq.]	3,95E-02	1,08E-03	2,30E-04	2,02E-02	0,00E+00	7,70E-05	1,31E-03	6,33E-04	-1,05E-03
POFP [kg NMVOC eq.]	1,07E-02	2,28E-04	6,19E-05	5,11E-03	0,00E+00	1,63E-05	2,29E-04	1,21E-04	-3,84E-04
ADPE [kg Sb eq.]	4,02E-04	1,11E-08	8,60E-10	7,50E-07	0,00E+00	4,48E-10	3,28E-09	9,16E-10	3,53E-04
ADPF [MJ]	7,59E+01	1,68E+00	1,17E-01	8,40E+01	0,00E+00	1,82E-01	4,97E-01	3,02E-01	-4,99E+00
WDP [m³ world equiv.]	7,28E-01	1,97E-03	5,60E-04	1,09E+00	0,00E+00	2,12E-05	5,84E-04	6,79E-04	-5,74E-04

How to read scientific numbers:

e.g. 2,05E02 = 2,05 x 10<sup>2</sup> = 205

2,04E-01 = 2,04 x 10<sup>-1</sup> = 0,204

**Table 6:** Environmental impact indicator descriptions

Acronym	Unit	Indicator
GWPT	kg CO <sub>2</sub> eq.	Carbon footprint (Global Warming Potential) – total
GWPF	kg CO <sub>2</sub> eq.	Carbon footprint (Global Warming Potential) – fossil
GWPB	kg CO <sub>2</sub> eq.	Carbon footprint (Global Warming Potential) – biogenic
GWPLULUC	kg CO <sub>2</sub> eq.	Carbon footprint (Global Warming Potential) – land use and land use change
ODP	kg CFC-11 eq.	Depletion potential of the stratospheric ozone layer
AP	Mole H <sup>+</sup> eq.	Acidification potential
EPfw	kg P eq.	Eutrophication potential – aquatic freshwater
EPmar	kg N eq.	Eutrophication potential – aquatic marine
EPter	Mole of N eq.	Eutrophication potential – terrestrial
POFP	kg NMVOC eq.	Summer smog (photochemical ozone formation potential)
ADPE*	kg Sb eq.	Depletion of abiotic resources – minerals and metals
ADPF*	MJ	Depletion of abiotic resources – fossil fuels
WDP*	m <sup>3</sup> world eq.	Water deprivation potential (deprivation-weighted water consumption)

Results for modules A1-A3 are specific to the product. All results from module A4 onwards should be considered as scenarios that represent one possible outcome. The true environmental performance of the product will depend on actual use.

The results in this section are relative expressions only and do not predict actual impacts, the exceeding of thresholds, safety margins, or risks. EPDs from others may not be comparable.

### Carbon footprint

The total carbon footprint (GWPT), cradle-to-grave, of the product is 9,22E+00 kg CO<sub>2</sub>-eq (A1-C4). The carbon footprint (GWPT) of production of this product, cradle-to-gate, is 4,84E+00 kg CO<sub>2</sub>-eq (A1-A3).

**Table 7:** Resource use - over its full life cycle of 1 year at 10% duty rate

	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE [MJ]	2,57E01	1,44E-01	7,87E-03	6,08E01	0,00E+00	5,98E-04	4,28E-02	1,38E-02	1,14E00
PERM [MJ]	5,79E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT [MJ]	2,58E01	1,44E-01	7,87E-03	6,08E01	0,00E+00	5,98E-04	4,28E-02	1,38E-02	1,14E00
PENRE [MJ]	7,41E01	1,68E00	1,17E-01	8,40E01	0,00E+00	1,82E-01	4,97E-01	3,02E-01	-4,99E00
PENRM [MJ]	1,82E00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT [MJ]	7,59E01	1,68E00	1,17E-01	8,40E01	0,00E+00	1,82E-01	4,97E-01	3,02E-01	-4,99E00
SM [kg]	9,58E-01	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	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	0,00E+00
FW [m3]	2,68E-02	1,61E-04	1,76E-05	4,63E-02	0,00E+00	9,61E-07	4,77E-05	2,11E-05	-2,94E-03

**Table 8:** Resource use indicator descriptions

Acronym	Unit	Indicator
PERE	MJ	Use of renewable primary energy excluding renewable primary energy resources used as raw materials
PERM	MJ	Use of renewable primary energy resources used as raw materials
PERT	MJ	Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)
PENRE	MJ	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials
PENRM	MJ	Use of non-renewable primary energy resources used as raw materials
PENRT	MJ	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)
SM	kg	Use of secondary material
RSF	MJ	Use of renewable secondary fuels
NRSF	MJ	Use of non-renewable secondary fuels
FW	m <sup>3</sup>	Net use of fresh water

