

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

ÖLFLEX® CLASSIC 110 4G1,0



The Norwegian EPD Foundation

**Owner of the declaration:**

Lapp Norway AS

**Product:**

ÖLFLEX® CLASSIC 110 4G1,0

**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-11912-11867

**Registration number:**

NEPD-11912-11867

**Issue date:**

28.07.2025

**Valid to:**

28.07.2030

**EPD software:**

LCAno EPD generator ID: 1119595

## General information

### Product

ÖLFLEX® CLASSIC 110 4G1,0

### Program operator:

The Norwegian EPD Foundation  
Post Box 5250 Majorstuen, 0303 Oslo, Norway  
Phone: +47 977 22 020  
web: [www.epd-norge.no](http://www.epd-norge.no)

### Declaration number:

NEPD-11912-11867

### 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 ÖLFLEX® CLASSIC 110 4G1,0

### Declared unit with option:

A1, A2, A3, A4, A5, C1, C2, C3, C4, D

### Functional unit:

1 meter of ÖLFLEX® CLASSIC 110 4G1,0 from cradle-to-grave.

### 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:

Lapp Norway AS  
Contact person: Petter Dahl  
Phone: 91597046  
e-mail: [petter.dahl@lapp.com](mailto:petter.dahl@lapp.com)

### Manufacturer:

Lapp Norway AS  
Eikringen 11  
3036 Drammen, Norway

### Place of production:

Cableries Lapp S.a.r.l.  
Technopole Sud Forbach  
F - 57600 FORBACH, France

### Management system:

ISO 14001, ISO 9001

### Organisation no:

919 398 876

### Issue date:

28.07.2025

### Valid to:

28.07.2030

### Year of study:

2023

### 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: NEPDT133

Developer of EPD: Siv Kampen

Reviewer of company-specific input data and EPD: Lars Nilsen

### Approved:



Håkon Hauan, CEO EPD-Norge

## Product

### Product description:

ÖLFLEX CLASSIC 110 cables are VDE approved control cables for occasional flexible use and fixed installation for medium mechanical load conditions. They are also suitable for use in dry, damp or wet areas. If using outdoors, observe the indicated temperature range and use with UV protection. They are largely resistant to acids, alkalis and certain oils at room temperature.

ÖLFLEX CLASSIC 110 cables are limited suitable for free and continuously recurring movements. The maximum tensile load is 15 N/mm<sup>2</sup> of conductor cross-section during installation and operation. Compulsory guidance is not permitted.

### Application range:

As connecting cable for control systems in machine tools, plant engineering and construction, industrial machinery, conveyor systems, production and assembly lines as well as in measuring and control technology and data processing systems. This cable is suitable for torsion application in wind turbines. The torsional load is limited to applications, which are typical for the loop in wind turbine generators (WTG).

### Product specification

#### Design

Design based on EN 50525-2-51

#### Certification

VDE-REG 7030

limited to following dimension range:

0.5 mm<sup>2</sup> - 2.5 mm<sup>2</sup> 2 - 65 cores

4 mm<sup>2</sup> - 16 mm<sup>2</sup> 2 - 7 cores

25 mm<sup>2</sup> - 120 mm<sup>2</sup> 2 - 5 cores

EN 13501-6 and EN 50575

Classification of fire behaviour

(article/dimension range see [www.lappkabel.com/cpr](http://www.lappkabel.com/cpr))

#### Conductor

Fine wire strands of bare copper, acc. to IEC 60228 resp. EN IEC 60228, Class 5

#### Insulation

PVC compound TI2 acc. to EN 50363-3

with increased requirements acc. to Lapp specification

#### Core identification code

acc. to VDE 0293-1, with or without GN/YE ground conductor

black cores with white numbers acc. to EN 50334

#### Cable assembly

Cores are stranded in layers

#### Outer sheath

PVC compound TM2 acc. to EN 50363-4-1

with increased requirements acc. to LAPP specification

colour: Silver Grey, similar RAL 7001

| Materials                          | kg     | %      |
|------------------------------------|--------|--------|
| Metal - Copper                     | 0,0384 | 48,61  |
| Plastic - Polyvinyl chloride (PVC) | 0,0406 | 51,39  |
| Total                              | 0,079  | 100,00 |

| Packaging             | kg   | %      |
|-----------------------|------|--------|
| Packaging - Wood      | 0,01 | 100,00 |
| Total incl. packaging | 0,08 | 100,00 |

