

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

AXALJ-F-TT 12/20(24) kV 1x630/35



The Norwegian EPD Foundation

Owner of the declaration:

NKT A/S

Product:

AXALJ-F-TT 12/20(24) kV 1x630/35

Declared unit:

1 m

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR

NPCR 027:2020 Part B for Electrical cables and wires

Program operator:

The Norwegian EPD Foundation

Declaration number:

NEPD-8389-8057-EN

Registration number:

NEPD-8389-8057-EN

Issue date:

06.12.2024

Valid to:

06.12.2029

EPD software:

LCAno EPD generator ID: 691835

General information

Product

AXALJ-F-TT 12/20(24) kV 1x630/35

Program operator:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
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Declaration number:

NEPD-8389-8057-EN

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 027:2020 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 AXALJ-F-TT 12/20(24) kV 1x630/35

Declared unit with option:

A1,A2,A3,A4,A5,B1,B2,B3,B4,B5,B6,B7,C1,C2,C3,C4,D

Functional unit:

1 m of AXALJ-F-TT 12/20(24) kV 1x630/35 installed electrical cable used to transmit a reference electric current of 1A over 40 years, including waste treatment at end-of-life.

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. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Norway, and iii) the process is reviewed annually by an independent third party verifier. 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. Approval number: NEPDT32.

Third party verifier:

Vito D'Incognito, Take Care International

(no signature required)

Owner of the declaration:

NKT A/S
Contact person: Matheo Roehr
Phone:
e-mail: matheo.roehr@nkt.com

Manufacturer:

NKT (Sweden) AB
Källviksvägen 18
SE-791 29 Falun, Sweden

Place of production:

NKT production site Falun (Sweden)
Källviksvägen 18
SE-791 29 Falun, Sweden

Management system:

ISO 9001, ISO 14001, ISO 45001

Organisation no:

957 338 690

Issue date:

06.12.2024

Valid to:

06.12.2029

Year of study:

2021

Comparability:

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

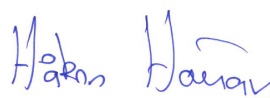
Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD Norway. Approval number: NEPDT32

Developer of EPD: Joakim Holm

Reviewer of company-specific input data and EPD: Matheo Roehr

Approved:



Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:

Cable for fixed installation in soil, water and pipes. Extra durable multilayer sheath. User-friendly at low temperatures. Made of material for easy recycling.

Product specification

- 1 Aluminium, compacted stranded, longitudinally watertight.
- 2 Extruded semi conducting conductor screen.
- 3 XLPE, dry vulcanized, peroxide crosslinked.
- 4 Extruded, bonded or strippable semi-conducting insulation screen, depending on dimension.
- 5 Concentric copper wire screen where both copper wire and aluminum foil are used to achieve equivalent max. screen resistance.
- 6 Swellable tape screening wires, achieving longitudinal water tightness.
- 7 PE laminated aluminium foil bonded to the sheath. Aluminium foil also serves as part of the metallic screen
- 8 Black PE sheath, meter marked. Equipped with rip cord for easier opening

| Materials | kg | % |
|------------------------------|------|--------|
| Aluminium foil, with plastic | 0,09 | 2,91 |
| Plastic - Polyethylene | 1,10 | 34,31 |
| Tape | 0,04 | 1,13 |
| Metal - Aluminium | 1,70 | 52,96 |
| Metal - Copper | 0,28 | 8,69 |
| Total | 3,20 | 100,00 |

Technical data:

- Norm (standard): SS4241416
- Rated voltage U_0/U : 12/20 kV
- Maximal voltage: 24 kV
- Maximal operating conductor temperature: 90 °C
- Maximal short-circuit conductor temperature: 250 °C
- Test voltage: 50 kV
- Temperature range: -20 °C
- Minimal storage temperature: -35 °C
- Minimal temperature for laying and manipulation: -15 °C
- Colour of insulation: natural
- Colour of sheath: black
- Packaging: drum
- Declaration of Conformity EU (CE): no
- Production site: NKT Falun
- Minimal radius of bend: 10 x D mm
- CPR-Classification: Fca
- RoHS: yes
- REACH: yes
- Max. permitted pulling force: 30 N/mm²

Market:

Nordic

Reference service life, product

40 years. As defined in appendix 1 of the PEP Ecopassport PSR.

