

Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804+A2:2022 standards

For KOPOHALF® divided cable duct



Manufacturer: KOPOS KOLÍN a.s.

Program: National environmental labeling program

Program operator: Ministry of the Environment of the Czech Republic

Product Category Rules: EN 15804+A2:2022

EPD registration number: Sk10-05-26

EPD for a product group, based on the worst values of the impact category indicator results

Valid from: 2026-06-26

General information

Program: National environmental labeling program

Program Operator: Ministry of the Environment of the Czech Republic

Manufacturer: KOPOS KOLÍN a.s., Havlíčkova 432, Kolín 28002, Kolín IV, Czech Republic

EPD registration number: Sk10-05-26

Declared unit: 1 kg of divided cable duct KOPOHALF®

Product Category Rules: EN 15804+A2:2022

Owner of the EPD: KOPOS KOLÍN a.s.

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Valid from: 2026-06-26

Expiration date: 2031-06-25

Validity: 5 years

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

EPDs within a single category are not necessarily comparable. For two EPDs to be comparable, they must be based on the same product category principle, cover products with the same functions, technical characteristics, and uses—the same declared or functional unit must be used. They must have equivalent system boundaries, objectives, and scope; data quality requirements and criteria for the inclusion of inputs and outputs; data collection methods; calculation procedures; impact categories; and allocation procedures. Instructions regarding content and format for compiling the data required to develop the declaration and validity at the time of comparison must also be equivalent.

Divided cable duct KOPOHALF®



Company information

KOPOS KOLÍN a.s. is one of the traditional manufacturers of electrical installation materials in the Czech Republic, where it has been operating on the market for many years. We successfully continue the tradition of manufacturing wiring storage material in Kolín, which was started in 1926. Since 1962, the technical development of the plant has also dealt with the technology of processing plastic materials in connection with applications for wiring storage material. Thanks to modern technology, continuous product development is possible. In 2023, the construction of a PV plant was started, which was successfully completed in 2024.

Increasing market demands in the Czech Republic and abroad led the company to expand in Europe in 1997 and then overseas. Now KOPOS KOLÍN a.s. is part of the holding structure of KOPOS HOLDING, a.s.

The company has been ISO 9001 certified since 1997. In 2001, it was awarded the Safe Enterprise certificate and ISO 14001 certificate. In 2018, the company obtained ISO 50001 certification. All these certifications are verified and the certificates are renewed.

Product information

Cable laying and for a laying-out of the energy and communication lines. Another possible application is a protection of already installed underground cables. The protectors consist of two identical parts. When installing, the cables are put in the bottom part and then the top part is snapped to the bottom one. Connecting of protectors is performed by overlapping joined lower parts with an upper part at length of approximately 30 cm.

Technical information

KOPOHALF® products are available in several diameters and color options. In the product code, the diameter is indicated by the last three digits before the slash. The first letter after the underscore indicates the color, as follows: B = red, C = blue, F = black, E = yellow.

Tab. 1 – technical information about products

Type number	Outside diameter	Weight	Material	Norms	Mechanical resistance
06058/2	58 mm	0,665 Kg/m	PE	ČSN EN 50626-1:2024 ČSN EN ISO 9969:2016	450 N/ 20 cm
06110/2	110 mm	2,2 kg/m	PE		450 N/ 20 cm
06160/2	160 mm	4,6 kg/m			750 N/ 20 cm
06110P/2	110 mm	3,3 kg/m	PVC	ČSN EN 50626-1:2024 ČSN EN ISO 9969:09	750 N/ 20 cm

Divided PVC cable duct are manufactured in accordance with ČSN EN 50626-1:2024.

Installation temperature: -5 °C to +60 °C

Operating temperature: -25 °C to +60 °C

Mechanical resistance: 750 N

Reaction to fire class of the base material: A1.

Divided HDPE cable duct are manufactured in accordance with ČSN EN 50626-1:2024.

