Environmental **Product Declaration**

Solenoid coil BE, BB, BY, BA, BD

EPD owner	Danfoss A/S
EPD registration number	EPD-IES-0031139:001
Programme	The International EPD® System, www.environdec.com
Programme operator	EDP International AB
EPD Type	Cradle to gate with options, modules A4-A5, B6, modules C1–C4, and module D, EPD for multiple products based on worse case results
Version date	2026-05-04
Validity date	2031-05-04

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 A/S
Declared unit	One product over its Reference Service Life
Product included	Solenoid Coil 018F6193
Product covered by the EPD	List of products covered located in annex
Manufacturing Location	Grodzisk, Poland
Use Location	Europe
Application	Refrigeration, A/C, Heat Pumps, and Industrial systems
Mass	0,292 kg without packaging 0,303 kg with packaging
Dimensions (H×W×D)	94 x 58 x 46 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:

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Product information

The reference product **Solenoid Coil 018F6193** used for this EPD is representative of all Solenoid Coils presented in the annex of this EPD.The production location is the Danfoss plant in **Grodzisk, Poland**. See more information on Danfoss Product Store.

The coils are specially designed to operate in the aggressive environment of high humidity and temperature fluctuations that you find in most refrigeration systems. The clip- on fastening system ensures faultless installation and makes the coils easy to mount and dismount. A Danfoss clip-on coil can be mounted without any tools at all, and it is simple to dismount the coil by means of a screwdriver. The clip-on coils are available for the entire range of Danfoss solenoid valves for refrigeration, freezing and air conditioning purposes.

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.

Figure 1: Solenoid Coil 018F6193

Content declaration

Table 1: Product composition

Material	Mass (kg)	%	Post-consumer scrap (%)
Metals	**1,8E-01**	**60,4%**	**0%**
Copper and its alloys	8,7E-02	29,8%	0%
Steel	8,9E-02	30,6%	0%
Plastics	**1,1E-01**	**40,2%**	**0%**
Plastic with no GF	8,0E-03	2,7%	0%
Plastic with GF	1,1E-01	36,3%	0%
Natural materials	1,8E-03	**0,6%**	0%
Paper and cardboard	**1,8E-03**	0,6%	0%
Product Total	**2,9E-01**	**100,0%**	**0%**

Table 2: Packaging composition

Material	Mass (kg)	Mass versus product (%)
Packing and Cardboard	1,2E-02	100%
Packaging Total	1,2E-02	**100%**
Total (Product + Packaging)	3,0E-01	