Reference service life, building or construction works

40 years.

LCA: Calculation rules

Declared unit:

1 m AXALJ-F-TT 12/20(24) kV 1x630/35

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.

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.

Data quality:

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

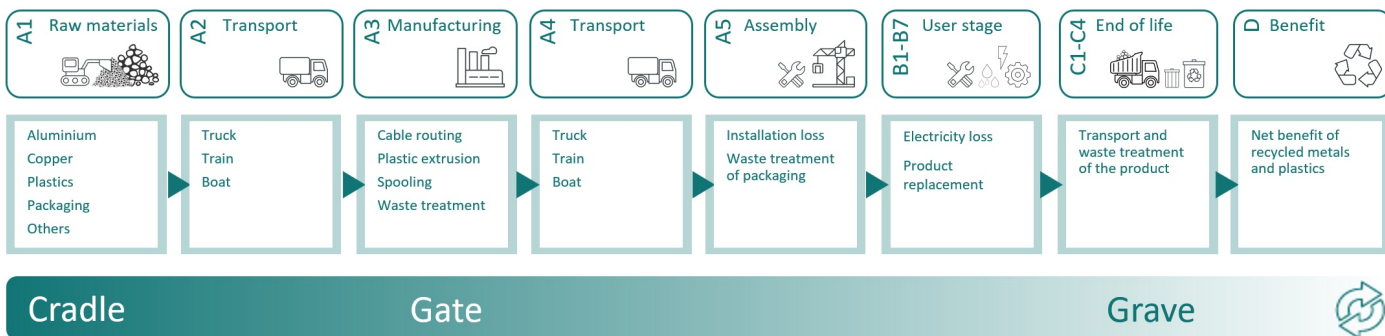
| Materials | Source | Data quality | Year |
|------------------------------|---------------|--------------|------|
| Aluminium foil, with plastic | ecoinvent 3.6 | Database | 2019 |
| Metal - Aluminium | ecoinvent 3.6 | Database | 2019 |
| Metal - Copper | ecoinvent 3.6 | Database | 2019 |
| Plastic - Polyethylene | ecoinvent 3.6 | Database | 2019 |
| Tape | ecoinvent 3.6 | Database | 2019 |

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

| Product stage | | | Construction installation stage | | Use 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 | X | X | X | X | X | X | X | X | X | X | X | X | X |

System boundary:

The flowchart below illustrates the system boundaries of the analysis:



Additional technical information:

The reference product AXALJ-F-TT 12/20(24) kV 1x630/35 represents the entire product family based on the highest material consumption. Please contact us for a specific EPD of another cable in the product family:

- AXALJ 12/20 (24) kV 1x240/35 mm²
- AXALJ 12/20 (24) kV 1x300/35 mm²
- AXALJ 12/20 (24) kV 1x630/35 mm²

LCA: Scenarios and additional technical information

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

Module A4 = An average distance between the factory and the market is considered.

Modules A5 = 2 % product losses during installation are estimated by the company. No energy use for installation has been quantified since this operation is assumed to be done with other products and should be assessed at a construction works level. Cable drums are reused and assumed under the cut-off criterion of 1%.

Modules B1, B2, B3, B4, B5, and B7 = Company data shows that no significant activities have been reported for use, maintenance, repair, replacement, refurbishment, and water use. This reflects an absence of impacts during the reference service life of the cable in these modules.

Module B6 = The operational energy use of the cable is calculated based on the methodology described in PEP Ecopassport, Product Specific Rules (PSR) for wires, cables and accessories, reference PSR-0001-ed3-EN-2015 10 16. The following parameters are used to calculate the electricity loss of the cable:

- Reference service life = 40 years (according to appendix 1 of the PSR)
- Number of conductors = 1 units
- Use rate = 100 % percent (according to appendix 1 of the PSR)
- Linear conductor resistivity = 0,0000469 Ohm per meter
- Current intensity = 1 Ampere

Module C1 = For both buildings and construction works, cables will be taken out as part of a larger demolition. The energy use for cable removal compared to other heavier materials is assumed to be low. This module can therefore be included with zero impact.