Installation temperature: -25 °C to +90 °C

Operating temperature: -55 °C to +90 °C

Mechanical resistance: 450 N, and for diameter 160 750 N

Reaction to fire class of the base material: A1-F.

Tab. 2 – Information on composition

Product	Material	% of representation
06058/2	Virgin PE	94–96 %
	Recycled PE	0 %
	Colour additives	1,5-2,2 %
	Minerals	2,0 – 4,5 %
06110/2	Virgin PE	21–95 %
	Recycled PE	0–77 %
	Colour additives	1,3 – 2,1 %
	Minerals	0,5 – 4,7 %
06160/2	Virgin PE	94–95 %
	Recycled PE	0 %
	Colour additives	1,1 – 1,6 %
	Minerals	4,4 – 4,6 %
06110P/2	PVC	65–77 %
	Additives	23–35 %

The products do not contain SVHC (Substances of very high concern) in excess of 0,1 % w/w according to the List of SVHC available at the date of issue of the EPD.

Tab. 3 – Information on packaging

Packaging	% of representation	Biogenic carbon
Paper packaging	4,95E-05 %	2,45E-07
Wood packaging	9,25 – 13,41 %	2,07-3,13E-02
Metal packaging	0,09 %	5,99E-08

LCA: Calculation rules

Declared unit

1 kg of KOPOHALF® products was used as the declared unit. Since the impacts of individual products do not meet the 10% rule, the worst impacts in each category were used.

Reference service life

If products KOPOHALF® are installed correctly under the surface, they can have a service life more than 30 years.

Product system and system boundaries

This EPD is a cradle-to-gate type with modules A4 - A5, C1 - C4 and module D.

Tab. 4 – Declared modules

	Product stage			Construction process stage		Use stage							End of life stage				Supplementary information beyond construction works life cycle
	Raw material supply	Transport	Manufacturing	Transport	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction, demolition	Transport	Waste processing	Disposal	Reuse, recovery, recycling potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X								X	X	X	X	X
Geography	ROW	ROW	CZ	ROW	ROW								ROW	ROW	ROW	ROW	ROW
Variation – products	13 % PE 06058 24 % PE 23 % PVC			-	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-
Variation – sites	0 %			-	-								-	-	-	-	-
Share of specific data	32 % 06058 PE 23 % PE 37 % PVC			-	-								-	-	-	-	-

ND – not declared

Raw material and its transport, A1 + A2

Granular PE/PVC polymers and additives such as paints and minerals are purchased for production. In addition, packaging materials are purchased, in particular wooden and metal packaging. The transport of raw materials varies depending on the quantity and the supplier

Manufacturing A3

Products KOPOHALF® included in this EPD are made in KOPOS KOLÍN a.s. v Kolíně.

The production consists of transporting the material through a weighbridge to a line where the material is melted and combined with additives such as paints. The melt is extruded through a mould where it takes the desired shape and diameter. The product is further cooled with water to fix its profile. Next, the product is marked with an imprint and packed.

Waste treatment

Waste generated during the manufacturing process is predominantly recycled internally directly at the production site of KOPOS KOLÍN a.s., where it is processed through grinding, regranulation, and reused in the production process.

Other types of waste, in particular plastic and paper waste, are handed over to authorized external entities for material recycling. Hazardous waste generated within the manufacturing process is considered for energy recovery.

Transport and installation, A4 – A5

The products are distributed worldwide, typically via a central warehouse, which subsequently manages further distribution to customers. Installation requires excavation works. For modelling purposes, the operation of machinery during installation was assumed, with diesel consumption of 1.1 kWh per ton of material. Waste packaging generated during product installation is handled simultaneously with the installation process. The management of waste packaging generated in Module A5 was modelled in accordance with EUROSTAT¹ statistics on packaging waste treatment, as follows:

- metal packaging: 84.8% recycling, 15.2% landfilling,
- wooden packaging: 37.7% recycling, 32.1% landfilling, 30.2% energy recovery,
- paper packaging: 5.4% recycling, 87.0% landfilling, 7.6% energy recovery.