### Technical data:

#### Electrical properties at 20 °C

Nominal voltage  
U<sub>0</sub> / U: 300/500V

Test voltage  
core / core: 4000 V AC

#### Mechanical and thermal properties

Minimum bending radius  
Occasional flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter

Temperature range  
Occasional flexing: - 15°C up to +70°C max. conductor temp.  
Fixed installation:  
- 40°C up to +80°C max. conductor temp.

Bending cycles and power chain  
Power Chain

Operation parameters  
Limited to 2-7 cores and 0.5 – 2.5 mm<sup>2</sup>  
Min. bending radius: 15 x outer diameter  
temperature range: -5 °C up to +70 °C max. conductor temp.  
Travelling distance up to 5 m: 0.2 ... 1 million bending cycles

Torsional stress in WTG:  
TW-0 (5000 cycles at = +5°C)  
TW-1 (2000 cycles at = -20°C)  
± 150°/m at 1 revolution per minute

Flammability  
Flame retardant acc. to IEC 60332-1-2 resp. EN 60332-1-2

Oil resistance  
acc. to EN 50290-2-22 TM54

Tests  
acc. to IEC 60811 resp. EN 60811, EN 50395, EN 50396

General requirements  
These cables conform to the EU-Directive 2014/35/EU (Low Voltage Directive).  
A part of these cables (see [www.lappkabel.com/cpr](http://www.lappkabel.com/cpr)) are classified in accordance with the EU-Regulation no. 305/2011 (CPR).

Environmental information  
These cables meet the substance-specific requirements of the EU Directive 2011/65/EU (RoHS).

#### **Market:**

Norway

#### **Reference service life, product**

Expected lifetime 40 years, provided proper installation, load and ambient temperature.

#### **Reference service life, building or construction works**

40 years

### **LCA: Calculation rules**

#### **Declared unit:**

1 m ÖLFLEX® CLASSIC 110 4G1,0

#### **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.

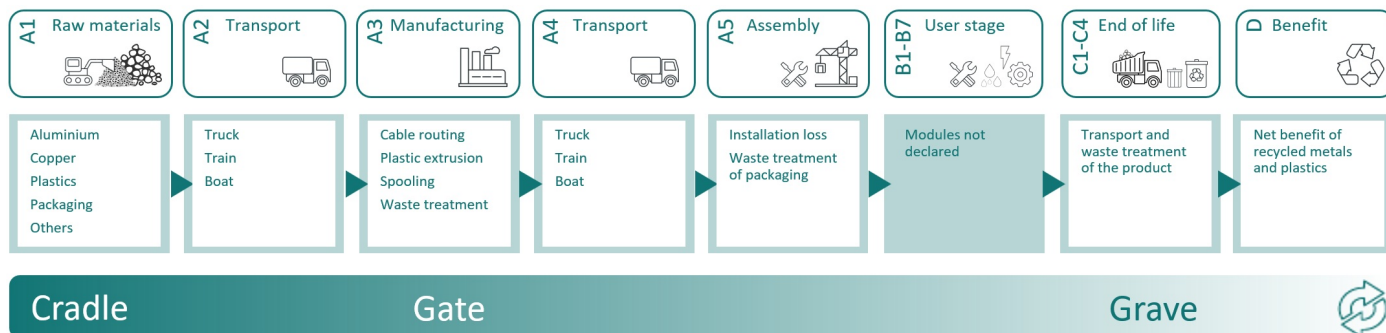
| Materials                          | Source        | Data quality | Year |
|------------------------------------|---------------|--------------|------|
| Metal - Copper                     | ecoinvent 3.6 | Database     | 2019 |
| Packaging - Wood                   | ecoinvent 3.6 | Database     | 2019 |
| Plastic - Polyvinyl chloride (PVC) | 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        | MND       | MND         | MND    | MND         | MND           | MND                    | MND                   |  | X                          | X         | X                | X        | X                                   |

