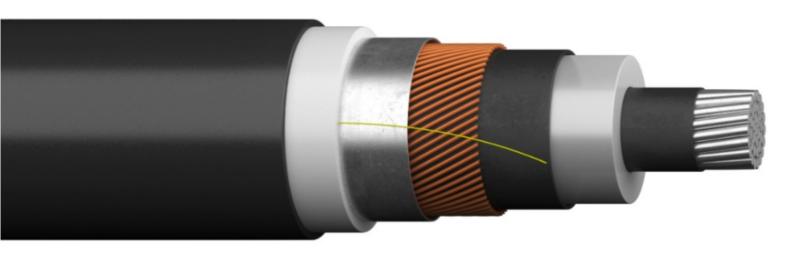




# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

AXLJ-TTCL TSLF 1x185/35 AFR 36kV



# Draka

# A Brand of Prysmian Group



The Norwegian EPD Foundation

Owner of the declaration:

Prysmian Group Danmark A/S

Product:

AXLJ-TTCL TSLF 1x185/35 AFR 36kV

**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-7449-6834-EN

Registration number:

NEPD-7449-6834-EN

Issue date: 06.09.2024

**Valid to:** 06.09.2029

**EPD** software:

LCAno EPD generator ID: 243910



# **General information**

# Product

AXLJ-TTCL TSLF 1x185/35 AFR 36kV

# **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:**

NFPD-7449-6834-FN

# 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 AXLJ-TTCL TSLF 1x185/35 AFR 36kV

### **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 installed AXLJ-TTCL TSLF 1x185/35 AFR 36kV outdoor power cable, used to transmit a reference energy throughput of 1A over a period of 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:

Prysmian Group Danmark A/S Contact person: Gustaf Jonsson Phone: +45 60 39 26 29 e-mail: gustaf.jonsson@prysmian.com

# Manufacturer:

Prysmian Group Danmark A/S Roskildevej 22 2620 Albertslund, Denmark

# Place of production:

Prysmian Group production site Nässjö (Sweden) Vallgatan 5 571 41 Nässjö, Sweden

# Management system:

ISO 9001, ISO 14001, ISO 45001

# Organisation no:

DK27917887

# Issue date:

06.09.2024

### Valid to:

06.09.2029

# 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: NEPDT33

Developer of EPD: Siri Andersen

Reviewer of company-specific input data and EPD: Anders Nymark

# Approved:

Håkon Hauan

Managing Director of EPD-Norway



# **Product**

# **Product description:**

Single-core, distribution cable for outdoor use in 3-phase formation. Installation in pipes and ground/water. Both radial and longitudinal water sealed. Can be ploughed down. The outer sheath has a conductive layer that greatly extends the possibilities to do a sheath testing before, during and after installation. Ripcords for easier and safer stripping of the outer sheath.

# **Product specification**

Conductor design: Round, stranded aluminum conductor, class 2

Conductor material: Aluminium Core insulation material: XLPE

Screen construction: Aluminium tape and copper wire

Material outer sheath: MDPE Laminated sheath: Yes

Longitudinal water blocking screen: Yes

Rip cord: Yes UV resistant: Yes

Materials	kg	%
Plastic - Polyethylene	0,93	54,64
Metal - Copper	0,19	11,36
Tape	0,01	0,81
Metal - Aluminium	0,56	32,82
Fire-, heat- and UV-stabilizers	0,00	0,27
Adhesive	0,00	0,09
Total	1,69	100,00

### **Technical data:**

AXLJ-TTCL TSLF 18/30(36) KV SAPcode 20102189

STANDARDS, CERTIFICATIONS AND APPROVALS:

SS 424 14 16 Construction standard 12-36 kV
CENELEC HD 620 Part 10 Section K Harmonized construction standard
CENELEC HD 620 Part 10 Section M Harmonized construction and testing standard

# Market:

Scandinavia

(B6 calculations done with Danish el.mix)

# Reference service life, product

40 years. Standard lifetime for energy distribution network applications, provided in appendix 1 of PSR for wires, cables, and accessories of PEP Ecopassport.

# Reference service life, building or construction works

40 years. Estimation made to match the product service life and keep the EPD environmental impact calculations at the product level.