¹ https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPAC_custom_20418088/default/table

Use stage, module B

KOPOHALF® products are long-life products. However, due to the declared limits of the system, durability was not taken into account.

No maintenance is required during the use phase and a complete replacement is assumed as a repair. This phase was not included in the LCA.

End of life stage, module C

Deconstruction of the product requires excavation works. For modelling purposes, the operation of machinery was again assumed, with diesel consumption of 1.1 kWh per ton of material.

Transport of the waste to waste treatment facilities was assumed over a distance of 80 km.

Waste treatment was modelled using a scenario consisting of 75.2 % recycling, 20.1 % energy recovery, and 4.7 % landfilling, based on EUROSTAT² data for plastic waste.

Module D

The product is recyclable. This property is modelled in Module D as the substitution of primary raw materials. In addition, the energy recovered from energy recovery of the product at the end of its life cycle is also modelled in Module D.

Preconditions and measures taken

Administrative processes were not included in the analysis. In addition, processes related to the production of production equipment were not included.

Exclusion rules

No relevant flows were excluded from the model. Data completeness is ensured in accordance with the cut-off criterion of EN 15804, with the model covering more than 95% of all input and output flows. Only negligible flows (e.g., cooling water consumption) not exceeding 5% of the total flows were excluded.

Data sources

Production data from 2024 were used as the primary source of information, and additional information was subsequently derived from these data. All products in the 06058 series are new and were not manufactured in 2024; therefore, their input values represent theoretical production recipes. In addition, information from suppliers and data from the Ecoinvent database, version 3.11, were used.

² https://ec.europa.eu/eurostat/databrowser/view/env_wastrt_custom_20758182/default/table

Data quality

The geographical representativeness of the data used was ensured in accordance with the available information from suppliers and customers. For processes carried out within the Czech Republic, data representative of the Czech Republic were applied (e.g. the Czech electricity mix). In the case of suppliers located in Europe, European data were used (e.g. for supplied materials). Where processes are relevant on a global scale, data representing global averages were applied (e.g. end-of-life treatment of the product).

Temporal representativeness is ensured by the use of production data and procurement records for the reference year 2024. The applied generic database processes (e.g. electricity mixes from the Ecoinvent database) correspond to average values relevant to this period or comply with the EN 15804 requirements regarding the maximum age of data.

Technological representativeness was ensured by using information on the actual production technologies applied, obtained from the manufacturer's operational data.

The quality of the data used in this study is further supported by a combination of specific (primary) data relating to processes under the direct operational control of the manufacturer, particularly in modules A1–A3, and generic (background) data from the Sphera and Ecoinvent databases for processes outside the manufacturer's direct control. Completeness of the inventory data is ensured in accordance with the EN 15804 cut-off rule, with any excluded negligible flows accounting for less than 5 % of the total flows.

Allocation

If a product can be manufactured on multiple pieces of machinery, the average energy consumption is applied. Where a specific input is supplied by multiple suppliers, the values used for this input represent an average of all relevant suppliers.

The GWP-GHG of electricity used in module A3 includes the electricity required for the production of the final product as well as for the production of intermediate products that form part of the final product. The GWP-GHG value of the applied residual electricity mix amounts to 0,734 kg CO₂ eq./kWh. Characterization factors are based on the Environmental Footprint (EF) 3.1 method.

Variability of products

The products differ in diameter (and therefore weight), colour (which may be influenced by different suppliers), length, recylcate content and packaging. Their impacts do not meet the 10% rule (according to ČSN ISO 21930:2018), therefore the worst values in each impact category are used as the presented results. LCA results will be presented for the following products:

- PE divided cable duct (06110 CRGA),
- PVC divided cable duct (06110P CA),
- PE divided cable duct – products of the 06058 series not yet in production (06058 FA (1))

LCA: Results

Tab. 5 – Environmental impacts (PE divided cable duct 06110 CRGA)