### System boundary:

The flowchart below illustrates the system boundaries of the analysis:



### Additional technical information:

The article 1119595 ÖLFLEX CLASSIC 110 4G1,0 represents the product with the highest expenditure of raw materials and energy consumption during manufacturing of all the following products from the same product family:

Elnumber Article no

1090625 1119854 ÖLFLEX® CLASSIC 110 4X1,0  
 1090431 1119203 ÖLFLEX® CLASSIC 110 3G1,0  
 1090624 1119853 ÖLFLEX® CLASSIC 110 3X1,0  
 1090430 1119852 ÖLFLEX® CLASSIC 110 2X1,0

This EPD is only valid for the declared product. This EPD includes only the specific cable as named in the heading.  
 For other cross sections EPD can be made on request.

## LCA: Scenarios and additional technical information

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

Module A4 = In A4, a transport distance from the production site to LAPP Norway's warehouse in Drammen was included. A distance of 300 km was also added as additional transport to market.

Modules A5 = 5 % product losses during installation are estimated by the company. No energy use has been quantified since installation in buildings is often done by manual labour. Use of portable electrical devices (e.g., drill) usually have low energy requirements falling under the cutoff criterion of 1%. Cable drums are reused and also assumed under the cut-off criterion of 1%.

Module C1 = de-construction in buildings is often done by manual labour. Use of portable electrical devices (e.g., drill) usually have low energy requirements falling under the cut-off criterion of 1%.

Module C2 = 85 km is added as an average distance to the waste facility

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, over 32 tonnes, EURO 6 (km)                                                                           | 53,3 %                                | 1956          | 0,023                   | l/tkm | 44,99               |
| Truck, over 32 tonnes, EURO 6 (km)                                                                           | 53,3 %                                | 300           | 0,023                   | l/tkm | 6,90                |
| Assembly (A5)                                                                                                | Unit                                  | Value         |                         |       |                     |
| Product loss during installation (percentage of cable)                                                       | Units/DU                              | 0,05          |                         |       |                     |
| Waste, packaging, pallet, EUR wooden pallet, single use, to average treatment (kg) - A5, inkl. 85 km transp. | kg                                    | 0,005         |                         |       |                     |
| 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)                                                                             | 36,7 %                                | 85            | 0,043                   | l/tkm | 3,66                |
| Waste processing (C3)                                                                                        | Unit                                  | Value         |                         |       |                     |
| Copper to recycling (kg)                                                                                     | kg                                    | 0,02304       |                         |       |                     |
| Waste treatment of polyvinylchloride (PVC), incineration with energy recovery and fly ash extraction (kg)    | kg                                    | 0,0203        |                         |       |                     |
| Disposal (C4)                                                                                                | Unit                                  | Value         |                         |       |                     |
| Landfilling of plastic mixture (kg)                                                                          | kg                                    | 0,0308        |                         |       |                     |
| Landfilling of copper (kg)                                                                                   | kg                                    | 0,01536       |                         |       |                     |
| Landfilling of ashes from incineration of Polyvinylchloride (PVC), process per kg ashes and residues (kg)    | kg                                    | 0,003234      |                         |       |                     |
| Benefits and loads beyond the system boundaries (D)                                                          | Unit                                  | Value         |                         |       |                     |
| Substitution of primary copper with net scrap (kg)                                                           | kg                                    | 0,03013       |                         |       |                     |
| Substitution of thermal energy, district heating, in Norway (MJ)                                             | MJ                                    | 0,3664        |                         |       |                     |
| Substitution of electricity, in Norway (MJ)                                                                  | MJ                                    | 0,02422       |                         |       |                     |