**Table 9:** Waste categories and output flows - over its full life cycle of 1 year at 10% duty rate

	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD [kg]	9,13E-08	6,42E-11	1,79E-11	1,21E-07	0,00E+00	1,25E-12	1,90E-11	2,08E-11	-2,07E-05
NHWD [kg]	2,93E-01	2,74E-04	3,57E-02	6,94E-02	0,00E+00	1,82E-05	8,11E-05	3,41E-01	-1,37E-02
RWD [kg]	3,51E-03	3,05E-06	7,48E-07	1,34E-02	0,00E+00	1,94E-07	9,05E-07	1,11E-06	1,98E-04
CRU [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	0,00E+00
MFR [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,39E-01	0,00E+00
MER [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	0,00E+00
EEE [MJ]	2,42E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET [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	0,00E+00

**Table 10:** Waste category and output flow descriptions

Acronym	Unit	Indicator
HWD	kg	Hazardous waste disposed
NHWD	kg	Non-hazardous waste disposed
RWD	kg	Radioactive waste disposed
CRU	kg	Components for reuse
MFR	kg	Materials for recycling
MER	kg	Materials for energy recovery
EEE	kg	Exported energy (electrical)
EET	kg	Exported energy (thermal)

**Table 11:** Additional indicators\* - over its full life cycle of 1 year at 10% duty rate

	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM [Disease incidences]	2,89E-07	2,08E-09	3,43E-10	6,46E-08	0,00E+00	1,04E-10	1,60E-09	1,04E-09	-1,19E-08
IRP [kBq U235 eq.]	5,51E-01	4,43E-04	9,91E-05	2,21E00	0,00E+00	2,76E-05	1,31E-04	1,40E-04	9,37E-03
ETPfw [CTUe]	3,12E01	1,23E00	1,02E-01	3,84E01	0,00E+00	1,32E-01	3,65E-01	1,09E00	-2,61E-01
HTPc [CTUh]	2,78E-07	2,51E-11	1,76E-12	1,37E-09	0,00E+00	2,45E-12	7,47E-12	4,37E-12	-2,92E-09
HTPnc [CTUh]	7,39E-08	1,41E-09	1,36E-10	3,16E-08	0,00E+00	1,07E-10	4,69E-10	2,30E-10	1,05E-08
SQP [Pt]	3,03E01	8,24E-01	1,86E-02	3,56E01	0,00E+00	4,64E-04	2,44E-01	2,01E-02	1,52E00
GWP-GHG [kg CO2 eq.]	5,00E+00	1,31E-01	0,00E+00	0,00E+00	0,00E+00	1,24E-02	0,00E+00	0,00E+00	0,00E+00

**Table 12:** Optional indicator descriptions

Acronym	Unit	Indicator
PM	Disease incidence	Potential incidence of disease due to particulate matter emissions
IRP**	kBq U235 eq.	Potential human exposure efficiency relative to U235
ETPfw*	CTUe	Potential Comparative Toxic Unit for Ecosystems (freshwater)
HTPc*	CTUh	Potential Comparative Toxic Unit for humans (cancer)
HTPnc*	CTUh	Potential Comparative Toxic Unit for humans (non-cancer)
SQP*	Dimensionless	Potential soil quality index

\*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 experience with the indicator.

\*\*Disclaimer for ionizing radiation: This impact category deals mainly with the eventual impact of low dose ionizing radiation on the human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon, and some construction materials is also not measured by this indicator.

ANNEX 1 – Values only for Global Warming Potential

				EV221BW 10-22 Brass						
				kg CO <sub>2</sub> e (1 year)						
Size	Kv (m <sup>3</sup> /h)	Code number	Valve function	GWPT (A1-C4 without B6) Global Warming Potential Without Use Phase (valve + coil)	Use Phase - B6					
					Duty rate 0,1%	Duty rate 0,1%	Duty rate 1%	Duty rate 1%	Duty rate 10%	Duty rate 10%
					11W coil*	16W coil**	11W coil*	16W coil**	11W coil*	16W coil**
G 3/8	1,5	132U1000	Normally closed (NC)	2,69	0,03	0,04	0,28	0,40	2,76	4,01
	1,5	132U1001	Normally open (NO)	2,68	0,03	0,04	0,28	0,40	2,76	4,01
G 1/2	1,5	132U1002	Normally closed (NC)	2,64	0,03	0,04	0,28	0,40	2,76	4,01
	1,5	132U1003	Normally open (NO)	2,63	0,03	0,04	0,28	0,40	2,76	4,01
	1,5	132U100431	Normally open (NO)	3,65	0,03	0,04	0,28	0,40	2,76	4,01
	1,5	132U100501	Normally open (NO)	3,66	0,03	0,04	0,28	0,40	2,76	4,01
	2,5	132U1300	Normally closed (NC)	3,53	0,03	0,04	0,28	0,40	2,76	4,01
	2,5	132U1301	Normally open (NO)	3,40	0,03	0,04	0,28	0,40	2,76	4,01
G 3/4	5	132U2003	Normally open (NO)	4,15	0,03	0,04	0,28	0,40	2,76	4,01
	6	132U2002	Normally open (NO)	4,22	0,03	0,04	0,28	0,40	2,76	4,01
	6	132U200531	Normally closed (NC)	5,07	0,03	0,04	0,28	0,40	2,76	4,01
	6	132U200601	Normally open (NO)	5,08	0,03	0,04	0,28	0,40	2,76	4,01
G 1	5	132U2201	Normally open (NO)	5,15	0,03	0,04	0,28	0,40	2,76	4,01
	6	132U2200	Normally closed (NC)	5,21	0,03	0,04	0,28	0,40	2,76	4,01

\* Represented by 11W 230V 50Hz coil (018F7351)

\*\* Represented by 16W 24 V DC coil (018F7397)

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### How to read the table and determine the GWPT (Global Warming Potential Total) of the valve and coil based on the duty rate.