Figure 2: Product material composition overview

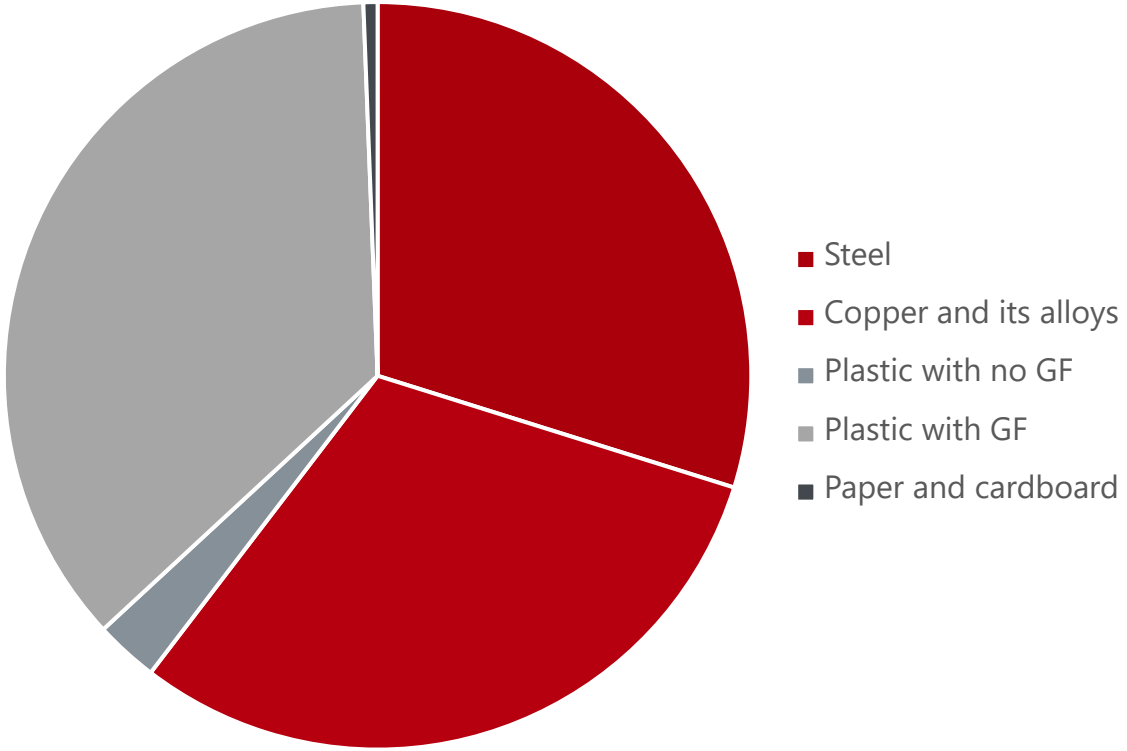


Table 3: Biogenic and recycled content overview

Biogenic content in the product [kg]	/
Biogenic content in the packaging [kg]	1.2E-02

LCA Information

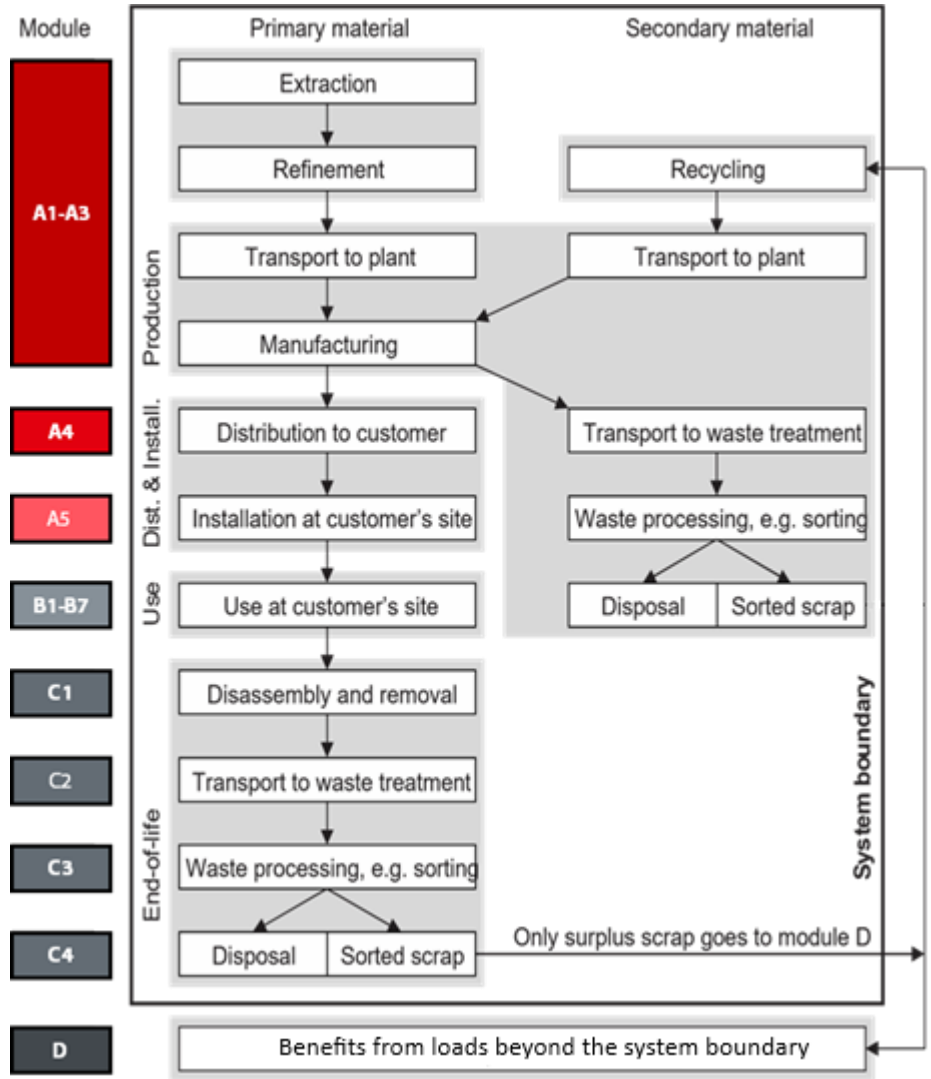
An EPD is a document used to communicate transparently, the quantified environmental impacts of a product over its lifecycle stages. This quantification is done by performing a Life Cycle Assessment (LCA) in line with a consistent set of rules known as a PCR (Product Category Rules).