## 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       | C1 | C2       | C3       | C4       | D         |
|  | GWP-total                        | kg CO <sub>2</sub> -eq | 2,74E-01  | 1,02E-02 | 2,51E-02 | 1,55E-02 | 2,77E-02 | 0  | 1,10E-03 | 4,07E-02 | 4,51E-03 | -7,46E-02 |
|  | GWP-fossil                       | kg CO <sub>2</sub> -eq | 2,77E-01  | 1,02E-02 | 2,35E-02 | 1,55E-02 | 2,01E-02 | 0  | 1,10E-03 | 4,07E-02 | 4,51E-03 | -7,41E-02 |
|  | GWP-biogenic                     | kg CO <sub>2</sub> -eq | -3,42E-03 | 4,23E-06 | 1,57E-03 | 6,65E-06 | 7,53E-03 | 0  | 4,54E-07 | 1,66E-05 | 6,85E-07 | -3,39E-04 |
|  | GWP-luluc                        | kg CO <sub>2</sub> -eq | 2,71E-04  | 3,64E-06 | 1,44E-05 | 4,73E-06 | 1,73E-05 | 0  | 3,90E-07 | 3,18E-06 | 2,48E-07 | -1,49E-04 |
|  | ODP                              | kg CFC11 -eq           | 6,20E-08  | 2,32E-09 | 7,58E-09 | 3,74E-09 | 4,22E-09 | 0  | 2,48E-10 | 1,34E-09 | 2,07E-10 | -1,55E-04 |
|  | AP                               | mol H <sup>+</sup> -eq | 9,33E-03  | 2,94E-05 | 8,09E-05 | 5,00E-05 | 5,77E-04 | 0  | 3,15E-06 | 2,35E-05 | 6,22E-06 | -1,21E-02 |
|  | EP-FreshWater                    | kg P -eq               | 7,59E-05  | 8,17E-08 | 5,80E-07 | 1,24E-07 | 4,66E-06 | 0  | 8,76E-09 | 1,20E-07 | 1,81E-08 | -8,16E-05 |
|  | EP-Marine                        | kg N -eq               | 6,67E-04  | 5,81E-06 | 1,77E-05 | 1,09E-05 | 4,27E-05 | 0  | 6,24E-07 | 5,74E-06 | 5,74E-06 | -5,02E-04 |
|  | EP-Terrestrial                   | mol N -eq              | 9,55E-03  | 6,50E-05 | 1,68E-04 | 1,22E-04 | 6,03E-04 | 0  | 6,98E-06 | 6,16E-05 | 2,35E-05 | -7,76E-03 |
|  | POCP                             | kg NMVOC -eq           | 2,44E-03  | 2,49E-05 | 4,67E-05 | 4,79E-05 | 1,56E-04 | 0  | 2,67E-06 | 1,74E-05 | 7,31E-06 | -2,11E-03 |
|  | ADP-minerals&metals <sup>1</sup> | kg Sb -eq              | 8,39E-05  | 2,82E-07 | 3,71E-07 | 2,77E-07 | 5,17E-06 | 0  | 3,03E-08 | 8,57E-08 | 6,42E-09 | -6,77E-05 |
|  | ADP-fossil <sup>1</sup>          | MJ                     | 4,53E+00  | 1,55E-01 | 1,65E+00 | 2,52E-01 | 3,70E-01 | 0  | 1,66E-02 | 5,35E-02 | 1,69E-02 | -6,73E-01 |
|  | WDP <sup>1</sup>                 | m <sup>3</sup>         | 1,48E+01  | 1,50E-01 | 2,50E+01 | 1,93E-01 | 2,20E+00 | 0  | 1,60E-02 | 1,09E+00 | 2,72E-01 | 3,56E+00  |