Module C2 = An average distance between the market and the waste treatment facility is considered.

Modules C3 and C4 = Waste treatment of the product follows the default values provided in EN 50693, Product Category Rules for life cycle assessments of electronic and electrical products and systems, table G.4. This table specified how different types of raw materials used in A1 will likely be treated during the end-of-life of the product. Waste treatments in C3 include material recycling and incineration with and without energy recovery and fly ash extraction. Disposal in C4 consist of landfilling of different waste fractions and of ashes.

Module D = The recyclability of metals and plastics allows the producers a credit for the net scrap that is produced at the end of a product's life. The benefits from recycling of net scrap are described in formula from EN 15804:2012+A2:2019. Substitution of heat and electricity generated by the incineration with energy recovery of plastic insulation and other parts is also calculated in module D.

| Transport from production place to user (A4) | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit | Value (Liter/tonne) |
|---|---------------------------------------|---------------|-------------------------|-------|---------------------|
| Truck, 16-32 tonnes, EURO 6 (km) - Europe | 36,7 % | 700 | 0,043 | l/tkm | 30,10 |
| Assembly (A5) | | Unit | Value | | |
| Product loss during installation (percentage of cable) | Units | 0,02 | | | |
| Operational energy (B6) | | Unit | Value | | |
| Electricity, Nordic (kWh) | kWh | 0,02 | | | |
| Transport to waste processing (C2) | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit | Value (Liter/tonne) |
| Truck, 16-32 tonnes, EURO 6 (km) - Europe | 36,7 % | 300 | 0,043 | l/tkm | 12,90 |
| Waste processing (C3) | | Unit | Value | | |
| Waste treatment of polyethylene (PE), incineration with energy recovery and fly ash extraction (kg) | kg | 0,55 | | | |
| Waste treatment of plastic mixture, incineration with energy recovery and fly ash extraction (kg) | kg | 0,02 | | | |
| Aluminium to recycling (kg) | kg | 1,25 | | | |
| Copper to recycling (kg) | kg | 0,17 | | | |
| Disposal (C4) | | Unit | Value | | |
| Landfilling of plastic mixture (kg) | kg | 0,57 | | | |
| Landfilling of ashes from incineration of Polyethylene (PE), process per kg ashes and residues (kg) | kg | 0,02 | | | |
| Landfilling of ashes from incineration of Plastic mixture, process per kg ashes and residues (kg) | kg | 0,00 | | | |
| Landfilling of aluminium (kg) | kg | 0,53 | | | |
| Landfilling of copper (kg) | kg | 0,11 | | | |

| Benefits and loads beyond the system boundaries (D) | Unit | Value | | | |
|---|------|-------|--|--|--|
| Substitution of electricity (MJ) | MJ | 1,10 | | | |
| Substitution of thermal energy, district heating (MJ) | MJ | 16,65 | | | |
| Substitution of primary aluminium with net scrap (kg) | kg | 0,98 | | | |
| Substitution of primary copper with net scrap (kg) | kg | 0,11 | | | |