# LCA: Calculation rules

# **Declared unit:**

1 m AXLJ-TTCL TSLF 1x185/35 AFR 36kV

# **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
Adhesive	ecoinvent 3.6	Database	2019
Fire-, heat- and UV-stabilizers	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
Таре	ecoinvent 3.6	Database	2019



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

P	roduct stag	je		ruction ion stage	Use stage End of life stage Beyond the syster boundaries				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	В3	B4	B5	B6	В7	C1	C2	C3	C4	D
Χ	X	Χ	X	Χ	X	X	Χ	Χ	Χ	X	Χ	X	Χ	Χ	X	X

# System boundary:

The flowchart below illustrates the system boundaries of the analysis:



Cradle Gate Grave

# Additional technical information:

Rated voltage U0/U (Um) 18/30 (36) kV

Test voltage [kV] 63

Halogen free acc. IEC/EN 60754-1/2

Max. conductor temperature 90

Min. outer temperature during installation [°C] -20  $\,$ 

Cable marking example AXLJ-TTCL TSLF 36kV 1x95 AFR/25 DRAKA "Date and time", metre marked

Bending radius (rule) Fixed installation: 10 x D

During handling: 15 x D During plowing: 8 x D



# LCA: Scenarios and additional technical information

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

Module A4 = In A4, an average transport from warehouse to Scandinavian/Danish 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, 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 40 years reference service life of the cable in these modules.

Module B4 = The service life of the building is the same as the service life of the product, no replacement activities are taking place in module B4

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 unit
- Use rate = 100% percent (according to appendix 1 of the PSR)

Linear conductor resistivity = 0,000164 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 heaver materials is assumed to be low. This module can therefore be included with zero impact.

Module C2 = 300 km is added as default average transport to nearest waste treatment 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.

the incineration with energy recovery of plas	SUC INSUIATION AND OTHE	er parts is also calcula	ted 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 5 (km)	53,3 %	1000	0,023	l/tkm	23,00
Assembly (A5)	Unit	Value			
Product loss during installation (percentage of cable)	Units/DU	0,02			
Operational energy (B6)	Unit	Value			
Electricity, Denmark (kWh)	kWh/DU	0,06			
Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 5 (km)	36,7 %	300	0,044	l/tkm	13,20
Waste processing (C3)	Unit	Value			
Aluminium to recycling (kg)	kg	0,39			
Copper to recycling (kg)	kg	0,12			
Waste treatment of plastic mixture, incineration with energy recovery and fly ash extraction (kg)	kg	0,01			
Waste treatment of polyethylene (PE), incineration with energy recovery and fly ash extraction (kg)	kg	0,46			
Disposal (C4)	Unit	Value			
Landfilling of aluminium (kg)	kg	0,17			
Landfilling of ashes from incineration of Plastic mixture, process per kg ashes and residues (kg)	kg	0,00			
Landfilling of ashes from incineration of Polyethylene (PE), process per kg ashes and residues (kg)	kg	0,02			
Landfilling of copper (kg)	kg	0,08			
Landfilling of plastic mixture (kg)	kg	0,47			



Benefits and loads beyond the system boundaries (D)	Unit	Value		
Substitution of electricity (MJ)	MJ	0,91		
Substitution of primary aluminium with net scrap (kg)	kg	0,29		
Substitution of primary copper with net scrap (kg)	kg	0,02		
Substitution of thermal energy, district heating (MJ)	МЈ	13,81		