This EPD is of the type 'cradle-to-gate with options' and includes all relevant modules: production (A1-A3), shipping (A4) and installation (A5); 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 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	X	ND	X	X	X	X	X
Geography	EU-27	EU-27	EU-27	PL	EU 27	-	-	-	-	-	EU 27	-	EU 27	EU 27	EU 27	EU 27	EU 27
Specific data used	7%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products	46%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
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 IATF 16949 compliant, ISO 14001, ISO 9001, PED/PESR, UL & MID 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. Photovoltaic energy was used during the final assembly of this product, with production emissions of 2.73E-02 kg CO_2 per kWh.

Shipping and installation (A4-A5)

Distribution is assumed to occur to customers within Europe region. Transportation at 3000 km distance by truck is assumed between the factory Poland Grodzisk 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	EU-27 - The baseline scenario involves the distribution, installation, and end-of-life in [Country/Region]
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	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 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	2026	Primary data	**2,1%**
Transport of raw materials to manufacturing site	Database	Sphera my professional database 2025.2	2026	Primary data	**4,9%**
Other	Database	Sphera my professional database 2025.2	2026	Secondary data	**0,0%**
Total share of primary data, of GWP-GHG results for A1-A3					**7,0%**

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

Use phase (B1-B7)

The use phase is bound on the application and customer usage; therefore, three duty rates have been defined (1%, 10% & 30%) and the overall consumption over its lifetime of 1 year. The results in this EPD express duty rate of 1%. This range of duty rates (1%, 10% & 30%) is typical for leak detection, shut-off, heating installations, water inlet, steam, and laundry amongst other applications. The coil power consumption has been calculated by considering continuous operation for Ten full year. At a continuous power rating of 17 watts operating 24/7, the annual energy consumption is 148.92 kWh. Over a 10-year period, this results in a total consumption of 1,489.2 kWh. When considering a 1% duty cycle, the total energy consumption over the 10 years is 14.89 kWh.

For the purpose of this assessment, use within Europe is assumed and an average EU-27 CO2 factor from LCA for Experts database (2026.1) is applied. Sales also occur outside of 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 the purpose of this assessment, an average EU-27 CO2 factor from LCA for Experts© database version 2026.1. 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 CO2 emissions for the baseline scenario in EU-27 is 4.58E+00 kgCO2eq

LCA Information

End-of-life (C1-C4)

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 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 the end-of-life 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 Solenoid Coil 018F6193. Figure 4 presents the environmental impact of the Solenoid Coil 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.

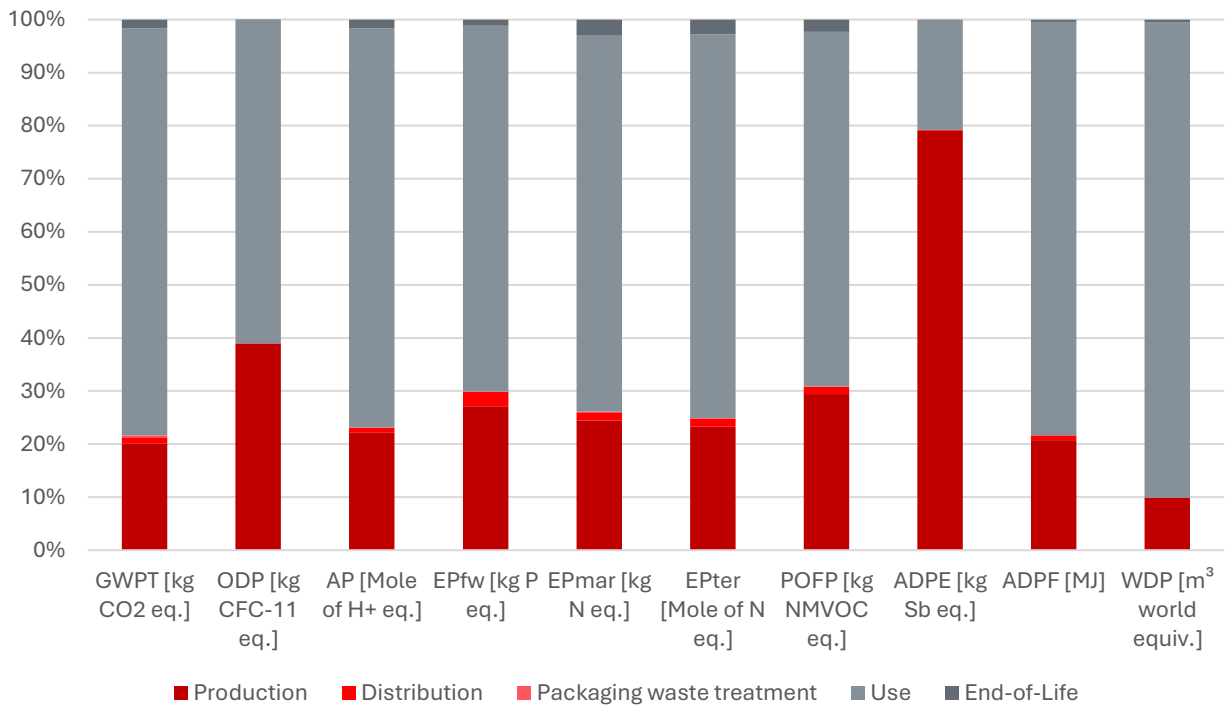
The environmental performance results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. The results of the end-of-life stage (module C) should be considered when using the results of the production stage (modules A1-A3).