Environmental impact indicators	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO2 eq	2,64E+00	2,49E-02	7,15E-02	3,99E-04	7,82E-03	4,75E-01	1,36E-03	-4,57E-01
Climate Change - total	kg CO2 eq	2,41E+00	2,48E-02	2,55E-01	3,99E-04	7,80E-03	4,75E-01	1,36E-03	-4,53E-01
Climate Change, fossil	kg CO2 eq	2,63E+00	2,46E-02	7,38E-03	3,99E-04	7,72E-03	4,75E-01	1,36E-03	-4,53E-01
Climate Change, biogenic	kg CO2 eq	-2,27E-01	2,17E-06	2,47E-01	8,07E-08	6,82E-07	3,92E-05	1,28E-06	0,00E+00
Climate Change, land use and land use change	kg CO2 eq	1,66E-03	2,52E-04	1,59E-05	4,08E-08	7,92E-05	1,16E-05	1,80E-06	-4,06E-04
Ozone depletion	kg CFC11 eq	7,70E-09	4,06E-15	5,96E-12	5,92E-12	1,28E-15	2,47E-13	8,61E-15	-3,30E-09
Acidification	mol H+ eq	7,05E-03	4,09E-05	4,42E-05	3,56E-06	4,02E-05	1,53E-04	8,31E-06	-1,24E-03
Eutrophication, freshwater	kg P eq	3,52E-04	6,60E-08	1,70E-07	1,28E-08	2,07E-08	1,11E-08	7,83E-07	-1,98E-04
Eutrophication, marine	kg N eq	2,54E-03	1,70E-05	1,76E-05	1,66E-06	1,98E-05	4,70E-05	1,80E-06	-1,43E-03
Eutrophication, terrestrial	mol N eq	2,13E-02	1,81E-04	1,88E-04	1,82E-05	2,15E-04	7,06E-04	1,98E-05	-3,33E-03
Photochemical ozone formation, human health	kg NMVOC eq	7,34E-03	3,69E-05	7,38E-05	5,43E-06	3,83E-05	1,23E-04	5,65E-06	-1,01E-03
Resource use, mineral and metals*	kg Sb eq	5,85E-06	1,63E-09	6,14E-10	1,42E-10	5,12E-10	1,78E-09	1,09E-10	-1,66E-06
Resource use, fossils *	MJ	7,95E+01	3,14E-01	1,06E-01	5,14E-03	9,86E-02	3,25E-01	2,23E-02	-8,01E+00
Water use*	m³ world eq	5,31E-01	1,12E-04	8,51E-03	1,57E-05	3,52E-05	4,77E-02	1,70E-04	-8,12E-02

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Tab. 6 – Other environmental information (PE divided cable duct 06110 CRGA)

Output flows and Waste	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
Hazardous	kg	3,76E-02	1,26E-11	4,60E-06	4,60E-06	3,96E-12	1,16E-10	5,69E-12	-6,41E-03
Non-hazardous	kg	2,47E+01	4,38E-05	3,07E-02	3,41E-05	1,38E-05	9,93E-03	4,63E-02	-5,10E+01
Radioactive	kg	8,84E-04	5,92E-07	3,27E-06	0,00E+00	1,86E-07	2,27E-05	2,41E-07	-2,80E-04
Materials for Recycling (MFR)	kg	9,60E-03	0,00E+00	5,72E-02	0,00E+00	0,00E+00	6,06E-01	0,00E+00	0,00E+00
Exported electrical energy (EEE)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,78E-01	0,00E+00	0,00E+00
Exported thermal energy (EET)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,96E+00	0,00E+00	0,00E+00

Tab. 7 – Parameters describing resource use (PE divided cable duct 06110 CRGA)

Resource use	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	9,07E+00	2,36E-02	1,47E-02	3,27E-05	7,43E-03	6,49E-02	4,03E-03	-1,02E+00
PERM	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
PERT	MJ	9,07E+00	2,36E-02	1,47E-02	3,27E-05	7,43E-03	6,49E-02	4,03E-03	-1,02E+00
PENRE	MJ	7,95E+01	3,14E-01	1,06E-01	5,14E-03	9,86E-02	3,25E-01	2,23E-02	-8,01E+00