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<sup>-3</sup> = 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       | C1 | C2       | C3       | C4       | D         |
|-------------------------------------------------------------------------------------------------------|-------------------|----------|----------|----------|----------|----------|----|----------|----------|----------|-----------|
|  PM                  | Disease incidence | 2,78E-08 | 6,25E-10 | 4,91E-10 | 1,43E-09 | 1,84E-09 | 0  | 6,70E-11 | 1,53E-10 | 9,80E-11 | -2,52E-08 |
|  IRP <sup>2</sup>    | kgBq U235 -eq     | 1,46E-02 | 6,76E-04 | 1,63E-02 | 1,10E-03 | 1,80E-03 | 0  | 7,25E-05 | 2,60E-04 | 9,34E-05 | -9,93E-04 |
|  ETP-fw <sup>1</sup> | CTUe              | 1,10E+02 | 1,15E-01 | 5,94E-01 | 1,84E-01 | 7,40E+00 | 0  | 1,23E-02 | 2,56E+00 | 9,53E+00 | -1,11E+02 |
|  HTP-c <sup>1</sup>  | CTUh              | 1,99E-09 | 0,00E+00 | 1,80E-11 | 0,00E+00 | 1,22E-10 | 0  | 0,00E+00 | 6,00E-12 | 1,00E-12 | -1,57E-09 |
|  HTP-nc <sup>1</sup> | CTUh              | 1,49E-07 | 1,24E-10 | 4,46E-10 | 1,79E-10 | 9,14E-09 | 0  | 1,30E-11 | 6,04E-10 | 4,10E-11 | -1,35E-07 |
|  SQP <sup>1</sup>    | dimensionless     | 3,10E+00 | 1,08E-01 | 9,68E-02 | 2,89E-01 | 2,10E-01 | 0  | 1,16E-02 | 1,95E-02 | 5,10E-02 | -1,61E+00 |

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 =  $9,0 \times 10^{-3}$  = 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
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        | C1 | C2       | C3        | C4       | D         |  |
|  PERE  | MJ             | 6,88E-01 | 2,21E-03 | 2,51E-01 | 3,17E-03 | 5,41E-02  | 0  | 2,37E-04 | 6,83E-03  | 1,46E-03 | -4,45E-01 |  |
|  PERM  | MJ             | 6,94E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -6,59E-02 | 0  | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  |  |
|  PERT  | MJ             | 7,57E-01 | 2,21E-03 | 2,51E-01 | 3,17E-03 | -1,19E-02 | 0  | 2,37E-04 | 6,83E-03  | 1,46E-03 | -4,45E-01 |  |
|  PENRE | MJ             | 3,65E+00 | 1,55E-01 | 1,65E+00 | 2,52E-01 | 3,23E-01  | 0  | 1,66E-02 | 5,35E-02  | 1,69E-02 | -6,73E-01 |  |
|  PENRM | MJ             | 8,73E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,39E-02  | 0  | 0,00E+00 | -1,33E+00 | 0,00E+00 | 0,00E+00  |  |
|  PENRT | MJ             | 4,53E+00 | 1,55E-01 | 1,65E+00 | 2,52E-01 | 3,47E-01  | 0  | 1,66E-02 | -1,27E+00 | 1,69E-02 | -6,73E-01 |  |
|  SM    | kg             | 6,56E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,28E-04  | 0  | 0,00E+00 | 0,00E+00  | 1,15E-06 | 2,11E-02  |  |
|  RSF   | MJ             | 1,70E-02 | 7,92E-05 | 1,81E-03 | 1,11E-04 | 1,13E-03  | 0  | 8,49E-06 | 1,23E-04  | 3,20E-05 | 1,97E-03  |  |
|  NRSF  | MJ             | 6,45E-04 | 2,83E-04 | 4,63E-03 | 3,72E-04 | 3,19E-04  | 0  | 3,04E-05 | 0,00E+00  | 8,03E-05 | -6,80E-03 |  |
|  FW    | m <sup>3</sup> | 4,69E-03 | 1,65E-05 | 1,53E-03 | 2,87E-05 | 3,90E-04  | 0  | 1,77E-06 | 1,28E-03  | 1,99E-05 | -1,99E-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 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<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