Table 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 Solenoid Coil 018F6193

			Production	Distribution	Packaging waste treatment	Use	End-of-Life				Benefits & Loads
			A1-A3	A4	A5	B6	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	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
Impact category	**Environmental Impact indicators**	**Unit**									
Global Warming Potential	**Total (GWPT)**	kg CO_2 eq.	1,3E+00	7,9E-02	2,2E-02	4,8E+00	0,0E+00	2,9E-03	9,9E-02	0,0E+00	-1,7E-01
	Fossil (GWPF)	kg CO_2 eq.	1,3E+00	7,9E-02	1,2E-03	4,8E+00	0,0E+00	2,9E-03	9,9E-02	0,0E+00	-1,7E-01
	Biogenic (GWPB)	kg CO_2 eq.	-2,1E-02	0,0E+00	2,1E-02	4,9E-02	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
	Land use & change (GWPLULUC)	kg CO_2 eq.	1,4E-03	3,4E-04	3,7E-07	1,4E-02	0,0E+00	7,2E-08	1,4E-04	0,0E+00	-4,8E-04
	Greenhouse gases (GWP-GHG)	kg CO_2 eq.	1,3E+00	7,9E-02	1,2E-03	4,8E+00	0,0E+00	2,9E-03	9,9E-02	0,0E+00	-1,7E-01
Ozone Depletion Potential	**ODP**	kg CFC-11 eq.	1,3E-10	3,7E-14	3,1E-16	2,1E-10	0,0E+00	3,5E-19	3,9E-14	0,0E+00	-1,4E-11
Acidification of soils and water	**AP**	Mole of H+ eq.	3,3E-03	1,5E-04	7,2E-06	1,1E-02	0,0E+00	4,2E-06	2,4E-04	0,0E+00	-9,1E-04
Eutrophication	**Freshwater (EPfw)**	kg P eq.	2,0E-06	2,0E-07	1,9E-09	5,0E-06	0,0E+00	6,4E-10	8,3E-08	0,0E+00	-1,7E-07
	Marine (EPmar)	kg N eq.	9,5E-04	6,3E-05	3,6E-06	2,8E-03	0,0E+00	1,6E-06	1,1E-04	0,0E+00	-2,0E-04
	Terrestrial (EPter)	Mole of N eq.	1,1E-02	6,8E-04	4,0E-05	3,3E-02	0,0E+00	1,8E-05	1,2E-03	0,0E+00	-2,1E-03
Photochemical ozone formation	**POFP (POFP)**	kg NMVOC eq.	2,9E-03	1,4E-04	6,7E-06	6,5E-03	0,0E+00	3,9E-06	2,2E-04	0,0E+00	-6,0E-04
Depletion of abiotic resources	**Minerals, metals (ADPE)**	kg Sb eq.	4,5E-06	5,7E-09	2,6E-10	1,2E-06	0,0E+00	1,1E-10	2,6E-09	0,0E+00	-5,9E-05
	Fossil fuels (ADPF)	MJ	2,4E+01	1,0E+00	1,6E-02	8,9E+01	0,0E+00	4,3E-02	4,9E-01	0,0E+00	-2,4E+00
Water deprivation	**WDP**	m^3 world equiv.	1,0E-01	3,2E-04	1,3E-05	9,1E-01	0,0E+00	5,0E-06	5,7E-03	0,0E+00	-7,0E-02