PENRM	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
PENRT	MJ	7,95E+01	3,14E-01	1,06E-01	5,14E-03	9,86E-02	3,25E-01	2,23E-02	-8,01E+00
SM	kg	1,48E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,40E-02	1,17E-05	2,04E-04	3,66E-07	3,67E-06	1,14E-03	4,90E-06	-2,17E-03
PERE – Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM – Use of renewable primary energy resources used as raw materials; PERT – Total use of renewable primary energy resources; PENRE – Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM – Use of non renewable primary energy resources used as raw materials; PENRT – Total use of non renewable primary energy resources; SM – Use of secondary material; RSF – Use of renewable secondary fuels; NRSF – Use of non renewable secondary fuels; FW – Net use of fresh water									

Tab. 8 – Optional indicators (PE divided cable duct 06110 CRGA)

Optional indicators	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
Particulate matter	Disease incidences	5,88E-08	4,04E-10	4,32E-10	1,01E-10	2,26E-10	9,15E-10	8,65E-11	-1,07E-08
Ionising radiation, human health*	kBq U235 eq	4,47E-01	8,50E-05	5,15E-04	2,21E-06	2,67E-05	3,60E-03	3,12E-05	-1,14E-01
Ecotoxicity, freshwater**	CTUe	4,75E+01	4,08E-01	5,24E-02	2,75E-04	1,28E-01	6,52E-02	5,10E-02	-5,68E+00
Human toxicity, cancer **	CTUh	9,34E-10	5,50E-12	1,96E-12	4,30E-14	1,73E-12	5,82E-12	7,19E-13	-1,28E-10

Human toxicity, non-cancer **	CTUh	2,25E-08	3,08E-10	1,83E-10	6,54E-13	9,67E-11	2,49E-10	1,32E-11	-6,62E-09
Land Use **	Pt	1,72E+01	1,39E-01	1,95E-02	3,41E-04	4,36E-02	4,13E-02	5,06E-03	-1,60E+00

* Disclaimer: 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.

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Tab. 9 – Environmental impacts (PE divided cable duct 06110P CA)

Environmental impact indicators	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO2 eq	3,18E+00	1,83E-02	4,90E-02	3,99E-04	7,82E-03	4,10E-01	1,36E-03	-7,56E-01
Climate Change - total	kg CO2 eq	3,01E+00	1,83E-02	1,74E-01	3,99E-04	7,80E-03	4,10E-01	1,36E-03	-7,56E-01
Climate Change, fossil	kg CO2 eq	3,17E+00	1,81E-02	5,18E-03	3,99E-04	7,72E-03	4,10E-01	1,36E-03	-7,55E-01
Climate Change, biogenic	kg CO2 eq	-1,60E-01	1,60E-06	1,69E-01	8,07E-08	6,82E-07	7,26E-05	1,28E-06	0,00E+00
Climate Change, land use and land use change	kg CO2 eq	2,08E-03	1,86E-04	1,09E-05	4,08E-08	7,92E-05	6,74E-05	1,80E-06	-6,47E-04
Ozone depletion	kg CFC11 eq	1,23E-08	2,99E-15	5,94E-12	5,92E-12	1,28E-15	6,80E-13	8,61E-15	-5,72E-09
Acidification	mol H+ eq	7,70E-03	3,01E-05	3,14E-05	3,56E-06	4,02E-05	1,19E-04	8,31E-06	-1,84E-03
Eutrophication, freshwater	kg P eq	5,44E-04	4,86E-08	1,20E-07	1,28E-08	2,07E-08	4,42E-08	7,83E-07	-1,90E-04