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

| Environmental impact | | | | | | | | | | |
|----------------------|----------------------------------|------------------------|----------|----------|----------|----------|----------|----|----|----|
| Indicator | | Unit | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 |
| | GWP-total | kg CO ₂ -eq | 2,99E+01 | 6,32E-01 | 5,33E-01 | 3,66E-01 | 6,60E-01 | 0 | 0 | 0 |
| | GWP-fossil | kg CO ₂ -eq | 2,93E+01 | 6,32E-01 | 3,68E-01 | 3,66E-01 | 6,44E-01 | 0 | 0 | 0 |
| | GWP-biogenic | kg CO ₂ -eq | 2,89E-01 | 2,31E-04 | 6,37E-02 | 1,52E-04 | 7,06E-03 | 0 | 0 | 0 |
| | GWP-luluc | kg CO ₂ -eq | 3,29E-01 | 2,77E-04 | 1,00E-01 | 1,30E-04 | 8,58E-03 | 0 | 0 | 0 |
| | ODP | kg CFC11 -eq | 2,12E-06 | 1,38E-07 | 8,79E-08 | 8,29E-08 | 4,74E-08 | 0 | 0 | 0 |
| | AP | mol H+ -eq | 4,18E-01 | 7,64E-03 | 1,13E-03 | 1,05E-03 | 8,56E-03 | 0 | 0 | 0 |
| | EP-FreshWater | kg P -eq | 3,47E-03 | 4,24E-06 | 9,99E-06 | 2,93E-06 | 6,98E-05 | 0 | 0 | 0 |
| | EP-Marine | kg N -eq | 3,19E-02 | 1,84E-03 | 3,95E-04 | 2,08E-04 | 6,90E-04 | 0 | 0 | 0 |
| | EP-Terrestrial | mol N -eq | 3,77E-01 | 2,05E-02 | 3,98E-03 | 2,33E-03 | 8,09E-03 | 0 | 0 | 0 |
| | POCP | kg NMVOC -eq | 1,23E-01 | 5,64E-03 | 9,95E-04 | 8,92E-04 | 2,62E-03 | 0 | 0 | 0 |
| | ADP-minerals&metals ¹ | kg Sb-eq | 1,24E-03 | 1,34E-05 | 1,87E-06 | 1,01E-05 | 2,52E-05 | 0 | 0 | 0 |
| | ADP-fossil ¹ | MJ | 4,14E+02 | 9,10E+00 | 1,95E+01 | 5,54E+00 | 8,89E+00 | 0 | 0 | 0 |
| | WDP ¹ | m ³ | 1,01E+04 | 6,87E+00 | 2,99E+03 | 5,35E+00 | 2,63E+02 | 0 | 0 | 0 |

| Indicator | | Unit | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|-----------|----------------------------------|------------------------|----|----|----------|----|----|----------|----------|----------|-----------|
| | GWP-total | kg CO ₂ -eq | 0 | 0 | 2,39E-03 | 0 | 0 | 1,57E-01 | 1,71E+00 | 7,57E-02 | -9,22E+00 |
| | GWP-fossil | kg CO ₂ -eq | 0 | 0 | 2,23E-03 | 0 | 0 | 1,57E-01 | 1,71E+00 | 7,57E-02 | -9,01E+00 |
| | GWP-biogenic | kg CO ₂ -eq | 0 | 0 | 4,07E-05 | 0 | 0 | 6,49E-05 | 1,46E-05 | 6,39E-06 | -4,12E-02 |
| | GWP-luluc | kg CO ₂ -eq | 0 | 0 | 1,22E-04 | 0 | 0 | 5,59E-05 | 2,19E-06 | 5,04E-06 | -1,68E-01 |
| | ODP | kg CFC11 -eq | 0 | 0 | 2,41E-10 | 0 | 0 | 3,55E-08 | 1,39E-09 | 4,49E-09 | -7,03E-03 |
| | AP | mol H+ -eq | 0 | 0 | 1,03E-05 | 0 | 0 | 4,51E-04 | 2,19E-04 | 1,20E-04 | -1,03E-01 |
| | EP-FreshWater | kg P -eq | 0 | 0 | 1,47E-07 | 0 | 0 | 1,25E-06 | 1,37E-07 | 2,41E-07 | -6,37E-04 |
| | EP-Marine | kg N -eq | 0 | 0 | 1,62E-06 | 0 | 0 | 8,92E-05 | 1,05E-04 | 1,11E-04 | -9,45E-03 |
| | EP-Terrestrial | mol N -eq | 0 | 0 | 2,18E-05 | 0 | 0 | 9,98E-04 | 1,14E-03 | 4,80E-04 | -1,12E-01 |
| | POCP | kg NMVOC -eq | 0 | 0 | 5,10E-06 | 0 | 0 | 3,82E-04 | 2,72E-04 | 1,50E-04 | -3,58E-02 |
| | ADP-minerals&metals ¹ | kg Sb-eq | 0 | 0 | 3,46E-08 | 0 | 0 | 4,33E-06 | 6,39E-08 | 1,20E-07 | -2,32E-04 |
| | ADP-fossil ¹ | MJ | 0 | 0 | 6,02E-02 | 0 | 0 | 2,37E+00 | 1,16E-01 | 3,55E-01 | -1,14E+02 |
| | WDP ¹ | m ³ | 0 | 0 | 4,65E+00 | 0 | 0 | 2,29E+00 | 2,99E-01 | 6,75E+00 | -4,97E+03 |