Table 9: Environmental impact indicators results per declared unit

Environmental performance

Of one-unit Solenoid Coil 018F6193

		Production	Distribution	Packaging waste treatment	Use	End-of-Life				Benefits & Loads
		A1-A3	A4	A5	B6	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	2,6E+01	7,3E-02	6,4E-04	6,8E+01	0,0E+00	1,4E-04	4,0E-02	0,0E+00	-3,2E-01
Use of renewable primary energy resources used as raw materials (PERM)	MJ	2,7E-02	0,0E+00	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	2,6E+01	7,3E-02	6,4E-04	6,8E+01	0,0E+00	1,4E-04	4,0E-02	0,0E+00	-3,2E-01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	2,2E+01	1,0E+00	1,6E-02	8,9E+01	0,0E+00	4,3E-02	4,9E-01	0,0E+00	-2,4E+00
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	1,8E+00	0,0E+00	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	2,4E+01	1,0E+00	1,6E-02	8,9E+01	0,0E+00	4,3E-02	4,9E-01	0,0E+00	-2,4E+00
Use of secondary material (SM)	kg	2,0E-02	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 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	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	0,0E+00
Net use of fresh water (FW)	m^3	6,2E-03	2,3E-05	4,8E-07	4,3E-02	0,0E+00	2,3E-07	1,4E-04	0,0E+00	-1,3E-03
Waste categories and output flows indicators	**Unit**									
Hazardous waste disposed (HWD)	kg	2,2E-08	4,7E-11	3,4E-12	1,3E-07	0,0E+00	3,0E-13	3,5E-11	0,0E+00	1,8E-09
Non-hazardous waste disposed (NHWD)	kg	3,4E-02	2,0E-04	1,9E-06	7,7E-02	0,0E+00	4,3E-06	2,3E-01	0,0E+00	-4,8E-02
Radioactive waste disposed (RWD)	kg	1,0E-03	1,6E-06	4,3E-08	1,2E-02	0,0E+00	4,6E-08	1,4E-06	0,0E+00	2,7E-06
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	0,0E+00
Materials for recycling (MFR)	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	2,7E-01	0,0E+00	0,0E+00
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	0,0E+00
Exported energy (electrical) (EEE)	MJ	2,6E-02	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 (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	0,0E+00

Table 10: Resource use, waste categories, and output flows result per declared unit.

Environmental performance

Of one-unit Solenoid Coil 018F6193

		Production	Distribution	Packaging waste treatment	Use	End-of-Life				Benefits & Loads
		A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Additional indicators	**Unit**									
Potential incidence of disease due to particulate matter emissions (PM)	Disease incidences	3,9E-08	1,3E-09	4,4E-11	9,3E-08	0,0E+00	2,5E-11	1,7E-09	0,0E+00	-1,0E-08
Potential human exposure efficiency relative to U235 (IRP)**	kBq U235 eq.	1,6E-01	2,1E-04	3,6E-06	1,9E+00	0,0E+00	6,5E-06	1,8E-04	0,0E+00	1,1E-03
Potential Comparative Toxic Unit for ecosystems (fresh water) (ETPfw)*	[CTUe]	7,8E+00	8,8E-01	1,5E-02	2,1E+01	0,0E+00	3,2E-02	4,0E-01	0,0E+00	-1,3E+00
Potential Comparative Toxic Unit for humans (cancer) (HTPc)*	CTUh	2,6E-10	1,7E-11	2,4E-13	1,4E-09	0,0E+00	5,8E-13	8,3E-12	0,0E+00	-1,4E-10
Potential Comparative Toxic Unit for humans (non-cancer) (HTPnc)*	CTUh	7,2E-09	9,1E-10	6,7E-12	4,4E-08	0,0E+00	1,9E-11	4,0E-10	0,0E+00	-2,6E-09
Potential soil quality index (SQP)*	Dimensionless	5,7E+00	2,7E-01	2,3E-03	3,7E+01	0,0E+00	1,1E-04	1,2E-01	0,0E+00	-8,2E-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=GWPF+GWPLULUC

References

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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 – Global Warming Potential values