Eutrophication, marine	kg N eq	2,19E-03	1,25E-05	1,26E-05	1,66E-06	1,98E-05	3,80E-05	1,80E-06	-5,59E-04
Eutrophication, terrestrial	mol N eq	2,34E-02	1,33E-04	1,35E-04	1,82E-05	2,15E-04	4,90E-04	1,98E-05	-4,68E-03
Photochemical ozone formation, human health	kg NMVOC eq	8,13E-03	2,72E-05	5,23E-05	5,43E-06	3,83E-05	1,03E-04	5,65E-06	-1,51E-03
Resource use, mineral and metals*	kg Sb eq	9,94E-06	1,20E-09	4,65E-10	1,42E-10	5,12E-10	4,93E-09	1,09E-10	-3,00E-06
Resource use, fossils *	MJ	7,22E+01	2,31E-01	7,41E-02	5,14E-03	9,86E-02	8,79E-01	2,23E-02	-8,91E+00
Water use*	m ³ world eq	3,85E-01	8,25E-05	5,83E-03	1,57E-05	3,52E-05	3,96E-02	1,70E-04	-1,40E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Tab. 10 – Other environmental information (PVC divided cable duct 06110P CA)

Output flows and Waste	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
Hazardous	kg	7,68E-02	9,27E-12	4,60E-06	4,60E-06	3,96E-12	3,71E-10	5,69E-12	-1,01E-02
Non-hazardous	kg	3,69E-01	3,23E-05	2,10E-02	3,41E-05	1,38E-05	1,80E-01	4,63E-02	-3,71E-01
Radioactive	kg	7,43E-04	4,36E-07	2,24E-06	0,00E+00	1,86E-07	3,62E-05	2,41E-07	-1,89E-04
Materials for Recycling (MFR)	kg	9,60E-03	0,00E+00	3,91E-02	0,00E+00	0,00E+00	7,52E-01	0,00E+00	0,00E+00
Exported electrical energy (EEE)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,92E-01	0,00E+00	0,00E+00

Exported thermal energy (EET)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,08E+00	0,00E+00	0,00E+00
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Tab. 11 – Parameters describing resource use (PVC divided cable duct 06110P CA)

Resource use	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1,20E+01	1,74E-02	1,00E-02	3,27E-05	7,43E-03	1,92E-01	4,03E-03	-1,45E+00
PERM	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
PERT	MJ	1,20E+01	1,74E-02	1,00E-02	3,27E-05	7,43E-03	1,92E-01	4,03E-03	-1,45E+00
PENRE	MJ	7,22E+01	2,31E-01	7,41E-02	5,14E-03	9,86E-02	8,79E-01	2,23E-02	-8,91E+00
PENRM	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
PENRT	MJ	7,22E+01	2,31E-01	7,41E-02	5,14E-03	9,86E-02	8,79E-01	2,23E-02	-8,91E+00
SM	kg	1,21E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,38E-02	8,61E-06	1,40E-04	3,66E-07	3,67E-06	1,02E-03	4,90E-06	-3,46E-03
PERE – Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM – Use of renewable primary energy resources used as raw materials; PERT – Total use of renewable primary energy resources; PENRE – Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM – Use of non renewable primary energy resources used as raw materials; PENRT – Total use of non renewable primary energy resources; SM – Use of secondary material; RSF – Use of renewable secondary fuels; NRSF – Use of non renewable secondary fuels; FW – Net use of fresh water									

Tab. 12 – Optional indicators (PVC divided cable duct 06110P CA)

Optional indicators	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
Particulate matter	Disease incidences	4,87E-08	2,98E-10	3,28E-10	1,01E-10	2,26E-10	2,35E-09	8,65E-11	-1,43E-08
Ionising radiation, human health*	kBq U235 eq	7,26E-01	6,27E-05	3,53E-04	2,21E-06	2,67E-05	5,42E-03	3,12E-05	-1,54E-01
Ecotoxicity, freshwater**	CTUe	2,81E+01	3,01E-01	3,59E-02	2,75E-04	1,28E-01	5,08E-01	5,10E-02	-1,64E+00
Human toxicity, cancer **	CTUh	7,42E-10	4,05E-12	1,36E-12	4,30E-14	1,73E-12	1,66E-11	7,19E-13	-1,64E-10
Human toxicity, non-cancer **	CTUh	2,40E-08	2,27E-10	1,26E-10	6,54E-13	9,67E-11	1,28E-09	1,32E-11	-5,03E-09
Land Use **	Pt	1,59E+01	1,02E-01	1,35E-02	3,41E-04	4,36E-02	1,27E-01	5,06E-03	-2,47E+00

* Disclaimer: 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.