**LCA: Results** 

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

Envir	onmental impact											
	Indicator			Unit	A1	A2	A3	A4	A5	B1	B2	В3
	GWP-total		kg	CO <sub>2</sub> -eq	1,39E+01	2,52E-01	1,85E-01	1,54E-01	3,22E-01	0	0	0
	GWP-fossil		kg	CO <sub>2</sub> -eq	1,37E+01	2,51E-01	1,62E-01	1,54E-01	3,18E-01	0	0	0
	GWP-biogenio	:	kg	CO <sub>2</sub> -eq	1,13E-01	1,11E-04	1,87E-02	6,33E-05	2,64E-03	0	0	0
	GWP-luluc		kg	CO <sub>2</sub> -eq	6,92E-02	1,03E-04	4,65E-03	4,50E-05	1,48E-03	0	0	0
(3)	ODP		kg CFC11 -eq		6,81E-07	5,42E-08	3,72E-08	3,56E-08	1,66E-08	0	0	0
Œ.	AP	AP		ol H+ -eq	1,19E-01	2,30E-03	5,43E-04	6,48E-04	2,47E-03	0	0	0
-	EP-FreshWate	EP-FreshWater		g P -eq	7,76E-04	2,20E-06	5,29E-06	1,18E-06	1,57E-05	0	0	0
4	EP-Marine		k	g N -eq	1,45E-02	7,10E-04	1,35E-04	1,95E-04	3,17E-04	0	0	0
-	EP-Terrestial		m	ol N -eq	1,71E-01	7,85E-03	1,33E-03	2,16E-03	3,69E-03	0	0	0
	POCP		kg N	MVOC -eq	5,24E-02	2,19E-03	3,22E-04	6,93E-04	1,13E-03	0	0	0
	ADP-minerals&me	etals <sup>1</sup>	k	g Sb-eq	5,74E-04	4,05E-06	3,01E-06	2,63E-06	1,17E-05	0	0	0
	ADP-fossil <sup>1</sup>			MJ	1,94E+02	3,66E+00	8,51E+00	2,40E+00	4,20E+00	0	0	0
<u>%</u>	WDP <sup>1</sup>			$m^3$	2,09E+03	2,78E+00	8,49E+02	1,84E+00	5,89E+01	0	0	0
	Indicator	Unit	t	B4	B5	В6	В7	C1	C2	C3	C4	D
	Indicator  GWP-total	Unit		B4 0	B5 0	B6 1,94E-02	B7 0	C1 0	C2 8,49E-02	C3 1,42E+00	C4 5,84E-02	D -2,78E+00
			-eq									
_	GWP-total	kg CO <sub>2</sub>	eq e-eq	0	0	1,94E-02	0	0	8,49E-02	1,42E+00	5,84E-02	-2,78E+00
	GWP-total GWP-fossil	kg CO <sub>2</sub>	-eq -eq -eq	0	0	1,94E-02 1,92E-02	0	0	8,49E-02 8,49E-02	1,42E+00 1,42E+00	5,84E-02 5,84E-02	-2,78E+00 -2,72E+00
	GWP-total GWP-fossil GWP-biogenic	kg CO <sub>2</sub> kg CO <sub>2</sub>	-eq -eq -eq	0 0 0	0 0 0	1,94E-02 1,92E-02 1,99E-04	0 0	0 0	8,49E-02 8,49E-02 3,46E-05	1,42E+00 1,42E+00 1,18E-05	5,84E-02 5,84E-02 5,29E-06	-2,78E+00 -2,72E+00 -1,23E-02
	GWP-total GWP-fossil GWP-biogenic GWP-luluc	kg CO <sub>2</sub> kg CO <sub>2</sub> kg CO <sub>2</sub>	-eq -eq -eq -eq 1-eq	0 0 0 0	0 0 0	1,94E-02 1,92E-02 1,99E-04 2,59E-05	0 0 0 0	0 0 0 0	8,49E-02 8,49E-02 3,46E-05 2,97E-05	1,42E+00 1,42E+00 1,18E-05 1,75E-06	5,84E-02 5,84E-02 5,29E-06 2,55E-06	-2,78E+00 -2,72E+00 -1,23E-02 -5,22E-02
	GWP-total GWP-fossil GWP-biogenic GWP-luluc ODP	kg CO2 $kg CO2$ $kg CO2$ $kg CO2$ $kg CO2$	e-eq e-eq e-eq e-eq 1-eq	0 0 0 0	0 0 0 0	1,94E-02 1,92E-02 1,99E-04 2,59E-05 6,53E-10	0 0 0 0	0 0 0 0	8,49E-02 8,49E-02 3,46E-05 2,97E-05 1,94E-08	1,42E+00 1,42E+00 1,18E-05 1,75E-06 1,12E-09	5,84E-02 5,84E-02 5,29E-06 2,55E-06 2,55E-09	-2,78E+00 -2,72E+00 -1,23E-02 -5,22E-02 -5,83E-03
	GWP-total GWP-fossil GWP-biogenic GWP-luluc ODP AP	kg CO <sub>2</sub> kg CO <sub>2</sub> kg CO <sub>2</sub> kg CO <sub>2</sub> mol H+	-eq -eq -eqeqeqeqeqeq	0 0 0 0 0	0 0 0 0 0	1,94E-02 1,92E-02 1,99E-04 2,59E-05 6,53E-10 7,70E-05	0 0 0 0 0	0 0 0 0 0	8,49E-02 8,49E-02 3,46E-05 2,97E-05 1,94E-08 3,47E-04	1,42E+00 1,42E+00 1,18E-05 1,75E-06 1,12E-09 1,80E-04	5,84E-02 5,84E-02 5,29E-06 2,55E-06 2,55E-09 6,69E-05	-2,78E+00 -2,72E+00 -1,23E-02 -5,22E-02 -5,83E-03 -2,46E-02
