epd-norge
Global program operatør

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

ÖLFLEX® CLASSIC 110 4G1,5

LAPP

The Norwegian EPD Foundation

Owner of the declaration:
Lapp Norway AS

Product:
ÖLFLEX® CLASSIC 110 4G1,5

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-11909-11870

Registration number:
NEPD-11909-11870

Issue date:
28.07.2025

Valid to:
28.07.2030

EPD software:
LCAno EPD generator ID: 1121150

General information

Product

ÖLFLEX® CLASSIC 110 4G1,5

Program operator:

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

Declaration number:

NEPD-11909-11870

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 4G1,5

Declared unit with option:

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

Functional unit:

1 meter of ÖLFLEX® CLASSIC 110 4G1,5 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

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.

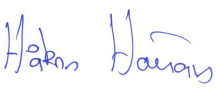
Development and verification of EPD:

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/mm² 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 mm² - 2.5 mm² 2 - 65 cores
4 mm² - 16 mm² 2 - 7 cores
25 mm² - 120 mm² 2 - 5 cores
EN 13501-6 and EN 50575
Classification of fire behaviour
(article/dimension range see 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	0,058	55,77
Plastic - Polyvinyl chloride (PVC)	0,046	44,23
Total	0,104	100,00

Packaging	kg	%
Packaging - Wood	0,01	100,00
Total incl. packaging	0,11	100,00

Technical data:

Electrical properties at 20 °C

Nominal voltage
U0 /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 mm²
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 are conform to the EU-Directive 2014/35/EU (Low Voltage Directive).
A part of these cables (see 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 4G1,5

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.

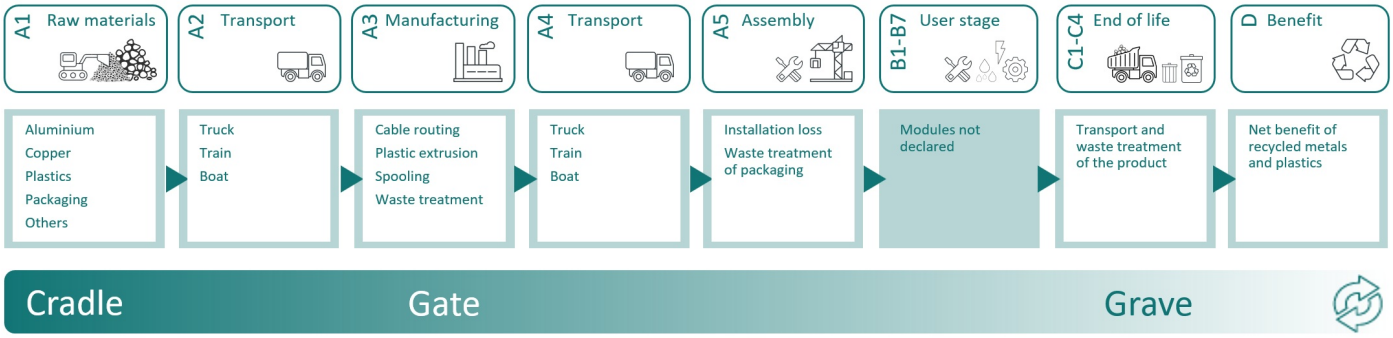
Materials	Source	Data quality	Year
Metal - Copper	ecoinvent 3.6	Database	2019
Packaging - Wood	ecoinvent 3.6	Database	2019
Plastic - Polyvinyl chloride (PVC)	ecoinvent 3.6	Database	2019

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 1121150 ÖLFLEX CLASSIC 110 4G1,5 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

1085814 1119904 ÖLFLEX® CLASSIC 110 4X1,5
1090461 1119303 ÖLFLEX® CLASSIC 110 3G1,5
1090626 1119903 ÖLFLEX® CLASSIC 110 3X1,5
1090460 1119902 ÖLFLEX® CLASSIC 110 2X1,5