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Tab. 13 – Environmental impacts (PE divided cable duct 06058 FA (1))

Environmental impact indicators	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO2 eq	2,62E+00	2,62E-02	5,50E-02	3,99E-04	7,82E-03	4,78E-01	1,36E-03	-4,97E-01
Climate Change - total	kg CO2 eq	2,43E+00	2,62E-02	1,95E-01	3,99E-04	7,80E-03	4,78E-01	1,36E-03	-4,93E-01

Climate Change, fossil	kg CO2 eq	2,61E+00	2,59E-02	5,78E-03	3,99E-04	7,72E-03	4,78E-01	1,36E-03	-4,92E-01
Climate Change, biogenic	kg CO2 eq	-1,81E-01	2,29E-06	1,90E-01	8,07E-08	6,82E-07	4,14E-05	1,28E-06	0,00E+00
Climate Change, land use and land use change	kg CO2 eq	1,49E-03	2,66E-04	1,22E-05	4,08E-08	7,92E-05	1,28E-05	1,80E-06	-4,85E-04
Ozone depletion	kg CFC11 eq	6,63E-09	4,28E-15	5,95E-12	5,92E-12	1,28E-15	2,74E-13	8,61E-15	-4,08E-09
Acidification	mol H+ eq	6,79E-03	4,31E-05	3,48E-05	3,56E-06	4,02E-05	1,57E-04	8,31E-06	-1,47E-03
Eutrophication, freshwater	kg P eq	2,79E-04	6,96E-08	1,33E-07	1,28E-08	2,07E-08	1,17E-08	7,83E-07	-2,46E-04
Eutrophication, marine	kg N eq	1,95E-03	1,79E-05	1,39E-05	1,66E-06	1,98E-05	4,80E-05	1,80E-06	-1,75E-03
Eutrophication, terrestrial	mol N eq	2,08E-02	1,91E-04	1,49E-04	1,82E-05	2,15E-04	7,17E-04	1,98E-05	-3,88E-03
Photochemical ozone formation, human health	kg NMVOC eq	7,09E-03	3,90E-05	5,80E-05	5,43E-06	3,83E-05	1,26E-04	5,65E-06	-1,18E-03
Resource use, mineral and metals*	kg Sb eq	5,46E-06	1,72E-09	5,06E-10	1,42E-10	5,12E-10	1,96E-09	1,09E-10	-2,05E-06
Resource use, fossils *	MJ	7,93E+01	3,31E-01	8,27E-02	5,14E-03	9,86E-02	3,75E-01	2,23E-02	-8,75E+00
Water use*	m³ world eq	5,05E-01	1,18E-04	6,55E-03	1,57E-05	3,52E-05	4,79E-02	1,70E-04	-9,87E-02

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Tab. 14 – Other environmental information (PE divided cable duct 06058 FA (1))

Output flows and Waste	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
Hazardous	kg	3,92E-02	1,33E-11	4,60E-06	4,60E-06	3,96E-12	1,24E-10	5,69E-12	-7,94E-03
Non-hazardous	kg	2,99E-01	4,62E-05	2,37E-02	3,41E-05	1,38E-05	9,94E-03	4,63E-02	-6,33E+01
Radioactive	kg	9,32E-04	6,24E-07	2,53E-06	0,00E+00	1,86E-07	2,78E-05	2,41E-07	-2,73E-04
Materials for Recycling (MFR)	kg	9,60E-03	0,00E+00	4,42E-02	0,00E+00	0,00E+00	7,52E-01	0,00E+00	0,00E+00
Exported electrical energy (EEE)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,54E-01	0,00E+00	0,00E+00
Exported thermal energy (EET)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,92E+00	0,00E+00	0,00E+00