	GWP-total GWP-fossil GWP-biogenic GWP-luluc ODP AP EP-FreshWater	$\label{eq:kgCO2} \begin{split} & \text{kg CO}_2 \\ & \text{kg CO}_2 \\ & \text{kg CO}_2 \\ & \text{kg CO}_2 \\ & \text{kg CFC1} \\ & \text{mol H+} \\ & \text{kg P-} \end{split}$	-eq -eq -eq -eq -eq -eq -eq	0 0 0 0 0 0	0 0 0 0 0 0	1,94E-02 1,92E-02 1,99E-04 2,59E-05 6,53E-10 7,70E-05 1,57E-06	0 0 0 0 0 0	0 0 0 0 0 0	8,49E-02 8,49E-02 3,46E-05 2,97E-05 1,94E-08 3,47E-04 6,67E-07	1,42E+00 1,42E+00 1,18E-05 1,75E-06 1,12E-09 1,80E-04 1,12E-07	5,84E-02 5,84E-02 5,29E-06 2,55E-06 2,55E-09 6,69E-05 1,24E-07	-2,78E+00 -2,72E+00 -1,23E-02 -5,22E-02 -5,83E-03 -2,46E-02 -1,51E-04
	GWP-total GWP-fossil GWP-biogenic GWP-luluc ODP AP EP-FreshWater EP-Marine	kg CO <sub>2</sub> kg CO <sub>2</sub> kg CO <sub>2</sub> kg CO <sub>2</sub> kg CFC1 mol H+ kg P -	2 -eq 2 -eq 2 -eq 1 -eq eq -eq -eq	0 0 0 0 0 0 0	0 0 0 0 0 0	1,94E-02 1,92E-02 1,99E-04 2,59E-05 6,53E-10 7,70E-05 1,57E-06 1,30E-05	0 0 0 0 0 0	0 0 0 0 0 0	8,49E-02 8,49E-02 3,46E-05 2,97E-05 1,94E-08 3,47E-04 6,67E-07 1,03E-04	1,42E+00 1,42E+00 1,18E-05 1,75E-06 1,12E-09 1,80E-04 1,12E-07 8,64E-05	5,84E-02 5,84E-02 5,29E-06 2,55E-06 2,55E-09 6,69E-05 1,24E-07 8,00E-05	-2,78E+00 -2,72E+00 -1,23E-02 -5,22E-02 -5,83E-03 -2,46E-02 -1,51E-04 -2,70E-03
	GWP-total GWP-fossil GWP-biogenic GWP-luluc ODP AP EP-FreshWater EP-Marine EP-Terrestial	kg CO <sub>2</sub> kg CO <sub>2</sub> kg CO <sub>2</sub> kg CO <sub>2</sub> kg CFC1 mol H+ kg P - kg N -	-eq	0 0 0 0 0 0 0	0 0 0 0 0 0 0	1,94E-02 1,92E-02 1,99E-04 2,59E-05 6,53E-10 7,70E-05 1,57E-06 1,30E-05 1,85E-04	0 0 0 0 0 0 0	0 0 0 0 0 0 0	8,49E-02 8,49E-02 3,46E-05 2,97E-05 1,94E-08 3,47E-04 6,67E-07 1,03E-04 1,14E-03	1,42E+00 1,42E+00 1,18E-05 1,75E-06 1,12E-09 1,80E-04 1,12E-07 8,64E-05 9,33E-04	5,84E-02 5,84E-02 5,29E-06 2,55E-06 2,55E-09 6,69E-05 1,24E-07 8,00E-05 2,66E-04	-2,78E+00 -2,72E+00 -1,23E-02 -5,22E-02 -5,83E-03 -2,46E-02 -1,51E-04 -2,70E-03 -3,08E-02
	GWP-total GWP-fossil GWP-biogenic GWP-luluc ODP AP EP-FreshWater EP-Marine EP-Terrestial POCP	kg CO <sub>2</sub> kg CO <sub>2</sub> kg CO <sub>2</sub> kg CO <sub>2</sub> kg CFC1 mol H+ kg P - mol N kg NMVC	eq -eq -eq -eq -eq -eq -eq -eq -eq -eq -	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	1,94E-02 1,92E-02 1,99E-04 2,59E-05 6,53E-10 7,70E-05 1,57E-06 1,30E-05 1,85E-04 3,94E-05	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	8,49E-02 8,49E-02 3,46E-05 2,97E-05 1,94E-08 3,47E-04 6,67E-07 1,03E-04 1,14E-03 3,48E-04	1,42E+00 1,42E+00 1,18E-05 1,75E-06 1,12E-09 1,80E-04 1,12E-07 8,64E-05 9,33E-04 2,23E-04	5,84E-02 5,84E-02 5,29E-06 2,55E-06 2,55E-09 6,69E-05 1,24E-07 8,00E-05 2,66E-04 8,71E-05	-2,78E+00 -2,72E+00 -1,23E-02 -5,22E-02 -5,83E-03 -2,46E-02 -1,51E-04 -2,70E-03 -3,08E-02 -9,99E-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

