

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Elektroskandia Norge AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-3725-2670-EN
Registration number:	NEPD-3725-2670-EN
ECO Platform reference number:	-
Issue date:	16.09.2022
Valid to:	16.09.2027

AXMK-PE FleX 4G300 0,6/1 kV D500

Elektroskandia Norge AS

www.epd-norge.no



General information

Product:

AXMK-PE FleX 4G300 0,6/1 kV D500

Program operator:The Norwegian EPD Foundation
Pb. 5250 Majorstuen, 0303 Oslo
Phone: +47 23 08 80 00
e-mail: post@epd-norge.no**Declaration number:**

NEPD-3725-2670-EN

ECO Platform reference number:**This declaration is based on Product Category Rules:**CEN Standard EN 15804:2012+A1:2013 serves as core PCR
NPCR 027 Part B for Electrical cables and wires**Statement of liability:**

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:

1 m AXMK-PE FleX 4G300 0,6/1 kV D500

Declared unit with option:

A1,A2,A3,A4,C1,C2,C3,C4,D

Functional unit:**General information on verification of EPD from EPD tools:**

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPDNorway, and iii) the process is reviewed annually. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools.

Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Fredrik Moltu Johnsen, Norsus AS

(no signature required)

Owner of the declaration:Elektroskandia Norge AS
Contact person: Pål Kristiansen
Phone: +47 97 66 22 12
e-mail: pkristiansen@elektroskandia.no**Manufacturer:**NKT
Støperigata 7 3040 Drammen
Norway**Place of production:**NKT production site Falun (Sweden)
Källviksvägen 18 791 52 Falun
Sweden**Management system:**

ISO 14001, ISO 9001

Organisation no:

977 454 700

Issue date: 16.09.2022**Valid to:** 16.09.2027**Year of study:****Comparability:**

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

Development and verification of EPD:

The declaration has been developed and verified using EPD tool Ica.tools ver EPD2020.11, developed by LCA.no AS. The EPD tool is integrated into the company's environmental management system, and has been approved by EPD-Norway

Developer of EPD:

Ann Aittamaa, NKT as

Reviewer of company-specific input data and EPD:

Marco Mezzadra - NKT

Approved:

Sign



Håkon Hauan, CEO EPD-Norge

Product

Product description:

Cables according to this standard are intended for permanent installation in ground, water and in pipes. The cables are flexible which makes them easy to handle even at low temperatures. They are also suitable for plowing.

Product specification

Power cable 1 kV
 AXMK-PE Flex 4G300

Materials	kg	%
Aluminium	3,23	77,87
Polyethylene	0,46	11,16
Other	0,45	10,97
Total:	4,15	

Technical data:

Produced according to Standard: SFS 4879/5800, HD 603-5D
 Conductor: Annealed aluminium according to IEC 60228 class 2
 25-50 mm²: Round
 95-300 mm²: Sector shaped
 Insulation: XLPE
 Colour identification:
 4-core: Yellow/green, brown, black, grey
 Rip cord
 Outer sheath: Polyethylene
 Example of marking: AXMK-PE Flex 4G300 0,6/1 kV and meter marking
 Rated voltage: 0,6/1 kV
 Max. short-circuit temperature: 250 °C
 Minimum temperature during installation.
 Caution shall be taken into account at temperatures below 0 °C: -20 °C
 Maximum conductor temperature: 90 °C
 Minimum bending radius: 8 x D
 Max. pulling force: 30 N/mm²
 Fire classification: F
 Fulfills the low voltage directive: Yes

Market:

Reference service life, product

80

Reference service life, construction

100

LCA: Calculation rules

Declared unit:

1 m AXMK-PE Flex 4G300 0,6/1 kV D500

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Data quality:

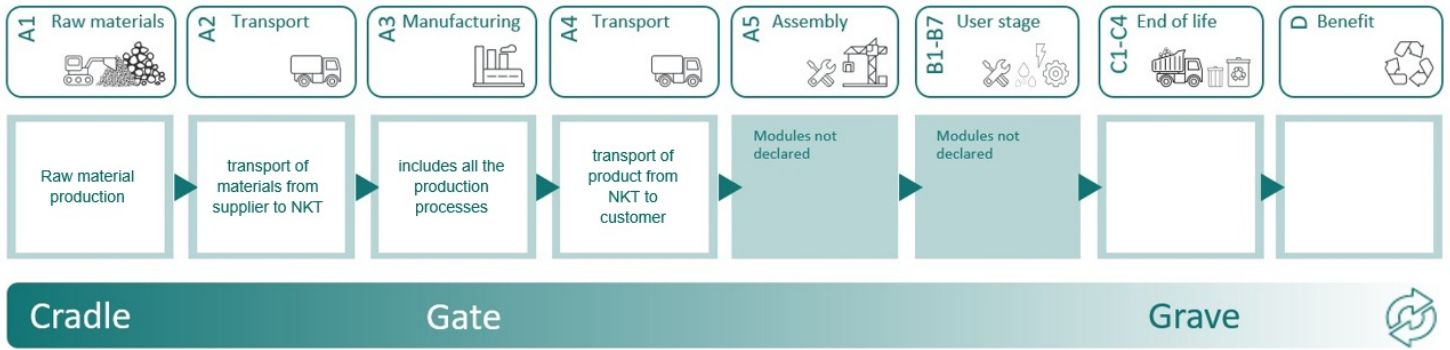
Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Aluminium	ecoinvent 3.6	Database	2019
Other	ecoinvent 3.6	Database	2019
Polyethylene	ecoinvent 3.6	Database	2019

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

System boundary:



Additional technical information:

This EPD is for our largest cable, meaning the product with the highest emissions per declared unit. Contact us for the specific EPD of other cables within this product family,

- 06 294 50 / 110 717 001 D1000
- 06 294 51 / 110 717 002 D1000
- 06 294 52 / 110 717 003 D0500
- 06 294 53 / 110 717 004 D0500
- 06 294 54 / 110 717 005 D0500
- 06 294 55 / 110 717 006 D0500
- 06 294 56 / 110 717 007 D0500
- 06 294 80 / 110 717 008 D0500

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

For the module A4, we consider Reykjavík as point of delivery from Falun NKT Production site.