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

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

*INA Indicator Not Assessed

1. 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

Remarks to environmental impacts

| Additional environmental impact indicators | | | | | | | | | | |
|--|-------------------|----------|----------|----------|----------|----------|----|----|----|--|
| Indicator | Unit | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | |
| PM | Disease incidence | 2,13E-06 | 3,21E-08 | 1,84E-08 | 2,24E-08 | 4,40E-08 | 0 | 0 | 0 | |
| IRP ² | kgBq U235 -eq | 1,36E+00 | 3,96E-02 | 6,49E-01 | 2,42E-02 | 4,11E-02 | 0 | 0 | 0 | |
| ETP-fw ¹ | CTUe | 2,38E+03 | 6,32E+00 | 8,49E+00 | 4,10E+00 | 5,59E+01 | 0 | 0 | 0 | |
| HTP-c ¹ | CTUh | 9,59E-08 | 0,00E+00 | 2,47E-10 | 0,00E+00 | 1,92E-09 | 0 | 0 | 0 | |
| HTP-nc ¹ | CTUh | 4,70E-06 | 7,12E-09 | 5,59E-09 | 4,48E-09 | 9,43E-08 | 0 | 0 | 0 | |
| SQP ¹ | dimensionless | 7,64E+01 | 4,94E+00 | 7,88E+00 | 3,87E+00 | 1,87E+00 | 0 | 0 | 0 | |

| Indicator | Unit | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---------------------|-------------------|----|----|----------|----|----|----------|----------|----------|-----------|
| PM | Disease incidence | 0 | 0 | 5,40E-11 | 0 | 0 | 9,61E-09 | 8,65E-10 | 2,18E-09 | -7,40E-07 |
| IRP ² | kgBq U235 -eq | 0 | 0 | 1,37E-03 | 0 | 0 | 1,04E-02 | 2,02E-04 | 2,11E-03 | -4,91E-01 |
| ETP-fw ¹ | CTUe | 0 | 0 | 7,53E-02 | 0 | 0 | 1,76E+00 | 4,38E-01 | 4,00E+02 | -5,39E+02 |
| HTP-c ¹ | CTUh | 0 | 0 | 2,00E-12 | 0 | 0 | 0,00E+00 | 4,00E-11 | 2,20E-11 | -2,77E-08 |
| HTP-nc ¹ | CTUh | 0 | 0 | 4,60E-11 | 0 | 0 | 1,92E-09 | 1,53E-09 | 4,55E-10 | -7,48E-07 |
| SQP ¹ | dimensionless | 0 | 0 | 4,53E-02 | 0 | 0 | 1,66E+00 | 1,45E-02 | 8,94E-01 | -1,53E+01 |

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

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

*INA Indicator Not Assessed

1. 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 experience with the indicator
2. 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.

| Resource use | | | | | | | | | | |
|--------------|-------|----------------|----------|----------|-----------|----------|----------|----|----|----|
| Indicator | | Unit | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 |
| | PERE | MJ | 9,20E+01 | 1,10E-01 | 1,06E+01 | 7,92E-02 | 2,06E+00 | 0 | 0 | 0 |
| | PERM | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0 | 0 | 0 |
| | PERT | MJ | 9,20E+01 | 1,10E-01 | 1,06E+01 | 7,92E-02 | 2,06E+00 | 0 | 0 | 0 |
| | PENRE | MJ | 3,68E+02 | 9,10E+00 | 1,96E+01 | 5,54E+00 | 7,97E+00 | 0 | 0 | 0 |
| | PENRM | MJ | 5,00E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,77E-02 | 0 | 0 | 0 |
| | PENRT | MJ | 4,18E+02 | 9,10E+00 | 1,96E+01 | 5,54E+00 | 8,02E+00 | 0 | 0 | 0 |
| | SM | kg | 3,65E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 7,29E-03 | 0 | 0 | 0 |
| | RSF | MJ | 5,35E-01 | 3,78E-03 | 3,63E-02 | 2,84E-03 | 1,16E-02 | 0 | 0 | 0 |
| | NRSF | MJ | 1,40E-01 | 1,21E-02 | -5,34E-02 | 1,01E-02 | 2,20E-03 | 0 | 0 | 0 |
| | FW | m ³ | 5,64E-01 | 8,26E-04 | 2,57E-02 | 5,92E-04 | 1,18E-02 | 0 | 0 | 0 |