# Remarks to environmental impacts

<sup>&</sup>quot;Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009"

<sup>\*</sup>INA Indicator Not Assessed

<sup>1.</sup> 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



Additio	onal enviro	nme	ntal impact ind	icators								
	Indicator		Unit		A1	A2	A3	A4	A5	B1	B2	В3
	PM		Disease inci	dence	9,63E-07	1,96E-08	4,25E-09	1,36E-08	2,02E-08	0	0	0
(101) Q	IRP <sup>2</sup>		kgBq U23!	kgBq U235 -eq		1,58E-02	2,87E-01	1,05E-02	1,42E-02	0	0	0
	ETP-fv	v <sup>1</sup>	CTUe	!	8,13E+02	2,80E+00	5,04E+00	1,75E+00	1,95E+01	0	0	0
44.	HTP-c	1	CTUh		2,69E-08	0,00E+00	1,64E-10	0,00E+00	5,41E-10	0	0	0
48° E	HTP-n	c <sup>1</sup>	CTUh		9,93E-07	2,95E-09	3,98E-09	1,70E-09	2,01E-08	0	0	0
	SQP <sup>1</sup>	l	dimension	nless	3,35E+01	2,95E+00	3,84E+00	2,75E+00	8,91E-01	0	0	0
Inc	dicator		Unit	B4	B5	В6	В7	C1	C2	C3	C4	D
	PM	Di	sease incidence	0	0	3,77E-10	0	0	6,11E-09	7,09E-10	1,25E-09	-2,34E-07
(100) D	IRP <sup>2</sup>	ŀ	kgBq U235 -eq	0	0	1,22E-03	0	0	5,59E-03	1,63E-04	1,10E-03	-1,52E-01
	ETP-fw <sup>1</sup>		CTUe	0	0	4,43E-01	0	0	9,43E-01	3,23E-01	1,51E+02	-1,04E+02
46.* *** <u>B</u>	HTP-c <sup>1</sup>		CTUh	0	0	9,00E-12	0	0	0,00E+00	3,30E-11	1,00E-11	-7,53E-09
%° ₫	HTP-nc <sup>1</sup>		CTUh	0	0	2,90E-10	0	0	1,02E-09	1,23E-09	2,31E-10	-1,53E-07
	SQP <sup>1</sup>	(	dimensionless	0	0	4,09E-01	0	0	8,82E-01	1,17E-02	5,73E-01	-8,68E+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)

<sup>&</sup>quot;Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009"