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck	38,8 %	Truck, lorry 16-32 tonnes, EURO 5	2900	0,044606	l/tkm	129,36
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

End of Life (C1, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction waste	kg	
Reuse	kg	
Recycling	kg	2,9052
Energy recovery	kg	0,9174
To landfill	kg	0,3551

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Benefits and loads beyond the system boundaries (D)

	Unit	Value
Substitution of primary Aluminium with net secondary aluminium (kg)	kg	2,91
Substitution of electricity, in Norway (MJ)	MJ	3,14
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	21,61

LCA: Results

LCA results according to the indicators of EN 15804:2013+A1:2013 are presented in the following tables, for the declared unit defined on page 2 of the EPD document. All potential environmental impacts might not be covered by the EN 15804 indicators. This concerns indicators such as noise, electromagnetic radiation, electromagnetic fields and treatment brominated flame retardants.

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage				Construction installation stage		User stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X	

Environmental impact

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq	4,54E+01	1,98E+00	0	0	2,77E+00	3,54E-03	-2,57E+01
ODP	kg CFC11 -eq	3,50E-06	3,65E-07	0	0	1,91E-09	7,09E-10	-2,16E-06
POCP	kg C ₂ H ₄ -eq	2,07E-02	3,23E-04	0	0	3,58E-06	7,25E-07	-1,32E-02
AP	kg SO ₂ -eq	2,64E-01	6,32E-03	0	0	2,39E-04	1,69E-05	-1,52E-01
EP	kg PO ₄ ³⁻ -eq	2,15E-02	1,05E-03	0	0	7,50E-05	2,96E-06	-1,14E-02
ADPM	kg Sb -eq	1,03E-05	6,04E-06	0	0	7,41E-09	5,60E-11	-7,22E-06
ADPE	MJ	5,14E+02	2,99E+01	0	0	1,75E-01	6,17E-02	-2,77E+02

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

Resource use

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
RPEE	MJ	1,66E+02	4,35E-01	0	0	5,32E-03	1,34E-03	-1,30E+02
RPEM	MJ	0,00E+00	0,00E+00	0	0	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	1,66E+02	4,35E-01	0	0	5,32E-03	1,34E-03	-1,30E+02
NRPE	MJ	5,91E+02	3,06E+01	0	0	1,89E-01	6,37E-02	-3,43E+02
NRPM	MJ	4,25E+01	0,00E+00	0	0	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	6,34E+02	3,06E+01	0	0	1,89E-01	6,37E-02	-3,43E+02
SM	kg	0,00E+00	0,00E+00	0	0	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	8,52E-03	0,00E+00	0	0	0,00E+00	0,00E+00	-6,19E-04
NRSF	MJ	7,10E-02	0,00E+00	0	0	0,00E+00	0,00E+00	0,00E+00
W	m ³	2,66E-01	5,73E-03	0	0	6,15E-04	6,72E-05	-1,20E-01

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

End of life - Waste

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
HW	kg	1,60E-03	1,78E-05	0	0	1,83E-06	8,95E-08	2,67E-02
NHW	kg	2,64E+01	1,61E+00	0	0	5,47E-03	3,65E-01	-1,21E+01
RW	kg	2,46E-03	2,10E-04	0	0	3,73E-07	4,08E-07	-1,42E-03

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

End of life - Output flow

Parameter	Unit	A1-A3	A4	C1	C2	C3	C4	D
CR	kg	0,00E+00	0,00E+00	0	0	0,00E+00	0,00E+00	0,00E+00
MR	kg	2,15E-01	0,00E+00	0	0	2,91E+00	0,00E+00	0,00E+00
MER	kg	1,00E-02	0,00E+00	0	0	9,17E-01	0,00E+00	0,00E+00
EEE	MJ	2,17E-02	0,00E+00	0	0	3,14E+00	0,00E+00	0,00E+00
ETE	MJ	2,00E-01	0,00E+00	0	0	2,16E+01	0,00E+00	0,00E+00

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

Additional Norwegian requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Data source	Amount	Unit
El-mix, Sweden (kWh)	ecoinvent 3.4 Alloc Rec	42,67	g CO2-ekv/kWh
Energy, district heating, Norwegian average (kWh)	Østfoldforskning	19,71	g CO2-ekv/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list or the Norwegian priority list.

Indoor environment

Bibliography

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.





EN 15804:2012+A1:2013 Environmental product declaration - Core rules for the product category of construction products.

ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.

ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.

Iversen et al., (2018) eEPD v3- Background information for EPD generator system. LCA.no report 04.18. Iversen et al., (2020) EPD generator for Elektroskandia and Prysmian Group - Background information and LCA data, LCA.no report 01.20

NPCR Part A: Construction products and services. Ver. 1.04.2017 EPD-Norge. NPCR 27 Part B for electrical cables and wires or NPCR 28 Part B for cable pipes Ver. 1.02.2020 EPD-Norge.

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