		Solenoid Coil				
		kg CO_2 e				
Code number	GWPT from A1-A3	GWPT without B6 Global Warming Potential Without Use Phase	Power Consumption (W) @50Hz	Use Phase - B6		
				Duty rate 1%	Duty rate 10%	Duty rate 30%
042N8523	7,02E-01	8,10E-01	11	2,96	29,64	88,91
042N8501	7,15E-01	8,25E-01	12	3,23	32,33	96,99
042N7597	7,19E-01	8,30E-01	15	4,04	40,41	121,24
042N8508	7,19E-01	8,30E-01	8,5	2,29	22,90	68,70
042N7501	7,28E-01	8,40E-01	12	3,23	32,33	96,99
042N7504	7,28E-01	8,40E-01	12	3,23	32,33	96,99
042N7512	7,28E-01	8,40E-01	9	2,42	24,25	72,74
042N7522	7,28E-01	8,40E-01	12	3,23	32,33	96,99
042N7510	7,45E-01	8,60E-01	10	2,69	26,94	80,82
042N7520	7,45E-01	8,60E-01	9,5	2,56	25,59	76,78
042N7502	7,50E-01	8,65E-01	10	2,69	26,94	80,82
042N7523	7,54E-01	8,70E-01	11	2,96	29,64	88,91
042N7508	7,71E-01	8,90E-01	8,5	2,29	22,90	68,70
042N7556	7,80E-01	9,00E-01	12	3,23	32,33	96,99
042N7591	7,84E-01	9,05E-01	13,5	3,64	36,37	109,11
042N7551	8,23E-01	9,50E-01	14	3,77	37,72	113,15
042N7550	8,32E-01	9,60E-01	14	3,77	37,72	113,15
042N7408	1,07E+00	1,23E+00	12	3,23	32,33	96,99
042N7453	1,10E+00	1,27E+00	10,5	2,83	28,29	84,86
018F7358	1,11E+00	1,28E+00	11	2,96	29,64	88,91
018F8358	1,11E+00	1,28E+00	11	2,96	29,64	88,91
042N7401	1,12E+00	1,29E+00	12	3,23	32,33	96,99
018F7353	1,13E+00	1,30E+00	14	3,77	37,72	113,15
018F4517	1,13E+00	1,30E+00	10	2,69	26,94	80,82
018F7365	1,14E+00	1,31E+00	14	3,77	37,72	113,15
042N7430	1,14E+00	1,31E+00	15	4,04	40,41	121,24
018F4520	1,14E+00	1,32E+00	12	3,23	32,33	96,99
018F8363	1,15E+00	1,33E+00	16	4,31	43,11	129,32
042N7432	1,15E+00	1,33E+00	16	4,31	43,11	129,32
042N8432	1,15E+00	1,33E+00	16	4,31	43,11	129,32
018F7361	1,17E+00	1,35E+00	11	2,96	29,64	88,91
018F8391	1,17E+00	1,35E+00	11	2,96	29,64	88,91
018F8351	1,17E+00	1,36E+00	11	2,96	29,64	88,91
018F8007	1,18E+00	1,36E+00	12	3,23	32,33	96,99
018F4511	1,18E+00	1,37E+00	10	2,69	26,94	80,82
018F6182	1,19E+00	1,37E+00	12	3,23	32,33	96,99