This EPD is only valid for the declared product. This EPD includes only the spesific 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 Norways 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	0,0348			
Waste treatment of polyvinylchloride (PVC), incineration with energy recovery and fly ash extraction (kg)	kg	0,023			

Disposal (C4)	Unit	Value			
Landfilling of plastic mixture (kg)	kg	0,0335			
Landfilling of copper (kg)	kg	0,0232			
Landfilling of ashes from incineration of Polyvinylchloride (PVC), process per kg ashes and residues (kg)	kg	0,003664			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of primary copper with net scrap (kg)	kg	0,03857			
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	0,4082			
Substitution of electricity, in Norway (MJ)	MJ	0,02698			

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_2 -eq	3,77E-01	1,25E-02	2,51E-02	2,04E-02	2,77E-02	0	1,45E-03	4,61E-02	5,03E-03	-9,51E-02
	GWP-fossil	kg CO_2 -eq	3,78E-01	1,25E-02	2,35E-02	2,04E-02	2,01E-02	0	1,44E-03	4,61E-02	5,03E-03	-9,45E-02
	GWP-biogenic	kg CO_2 -eq	-1,44E-03	5,19E-06	1,57E-03	8,75E-06	7,53E-03	0	5,98E-07	1,88E-05	7,61E-07	-4,33E-04
	GWP-luluc	kg CO_2 -eq	3,77E-04	4,46E-06	1,44E-05	6,23E-06	1,73E-05	0	5,14E-07	3,60E-06	3,10E-07	-1,79E-04
	ODP	kg CFC11 -eq	7,58E-08	2,84E-09	7,58E-09	4,93E-09	4,22E-09	0	3,27E-10	1,51E-09	2,54E-10	-1,72E-04
	AP	mol H+ -eq	1,39E-02	3,60E-05	8,09E-05	6,58E-05	5,77E-04	0	4,15E-06	2,66E-05	7,58E-06	-1,55E-02
	EP-FreshWater	kg P -eq	1,13E-04	1,00E-07	5,80E-07	1,63E-07	4,66E-06	0	1,15E-08	1,36E-07	2,19E-08	-1,04E-04
	EP-Marine	kg N -eq	9,73E-04	7,13E-06	1,77E-05	1,44E-05	4,27E-05	0	8,21E-07	6,50E-06	6,53E-06	-6,42E-04
	EP-Terrestial	mol N -eq	1,40E-02	7,98E-05	1,68E-04	1,61E-04	6,03E-04	0	9,18E-06	6,98E-05	2,88E-05	-9,92E-03
	POCP	kg NMVOC -eq	3,57E-03	3,06E-05	4,67E-05	6,31E-05	1,56E-04	0	3,52E-06	1,97E-05	8,86E-06	-2,70E-03
	ADP-minerals&metals[1]	kg Sb-eq	1,26E-04	3,46E-07	3,71E-07	3,64E-07	5,17E-06	0	3,99E-08	9,71E-08	7,80E-09	-8,67E-05
	ADP-fossil[1]	MJ	5,99E+00	1,90E-01	1,65E+00	3,32E-01	3,70E-01	0	2,18E-02	6,06E-02	2,07E-02	-8,57E-01
	WDP[1]	m^3	2,16E+01	1,83E-01	2,50E+01	2,54E-01	2,20E+00	0	2,11E-02	1,24E+00	3,55E-01	4,62E+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*10-3 = 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	C1	C2	C3	C4	D
	PM	Disease incidence	4,05E-08	7,68E-10	4,91E-10	1,88E-09	1,84E-09	0	8,80E-11	1,73E-10	1,19E-10	-3,21E-08
	IRP[2]	kgBq U235 -eq	2,08E-02	8,29E-04	1,63E-02	1,45E-03	1,80E-03	0	9,54E-05	2,95E-04	1,17E-04	-1,24E-03
	ETP-fw[1]	CTUe	1,65E+02	1,41E-01	5,94E-01	2,43E-01	7,40E+00	0	1,62E-02	2,91E+00	1,44E+01	-1,43E+02
	HTP-c[1]	CTUh	2,98E-09	0,00E+00	1,80E-11	0,00E+00	1,22E-10	0	0,00E+00	6,00E-12	2,00E-12	-2,01E-09
	HTP-nc[1]	CTUh	2,24E-07	1,54E-10	4,46E-10	2,34E-10	9,14E-09	0	1,80E-11	6,84E-10	4,80E-11	-1,72E-07
	SQP[1]	dimensionless	4,17E+00	1,33E-01	9,68E-02	3,80E-01	2,10E-01	0	1,53E-02	2,21E-02	5,99E-02	-2,03E+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*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	9,83E-01	2,71E-03	2,51E-01	4,18E-03	5,41E-02	0	3,13E-04	7,74E-03	1,91E-03	-5,39E-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	1,05E+00	2,71E-03	2,51E-01	4,18E-03	-1,19E-02	0	3,13E-04	7,74E-03	1,91E-03	-5,39E-01
	PENRE	MJ	5,00E+00	1,90E-01	1,65E+00	3,32E-01	3,23E-01	0	2,18E-02	6,06E-02	2,07E-02	-8,57E-01
	PENRM	MJ	9,89E-01	0,00E+00	0,00E+00	0,00E+00	2,39E-02	0	0,00E+00	-1,44E+00	0,00E+00	0,00E+00
	PENRT	MJ	5,99E+00	1,90E-01	1,65E+00	3,32E-01	3,47E-01	0	2,18E-02	-1,38E+00	2,07E-02	-8,57E-01
	SM	kg	9,91E-03	0,00E+00	0,00E+00	0,00E+00	4,28E-04	0	0,00E+00	0,00E+00	1,15E-06	2,70E-02
	RSF	MJ	2,49E-02	9,71E-05	1,81E-03	1,46E-04	1,13E-03	0	1,12E-05	1,40E-04	4,15E-05	2,53E-03
	NRSF	MJ	8,42E-04	3,47E-04	4,63E-03	4,90E-04	3,19E-04	0	4,00E-05	0,00E+00	9,05E-05	-6,86E-03
	FW	m^3	6,54E-03	2,03E-05	1,53E-03	3,78E-05	3,90E-04	0	2,33E-06	1,45E-03	2,46E-05	-2,51E-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*10-3 = 0,009"
*INA Indicator Not Assessed