Tab. 15 – Parameters describing resource use (PE divided cable duct 06058 FA (1))

Resource use	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	9,00E+00	2,49E-02	1,13E-02	3,27E-05	7,43E-03	7,15E-02	4,03E-03	-1,17E+00
PERM	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
PERT	MJ	9,00E+00	2,49E-02	1,13E-02	3,27E-05	7,43E-03	7,15E-02	4,03E-03	-1,17E+00
PENRE	MJ	7,93E+01	3,31E-01	8,27E-02	5,14E-03	9,86E-02	3,75E-01	2,23E-02	-8,75E+00

PENRM	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
PENRT	MJ	7,93E+01	3,31E-01	8,27E-02	5,14E-03	9,86E-02	3,75E-01	2,23E-02	-8,75E+00
SM	kg	1,95E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,35E-02	1,23E-05	1,57E-04	3,66E-07	3,67E-06	1,15E-03	4,90E-06	-2,57E-03
PERE – Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM – Use of renewable primary energy resources used as raw materials; PERT – Total use of renewable primary energy resources; PENRE – Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM – Use of non renewable primary energy resources used as raw materials; PENRT – Total use of non renewable primary energy resources; SM – Use of secondary material; RSF – Use of renewable secondary fuels; NRSF – Use of non renewable secondary fuels; FW – Net use of fresh water									

Tab. 16 – Optional indicators (PE divided cable duct 06058 FA (1))

Optional indicators	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
Particulate matter	Disease incidences	5,62E-08	4,26E-10	3,56E-10	1,01E-10	2,26E-10	9,49E-10	8,65E-11	-1,26E-08
Ionising radiation, human health*	kBq U235 eq	4,56E-01	8,96E-05	3,98E-04	2,21E-06	2,67E-05	4,43E-03	3,12E-05	-1,29E-01
Ecotoxicity, freshwater**	CTUe	4,48E+01	4,30E-01	4,04E-02	2,75E-04	1,28E-01	6,94E-02	5,10E-02	-6,98E+00
Human toxicity, cancer **	CTUh	8,82E-10	5,80E-12	1,52E-12	4,30E-14	1,73E-12	6,08E-12	7,19E-13	-1,52E-10

Human toxicity, non-cancer **	CTUh	1,99E-08	3,24E-10	1,41E-10	6,54E-13	9,67E-11	2,54E-10	1,32E-11	-8,12E-09
Land Use **	Pt	1,46E+01	1,46E-01	1,51E-02	3,41E-04	4,36E-02	4,47E-02	5,06E-03	-1,17E+01

* Disclaimer: 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.

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

LCA: Interpretation

From the above-mentioned results of the environmental impacts, it can be seen that the most significant of the environmental impact of the assessed modules is in the production module, in phases A1-A3.

The LCIA results are relative and do not predict the ultimate impacts of each category, threshold exceedances, safety margins or risks.

Sources

ISO 14020:2000 Environmental labels and declarations — General principles, 2000-09

ISO 14025: EN ISO 14025:2006-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework, 2006-07

ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines, 2006-07

EN 15804:2012 +A2:2019/AC:2021 European Committee for Standardization: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products, 2021

ecoinvent: www.ecoinvent.org, ecoinvent database 3.11

Sphera: software LCA for Expert. 2023, Sphera solutions, www.sphera.com

ISO 21930:2018 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services

EPD verification

Independent verification of declarations and data in accordance with ISO 14025:2006			
Standard ČSN EN 15804+A2 developed by CEN serves as baseline PCR*.			
☐	Internal	☒	External
Verifier:			
		prof. Ing. Silvia Vilčková, Ph.D. Silcert, s.r.o. Approved individual verifier of The International EPD® System	
*PCR – Product Category Rules			