ANNEX 1 – Global Warming Potential values

		Solenoid Coil				
		kg CO_2 e				
Code number	GWPT from A1-A3	GWPT without B6 Global Warming Potential Without Use Phase	Power Consumption (W) @50Hz	Use Phase - B6		
				Duty rate 1%	Duty rate 10%	Duty rate 30%
018F7351	1,19E+00	1,37E+00	11	2,96	29,64	88,91
018F8352	1,19E+00	1,37E+00	11	2,96	29,64	88,91
018F7352	1,20E+00	1,38E+00	11	2,96	29,64	88,91
018F7360	1,20E+00	1,38E+00	15	4,04	40,41	121,24
018F7363	1,20E+00	1,38E+00	16	4,31	43,11	129,32
018F7392	1,20E+00	1,38E+00	16	4,31	43,11	129,32
018F7396	1,20E+00	1,38E+00	14	3,77	37,72	113,15
018F7658	1,20E+00	1,38E+00	16	4,31	43,11	129,32
018F7390	1,20E+00	1,39E+00	14	3,77	37,72	113,15
042N7457	1,20E+00	1,39E+00	16	4,31	43,11	129,32
018F7655	1,21E+00	1,40E+00	14	3,77	37,72	113,15
042N7427	1,21E+00	1,40E+00	12	3,23	32,33	96,99
018F8077	1,21E+00	1,40E+00	13	3,50	35,02	105,07
018F4519	1,21E+00	1,40E+00	13,5	3,64	36,37	109,11
018F7665	1,22E+00	1,41E+00	16	4,31	43,11	129,32
018F6185	1,22E+00	1,41E+00	11	2,96	29,64	88,91
018F6081	1,22E+00	1,41E+00	10	2,69	26,94	80,82
018F6176	1,25E+00	1,44E+00	12	3,23	32,33	96,99
018F7397	1,25E+00	1,44E+00	16	4,31	43,11	129,32
018F8045	1,25E+00	1,45E+00	14	3,77	37,72	113,15
018F7391	1,26E+00	1,45E+00	14	3,77	37,72	113,15
018F6991	1,26E+00	1,45E+00	18	4,85	48,49	145,48
018F8044	1,26E+00	1,45E+00	18	4,85	48,49	145,48
018F7388	1,26E+00	1,45E+00	11	2,96	29,64	88,91
018F8032	1,26E+00	1,46E+00	17	4,58	45,80	137,40
018F7663	1,27E+00	1,46E+00	14	3,77	37,72	113,15
018F8393	1,27E+00	1,46E+00	18	4,85	48,49	145,48
018F6177	1,27E+00	1,47E+00	11	2,96	29,64	88,91
018F6192	1,27E+00	1,47E+00	15	4,04	40,41	121,24
018F7394	1,27E+00	1,47E+00	7	1,89	18,86	56,58
018F6189	1,28E+00	1,48E+00	13	3,50	35,02	105,07
018F7660	1,28E+00	1,48E+00	14	3,77	37,72	113,15
018F6077	1,29E+00	1,49E+00	13	3,50	35,02	105,07
018F6193	1,30E+00	1,50E+00	17	4,58	45,80	137,40
018F7382	1,30E+00	1,50E+00	11	2,96	29,64	88,91

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

1. Identify the code number for the specific valve/Coil size
2. Determine what type of coil is used (Watt)
3. Determine what duty rate will be used (1%, 10%, 30%)
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

Global Warming Potential Total (GWPT) [kg CO_2 eq.]

018F7660 with a 14W coil at 10% duty rate

Sales code: 018F7660

GWPT A1-C4 without B6: 1,48 kgCO2eq (refer table Annex 1)

14W coil at 10% duty rate Use phase B6: 37,72 kgCO2eq(refer table Annex 1)

Climate change A1-C4 : GWPT A1-C4 without B6 + B6 use phase duty rate 14 W coil 10% = 1,48+37,72 kgCO2eq = **39,2 kgCO2 total (GWPT)**

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

		Solenoid Coil				
		Factors				
Code number	Weight with packaging	GWPT without B6 - Factor Global Warming Potential Without Use Phase	Power Consumption (W) @50Hz	Use Phase Factor - B6		
				Duty rate 1%	Duty rate 10%	Duty rate 30%
042N8523	0,162	0,540	11	0,65	6,47	19,41
042N8501	0,165	0,550	12	0,71	7,06	21,18
042N7597	0,166	0,553	15	0,88	8,82	26,47
042N8508	0,166	0,553	8,5	0,50	5,00	15,00
042N7501	0,168	0,560	12	0,71	7,06	21,18
042N7504	0,168	0,560	12	0,71	7,06	21,18
042N7512	0,168	0,560	9	0,53	5,29	15,88
042N7522	0,168	0,560	12	0,71	7,06	21,18
042N7510	0,172	0,573	10	0,59	5,88	17,65
042N7520	0,172	0,573	9,5	0,56	5,59	16,76
042N7502	0,173	0,577	10	0,59	5,88	17,65
042N7523	0,174	0,580	11	0,65	6,47	19,41
042N7508	0,178	0,593	8,5	0,50	5,00	15,00
042N7556	0,180	0,600	12	0,71	7,06	21,18
042N7591	0,181	0,603	13,5	0,79	7,94	23,82
042N7551	0,190	0,633	14	0,82	8,24	24,71
042N7550	0,192	0,640	14	0,82	8,24	24,71
042N7408	0,246	0,820	12	0,71	7,06	21,18
042N7453	0,254	0,847	10,5	0,62	6,18	18,53
018F7358	0,256	0,853	11	0,65	6,47	19,41
018F8358	0,256	0,853	11	0,65	6,47	19,41
042N7401	0,258	0,860	12	0,71	7,06	21,18
018F7353	0,260	0,867	14	0,82	8,24	24,71
018F4517	0,260	0,867	10	0,59	5,88	17,65
018F7365	0,262	0,873	14	0,82	8,24	24,71
042N7430	0,262	0,873	15	0,88	8,82	26,47
018F4520	0,264	0,880	12	0,71	7,06	21,18
018F8363	0,265	0,883	16	0,94	9,41	28,24
042N7432	0,266	0,887	16	0,94	9,41	28,24
042N8432	0,266	0,887	16	0,94	9,41	28,24
018F7361	0,270	0,900	11	0,65	6,47	19,41
018F8391	0,270	0,900	11	0,65	6,47	19,41
018F8351	0,271	0,903	11	0,65	6,47	19,41
018F8007	0,272	0,907	12	0,71	7,06	21,18
018F4511	0,273	0,910	10	0,59	5,88	17,65
018F6182	0,274	0,913	12	0,71	7,06	21,18