<sup>\*</sup>INA Indicator Not Assessed

<sup>1.</sup> 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

<sup>2.</sup> 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	e										
W .	Indicator		Unit	A1	A2	А3	A4	A5	B1	B2	В3
Ç.F.	PERE		MJ	2,41E+01	5,69E-02	4,04E+00	3,02E-02	5,65E-01	0	0	0
	PERM	I	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0
T,	PERT		MJ	2,41E+01	5,69E-02	4,04E+00	3,02E-02	5,65E-01	0	0	0
	PENRI		MJ	1,55E+02	3,66E+00	8,53E+00	2,40E+00	3,42E+00	0	0	0
el.	PENRN	Л	MJ	4,13E+01	0,00E+00	0,00E+00	0,00E+00	3,05E-02	0	0	0
IA	PENRT	г	MJ	1,96E+02	3,66E+00	8,53E+00	2,40E+00	3,45E+00	0	0	0
	SM		kg	1,38E-01	0,00E+00	0,00E+00	0,00E+00	2,78E-03	0	0	0
2	RSF		MJ	2,34E-01	1,67E-03	1,58E-02	1,06E-03	5,08E-03	0	0	0
	NRSF		MJ	5,06E-02	8,66E-03	5,10E-02	3,54E-03	2,36E-03	0	0	0
<b>%</b>	FW		m <sup>3</sup>	1,63E-01	4,32E-04	9,87E-03	2,73E-04	3,49E-03	0	0	0
	licator	Unit	B4	B5	В6	В7	C1	C2	C3	C4	D
Ind ুন	PERE	<b>Unit</b> MJ	B4 0	B5 0	B6 2,14E-01	B7 0	C1 0	C2 1,81E-02	C3 2,87E-03	C4 1,68E-02	D -1,92E+01
Ů,	PERE	МЈ	0	0	2,14E-01	0	0	1,81E-02	2,87E-03	1,68E-02	-1,92E+01
T.	PERE PERM	MJ	0	0	2,14E-01 0,00E+00	0	0	1,81E-02 0,00E+00	2,87E-03 0,00E+00	1,68E-02 0,00E+00	-1,92E+01 0,00E+00
<b>4</b>	PERE PERM PERT	W1 W1	0 0	0 0	2,14E-01 0,00E+00 2,14E-01	0 0	0 0	1,81E-02 0,00E+00 1,81E-02	2,87E-03 0,00E+00 2,87E-03	1,68E-02 0,00E+00 1,68E-02	-1,92E+01 0,00E+00 -1,92E+01
E E	PERE PERM PERT PENRE	M1 M1 M1	0 0 0	0 0 0	2,14E-01 0,00E+00 2,14E-01 2,49E-01	0 0 0	0 0 0	1,81E-02 0,00E+00 1,81E-02 1,28E+00	2,87E-03 0,00E+00 2,87E-03 9,46E-02	1,68E-02 0,00E+00 1,68E-02 1,97E-01	-1,92E+01 0,00E+00 -1,92E+01 -3,46E+01
	PERE PERM PERT PENRE PENRM	M1 M1 M1 M1	0 0 0 0	0 0 0 0 0	2,14E-01 0,00E+00 2,14E-01 2,49E-01 0,00E+00	0 0 0 0	0 0 0 0	1,81E-02 0,00E+00 1,81E-02 1,28E+00 0,00E+00	2,87E-03 0,00E+00 2,87E-03 9,46E-02 -3,97E+01	1,68E-02 0,00E+00 1,68E-02 1,97E-01 0,00E+00	-1,92E+01 0,00E+00 -1,92E+01 -3,46E+01 0,00E+00
	PERE PERM PERT PENRE PENRM PENRT	M1 M1 M1 M1 M1	0 0 0 0 0	0 0 0 0 0	2,14E-01 0,00E+00 2,14E-01 2,49E-01 0,00E+00 2,49E-01	0 0 0 0 0	0 0 0 0 0	1,81E-02 0,00E+00 1,81E-02 1,28E+00 0,00E+00 1,28E+00	2,87E-03 0,00E+00 2,87E-03 9,46E-02 -3,97E+01	1,68E-02 0,00E+00 1,68E-02 1,97E-01 0,00E+00 1,97E-01	-1,92E+01 0,00E+00 -1,92E+01 -3,46E+01 0,00E+00 -3,46E+01
	PERE PERM PERT PENRE PENRM PENRT SM	MJ MJ MJ Kg	0 0 0 0 0 0	0 0 0 0 0	2,14E-01 0,00E+00 2,14E-01 2,49E-01 0,00E+00 2,49E-01 0,00E+00	0 0 0 0 0 0	0 0 0 0 0 0	1,81E-02 0,00E+00 1,81E-02 1,28E+00 0,00E+00 1,28E+00 0,00E+00	2,87E-03 0,00E+00 2,87E-03 9,46E-02 -3,97E+01 -3,97E+01 0,00E+00	1,68E-02 0,00E+00 1,68E-02 1,97E-01 0,00E+00 1,97E-01 1,22E-03	-1,92E+01 0,00E+00 -1,92E+01 -3,46E+01 0,00E+00 -3,46E+01 1,11E-02