1. Identify the code number for the specific valve size
2. Determine what type of coil is used (11W coil or 16W coil)
3. Determine what duty rate will be used (0,1%, 1%, 10%)
4. Add up the value from GWPT (A1-C4 without B6) corresponding to the code number and the value from the coil with its specific duty rate

#### Example :

132U1002 with a 16W coil at 10% duty rate

Sales code: 132U1002

GWPT A1-C4 without B6: 2,64 kgCO<sub>2</sub>eq

16W coil at 10% duty rate Use phase B6: 4,01 kgCO<sub>2</sub>eq

Climate change A1-C4 2,64 + 4,01 kgCO<sub>2</sub>eq = **6,65 kgCO<sub>2</sub> total (GWPT)**

## ANNEX 2 – Factors to determine the rest of environmental impact indicators

					EV221BW 10-22 Brass						
					Factor	Factor - Use Phase B6					
						Duty rate 0,1%	Duty rate 0,1%	Duty rate 1%	Duty rate 1%	Duty rate 10%	Duty rate 10%
Size	Kv (m³/h)	Code number	Valve function	Weight with packaging [kg] (valve + coil)	Global Warming Potential Without Use Phase (valve + coil)	11W coil*	16W coil**	11W coil*	16W coil**	11W coil*	16W coil**
G 3/8	1,5	132U1000	Normally closed (NC)	0,687	0,52	0,007	0,01	0,07	0,1	0,69	1
	1,5	132U1001	Normally open (NO)	0,685	0,52	0,007	0,01	0,07	0,1	0,69	1
G 1/2	1,5	132U1002	Normally closed (NC)	0,673	0,51	0,007	0,01	0,07	0,1	0,69	1
	1,5	132U1003	Normally open (NO)	0,670	0,50	0,007	0,01	0,07	0,1	0,69	1
	1,5	132U100431	Normally open (NO)	0,932	0,70	0,007	0,01	0,07	0,1	0,69	1
	1,5	132U100501	Normally open (NO)	0,933	0,70	0,007	0,01	0,07	0,1	0,69	1
	2,5	132U1300	Normally closed (NC)	0,900	0,68	0,007	0,01	0,07	0,1	0,69	1
	2,5	132U1301	Normally open (NO)	0,867	0,65	0,007	0,01	0,07	0,1	0,69	1
G 3/4	5	132U2003	Normally open (NO)	1,060	0,80	0,007	0,01	0,07	0,1	0,69	1
	6	132U2002	Normally open (NO)	1,076	0,81	0,007	0,01	0,07	0,1	0,69	1
	6	132U200531	Normally closed (NC)	1,294	0,97	0,007	0,01	0,07	0,1	0,69	1
	6	132U200601	Normally open (NO)	1,296	0,98	0,007	0,01	0,07	0,1	0,69	1
G 1	5	132U2201	Normally open (NO)	1,313	0,99	0,007	0,01	0,07	0,1	0,69	1
	6	132U2200	Normally closed (NC)	1,329	1,00	0,007	0,01	0,07	0,1	0,69	1

Reference products used in the EPD

\* Represented by 11W 230V 50Hz coil (018F7351)

\*\* Represented by 16W 24 V DC coil (018F7397)



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How to read the table and determine the rest of the environmental impact indicators for GWP of the valve/coil and use phase.

1. Identify the code number for the specific valve
2. Determine what type of coil is used (11W coil or 16W coil)
3. Determine what duty rate will be used (0,1%, 1%, 10%)
4. Multiply the specific GWPT(A1-C4) without the B6 **Factor** corresponding to the code number with the specific environmental impact indicator from Table 5 **Excluding B6**
5. Based on points 2 & 3 Factor multiply the corresponding factor with the specific environmental impact indicator (same as point 4) B6
6. Add the values from point 4&5.

**Example** - ODP [kg CFC-11 eq.]

132U1002 with a 16W coil at 10% duty rate

Sales code: 132U1002

Conversion factor: 0,51

16W coil at 10% duty rate factor: 1

$0,51 * ((A1-A3)+A4+A5+C1+C2+C3+C4) + 1 * B6 = 1,55E-11 + 9,10E-11 \rightarrow \mathbf{1,07E-10 \text{ kg CFC-11 eq}}$  over its life cycle

OR

You could calculate for individual life cycle stages without doing the SUM of A1-D, and instead pick individual values associated with the life cycle stage.

Extract from Table 5

Life cycle stages based on EN 15804+A2	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
ODP [kg CFC-11 eq.]	3,04E-11	1,87E-14	6,81E-15	9,10E-11	0,00E+00	1,47E-18	5,56E-15	1,56E-14	2,81E-12

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