| End of life - Waste                                                               |      |      |          |          |          |          |          |    |          |          |          |           |
|-----------------------------------------------------------------------------------|------|------|----------|----------|----------|----------|----------|----|----------|----------|----------|-----------|
| Indicator                                                                         |      | Unit | A1       | A2       | A3       | A4       | A5       | C1 | C2       | C3       | C4       | D         |
|  | HWD  | kg   | 2,51E-03 | 7,97E-06 | 3,33E-03 | 1,38E-05 | 3,73E-04 | 0  | 8,55E-07 | 0,00E+00 | 8,68E-04 | -8,17E-04 |
|  | NHWD | kg   | 8,95E-02 | 7,52E-03 | 1,60E-02 | 2,19E-02 | 1,47E-02 | 0  | 8,07E-04 | 0,00E+00 | 4,94E-02 | -3,54E-02 |
|  | RWD  | kg   | 1,33E-05 | 1,05E-06 | 2,10E-05 | 1,72E-06 | 2,02E-06 | 0  | 1,13E-07 | 0,00E+00 | 9,32E-08 | -8,82E-07 |

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

"Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 0,009"

\*INA Indicator Not Assessed

| End of life - Output flow                                                         |     |      |          |          |          |          |          |    |          |          |          |           |
|-----------------------------------------------------------------------------------|-----|------|----------|----------|----------|----------|----------|----|----------|----------|----------|-----------|
| Indicator                                                                         |     | Unit | A1       | A2       | A3       | A4       | A5       | C1 | C2       | C3       | C4       | D         |
|  | CRU | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0  | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
|  | MFR | kg   | 0,00E+00 | 0,00E+00 | 1,21E-02 | 0,00E+00 | 2,02E-03 | 0  | 0,00E+00 | 2,30E-02 | 2,76E-06 | -8,24E-04 |
|  | MER | kg   | 0,00E+00 | 0,00E+00 | 1,43E-02 | 0,00E+00 | 5,67E-03 | 0  | 0,00E+00 | 2,03E-02 | 6,76E-08 | -1,09E-04 |
|  | EEE | MJ   | 0,00E+00 | 0,00E+00 | 8,73E-03 | 0,00E+00 | 4,42E-03 | 0  | 0,00E+00 | 2,08E-02 | 4,38E-06 | -2,66E-04 |
|  | EET | MJ   | 0,00E+00 | 0,00E+00 | 1,32E-01 | 0,00E+00 | 6,69E-02 | 0  | 0,00E+00 | 3,14E-01 | 6,63E-05 | -4,02E-03 |

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 =  $9,0 \cdot 10^{-3}$  = 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 | 2,07E-03            |

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

## 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, Norway (kWh) | ecoinvent 3.6 | 24,33  | g CO <sub>2</sub> -eq/kWh |
| Electricity, France (kWh) | ecoinvent 3.6 | 94,37  | g CO <sub>2</sub> -eq/kWh |

### Dangerous substances

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

### Indoor environment

No effect on indoor environment.

## Additional Environmental Information

| Additional environmental impact indicators required in NPCR Part A for construction products |                        |          |          |          |          |          |    |          |          |          |           |
|----------------------------------------------------------------------------------------------|------------------------|----------|----------|----------|----------|----------|----|----------|----------|----------|-----------|
| Indicator                                                                                    | Unit                   | A1       | A2       | A3       | A4       | A5       | C1 | C2       | C3       | C4       | D         |
| GWPIOBC                                                                                      | kg CO <sub>2</sub> -eq | 2,81E-01 | 1,02E-02 | 2,48E-02 | 1,55E-02 | 2,04E-02 | 0  | 1,10E-03 | 4,08E-02 | 3,34E-03 | -3,63E-02 |

GWP-IOBC: 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.

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