| Indicator | | Unit | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|-----------|-------|----------------|----|----|----------|----|----|----------|-----------|----------|-----------|
| | PERE | MJ | 0 | 0 | 5,92E-02 | 0 | 0 | 3,40E-02 | 3,60E-03 | 3,65E-02 | -4,93E+01 |
| | PERM | MJ | 0 | 0 | 0,00E+00 | 0 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| | PERT | MJ | 0 | 0 | 5,92E-02 | 0 | 0 | 3,40E-02 | 3,60E-03 | 3,65E-02 | -4,93E+01 |
| | PENRE | MJ | 0 | 0 | 6,11E-02 | 0 | 0 | 2,37E+00 | 1,16E-01 | 3,55E-01 | -1,14E+02 |
| | PENRM | MJ | 0 | 0 | 0,00E+00 | 0 | 0 | 0,00E+00 | -4,77E+01 | 0,00E+00 | 0,00E+00 |
| | PENRT | MJ | 0 | 0 | 6,11E-02 | 0 | 0 | 2,37E+00 | -4,75E+01 | 3,55E-01 | -1,14E+02 |
| | SM | kg | 0 | 0 | 0,00E+00 | 0 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 7,59E-02 |
| | RSF | MJ | 0 | 0 | 5,98E-04 | 0 | 0 | 1,22E-03 | 9,87E-05 | 7,60E-04 | -1,06E-02 |
| | NRSF | MJ | 0 | 0 | 0,00E+00 | 0 | 0 | 4,34E-03 | 0,00E+00 | 2,18E-03 | -4,31E-01 |
| | FW | m ³ | 0 | 0 | 2,69E-04 | 0 | 0 | 2,54E-04 | 3,69E-04 | 4,53E-04 | -2,34E-01 |

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 materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

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

*INA Indicator Not Assessed

| End of life - Waste | | | | | | | | | | | |
|---------------------|------|----|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | | |
| | HWD | kg | 2,27E-01 | 4,42E-04 | 7,97E-02 | 2,86E-04 | 6,96E-03 | 0 | 0 | 0 | |
| | NHWD | kg | 6,96E+00 | 3,27E-01 | 1,69E-01 | 2,69E-01 | 1,79E-01 | 0 | 0 | 0 | |
| | RWD | kg | 1,29E-03 | 6,24E-05 | 2,88E-04 | 3,77E-05 | 3,30E-05 | 0 | 0 | 0 | |
| Indicator | Unit | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D | |
| | HWD | kg | 0 | 0 | 5,64E-06 | 0 | 0 | 1,22E-04 | 0,00E+00 | 4,06E-02 | 3,35E-02 |
| | NHWD | kg | 0 | 0 | 3,74E-04 | 0 | 0 | 1,15E-01 | 0,00E+00 | 1,24E+00 | -2,67E+00 |
| | RWD | kg | 0 | 0 | 6,30E-07 | 0 | 0 | 1,62E-05 | 0,00E+00 | 2,42E-06 | -4,60E-04 |