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

		Solenoid Coil				
		Factors				
Code number	Weight with packaging	GWPT without B6 - Factor Global Warming Potential Without Use Phase	Power Consumption (W) @50Hz	Use Phase Factor - B6		
				Duty rate 1%	Duty rate 10%	Duty rate 30%
018F7351	0,274	0,913	11	0,65	6,47	19,41
018F8352	0,274	0,913	11	0,65	6,47	19,41
018F7352	0,276	0,920	11	0,65	6,47	19,41
018F7360	0,276	0,920	15	0,88	8,82	26,47
018F7363	0,276	0,920	16	0,94	9,41	28,24
018F7392	0,276	0,920	16	0,94	9,41	28,24
018F7396	0,276	0,920	14	0,82	8,24	24,71
018F7658	0,276	0,920	16	0,94	9,41	28,24
018F7390	0,277	0,923	14	0,82	8,24	24,71
042N7457	0,278	0,927	16	0,94	9,41	28,24
018F7655	0,280	0,933	14	0,82	8,24	24,71
042N7427	0,280	0,933	12	0,71	7,06	21,18
018F8077	0,280	0,933	13	0,76	7,65	22,94
018F4519	0,280	0,933	13,5	0,79	7,94	23,82
018F7665	0,281	0,937	16	0,94	9,41	28,24
018F6185	0,282	0,940	11	0,65	6,47	19,41
018F6081	0,282	0,940	10	0,59	5,88	17,65
018F6176	0,288	0,960	12	0,71	7,06	21,18
018F7397	0,288	0,960	16	0,94	9,41	28,24
018F8045	0,289	0,963	14	0,82	8,24	24,71
018F7391	0,290	0,967	14	0,82	8,24	24,71
018F6991	0,290	0,967	18	1,06	10,59	31,76
018F8044	0,290	0,967	18	1,06	10,59	31,76
018F7388	0,290	0,967	11	0,65	6,47	19,41
018F8032	0,291	0,970	17	1,00	10,00	30,00
018F7663	0,292	0,973	14	0,82	8,24	24,71
018F8393	0,292	0,973	18	1,06	10,59	31,76
018F6177	0,294	0,980	11	0,65	6,47	19,41
018F6192	0,294	0,980	15	0,88	8,82	26,47
018F7394	0,294	0,980	7	0,41	4,12	12,35
018F6189	0,296	0,987	13	0,76	7,65	22,94
018F7660	0,296	0,987	14	0,82	8,24	24,71
018F6077	0,298	0,993	13	0,76	7,65	22,94
018F6193	0,300	1,000	17	1,00	10,00	30,00
018F7382	0,300	1,000	11	0,65	6,47	19,41

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

1. Identify the code number for the specific valve/Coil size
2. Determine what type of coil is used (Watt)
3. Determine what duty rate will be used (1%, 10%, 30%)
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 - Depletion potential of the stratospheric ozone layer (ODP) [kg CFC-11 eq.]

018F7660 with a 14W coil at 10% duty rate

Sales code: 018F7660

Conversion factor: 0,987 (refer table Annex 2)

14W coil at 10% duty rate factor: 8,24 (refer table Annex 2)

0,987*((A1-A3)+A4+A5+C1+C2+C3+C4)+ 8,24*B6 = 0,987*(1,3E-10+3,7E-14+3,1E-16+0.0E+00+3,5E-19+1,9E-14+0.0E+00)+8,24*2,1E-10 = **2,07E-9 kg CFC-11 eq** over its life cycle

- 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 9

Life cycle stages based on EN 15804+A2	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
ODP [kg CFC-11 eq.]	1,3E-10	3,7E-14	3,1E-16	2,1E-10	0,0E+00	3,5E-19	3,9E-14	0,0E+00	-1,4E-11

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Danfoss