End of life - Waste

Indicator		Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
	HWD	kg	3,65E-03	9,78E-06	3,33E-03	1,82E-05	3,73E-04	0	1,13E-06	0,00E+00	1,20E-03	-1,05E-03
	NHWD	kg	1,30E-01	9,22E-03	1,60E-02	2,89E-02	1,47E-02	0	1,06E-03	0,00E+00	6,04E-02	-4,52E-02
	RWD	kg	1,91E-05	1,29E-06	2,10E-05	2,27E-06	2,02E-06	0	1,49E-07	0,00E+00	1,17E-07	-1,10E-06

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	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	3,48E-02	3,00E-06	-1,06E-03
	MER	kg	0,00E+00	0,00E+00	1,43E-02	0,00E+00	5,67E-03	0	0,00E+00	2,30E-02	7,35E-08	-1,39E-04
	EEE	MJ	0,00E+00	0,00E+00	8,73E-03	0,00E+00	4,42E-03	0	0,00E+00	2,35E-02	4,77E-06	-3,40E-04
	EET	MJ	0,00E+00	0,00E+00	1,32E-01	0,00E+00	6,69E-02	0	0,00E+00	3,56E-01	7,21E-05	-5,15E-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*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 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, Norway (kWh)	ecoinvent 3.6	24,33	g CO2-eq/kWh
Electricity, France (kWh)	ecoinvent 3.6	94,37	g CO2-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_2 -eq	3,84E-01	1,25E-02	2,48E-02	2,04E-02	2,04E-02	0	1,45E-03	4,62E-02	3,87E-03	-4,61E-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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