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

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

*INA Indicator Not Assessed

| End of life - Output flow | | | | | | | | | | | |
|---------------------------|------|----|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | | |
| | CRU | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0 | 0 | 0 | |
| | MFR | kg | 0,00E+00 | 0,00E+00 | 3,48E-03 | 0,00E+00 | 2,83E-02 | 0 | 0 | 0 | |
| | MER | kg | 0,00E+00 | 0,00E+00 | 3,20E-01 | 0,00E+00 | 1,78E-02 | 0 | 0 | 0 | |
| | EEE | MJ | 0,00E+00 | 0,00E+00 | 1,88E-01 | 0,00E+00 | 2,58E-02 | 0 | 0 | 0 | |
| | EET | MJ | 0,00E+00 | 0,00E+00 | 2,84E+00 | 0,00E+00 | 3,90E-01 | 0 | 0 | 0 | |
| Indicator | Unit | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D | |
| | CRU | kg | 0 | 0 | 0,00E+00 | 0 | 0 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| | MFR | kg | 0 | 0 | 0,00E+00 | 0 | 0 | 0,00E+00 | 1,41E+00 | 5,13E-05 | -2,97E-03 |
| | MER | kg | 0 | 0 | 0,00E+00 | 0 | 0 | 0,00E+00 | 5,72E-01 | 1,26E-06 | -3,91E-04 |
| | EEE | MJ | 0 | 0 | 0,00E+00 | 0 | 0 | 0,00E+00 | 1,10E+00 | 8,14E-05 | -9,59E-04 |
| | EET | MJ | 0 | 0 | 0,00E+00 | 0 | 0 | 0,00E+00 | 1,66E+01 | 1,23E-03 | -1,45E-02 |

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

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

*INA Indicator Not Assessed

| Biogenic Carbon Content | | |
|---|------|---------------------|
| Indicator | Unit | At the factory gate |
| Biogenic carbon content in product | kg C | 0,00E+00 |
| Biogenic carbon content in accompanying packaging | kg C | 0,00E+00 |

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂

Additional 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 | Source | Amount | Unit |
|--|---------------|--------|---------------------------|
| Electricity, renewable with guarantee of origin, low voltage, Sweden (kWh) - NKT | ecoinvent 3.6 | 114,84 | g CO ₂ -eq/kWh |

Dangerous substances

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

Indoor environment

Additional Environmental Information

| Additional environmental impact indicators required in NPCR Part A for construction products | | | | | | | | | | |
|--|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | |
| GWPIOBC | kg CO ₂ -eq | 2,98E+01 | 6,32E-01 | 5,17E-01 | 3,66E-01 | 6,57E-01 | 0 | 0 | 0 | |
| Indicator | Unit | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| GWPIOBC | kg CO ₂ -eq | 0 | 0 | 3,24E-03 | 0 | 0 | 1,57E-01 | 1,71E+00 | 7,76E-02 | -8,68E+00 |

GWPIOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Bibliography

ISO 14025:2010. Environmental labels and declarations - Type III environmental declarations - Principles and procedures. International Organization for Standardization.

ISO 14044:2006. Environmental management - Life cycle assessment - Requirements and guidelines. International Organization for Standardization.

EN 15804:2012+A2:2019. Environmental product declaration - Core rules for the product category of construction products. European Committee for Standardization.

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

EN 50693:2019. Product category rules for life cycle assessments of electronic and electrical products and systems. European Committee for Standardization.




Ecoinvent v3, 2019. Allocation, cut-off by classification. Swiss Centre of Life Cycle Inventories.

Iversen et al., (2021). eEPD v2021.09, background information for EPD generator tool system verification, LCA.no. Report number: 07.21. System verification report.

Philis et al., (2022). EPD generator for NPCR 027 part B for electrical wires and cables, background information for EPD generator application and LCA data, LCA.no Report number: 03.22. PCR verification report.

EPD Norway (2022). NPCR Part A: Construction products and services. The Norwegian EPD foundation. Version 2.0 published 24.03.2021.

EPD Norway (2022). NPCR 027 Part B for electrical cables and wires. The Norwegian EPD foundation. Version 2.0 published 01.03.2022.

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|---|--|--|
|  <small>Global program operator</small> | Program operator and publisher The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo, Norway | Phone: +47 977 22 020 e-mail: post@epd-norge.no web: www.epd-norge.no |
|  | Owner of the declaration: NKT A/S Vibeholms Allé 20, 2605 Brøndby, Denmark | Phone: e-mail: matheo.roehr@nkt.com web: nkt.com |
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