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 resources used as raw materials; PENRM = Use of non renewable primary energy resources; SM = Use of secondary materials; PENRM = Use of renewable primary energy resources; SM = Use of secondary materials; PENRM = 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	В3
	HWE		kg	9,01E-02	2,20E-04	4,07E-02	1,31E-04	3,08E-03	0	0	0
Ū	NHW	'D	kg	2,66E+00	1,91E-01	6,21E-02	2,09E-01	7,83E-02	0	0	0
	RWE	)	kg	3,81E-04	2,46E-05	1,27E-04	1,64E-05	1,12E-05	0	0	0
Inc	licator	Unit	B4	B5	В6	В7	C1	C2	C3	C4	D
Ā	HWD	kg	0	0	3,29E-05	0	0	6,53E-05	0,00E+00	2,30E-02	1,05E-02
Ū	NHWD	kg	0	0	1,52E-03	0	0	6,12E-02	0,00E+00	7,28E-01	-8,01E-01
₩	RWD	kg	0	0	7,84E-07	0	0	8,73E-06	0,00E+00	1,33E-06	-1,42E-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 - O	utput flow										
In	dicator		Unit	A1	A2	A3	A4	A5	B1	B2	В3
<b>@▷</b>	CI	RU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0
&▷	М	FR	kg	0,00E+00	0,00E+00	2,68E-03	0,00E+00	1,01E-02	0	0	0
DØ	М	ER	kg	0,00E+00	0,00E+00	1,53E-01	0,00E+00	1,25E-02	0	0	0
₹0	Е	EE	MJ	0,00E+00	0,00E+00	8,89E-02	0,00E+00	2,00E-02	0	0	0
DI	E	ET	МЈ	0,00E+00	0,00E+00	1,34E+00	0,00E+00	3,03E-01	0	0	0
Indica	tor	Unit	B4	B5	В6	В7	C1	C2	C3	C4	D
<b>@</b> 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	5,05E-01	4,47E-05	-4,33E-04
DØ	MER	kg	0	0	0,00E+00	0	0	0,00E+00	4,73E-01	3,18E-05	-5,70E-05
<b>5</b> D	EEE	MJ	0	0	0,00E+00	0	0	0,00E+00	9,13E-01	3,41E-04	-1,40E-04
D.	EET	MJ	0	0	0,00E+00	0	0	0,00E+00	1,38E+01	5,15E-03	-2,11E-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	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, Sweden (kWh)	ecoinvent 3.6	54.94	a CO2-ea/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	В3	
GWPIOBC	kg CO <sub>2</sub>	kg CO <sub>2</sub> -eq		2,52E-01	1,81E-01	1,54E-01	3,20E-01	0	0	0	
Indicator	Unit	B4	B5	В6	В7	C1	C2	C3	C4	D	
GWPIOBC	kg CO <sub>2</sub> -eq	0	0	2,69E-02	0	0	8,49E-02	1,42E+00	5,92E-02	-2,64E+00	

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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@ and narga	Program operator and publisher	Phone: +47 977 22 020
@ epd-norge	The Norwegian EPD Foundation	e-mail: post@epd-norge.no
Global program operatør	Post Box 5250 Majorstuen, 0303 Oslo, Norway	web: www.epd-norge.no
	Owner of the declaration:	Phone: +45 60 39 26 29
🛂 prysmian	Prysmian Group Danmark A/S	e-mail: gustaf.jonsson@prysmian.com
prgsman	Roskildevej 22, 2620 Albertslund	web:
	Author of the Life Cycle Assessment	Phone: +47 916 50 916
(LCA\	LCA.no AS	e-mail: post@lca.no
no	Dokka 6A, 1671 Kråkerøy	web: www.lca.no
	Developer of EPD generator	Phone: +47 916 50 916
(LCA\	LCA.no AS	e-mail: post@lca.no
	Dokka 6A, 1671 Kråkerøy	web: www.lca.no
ECO PLATFORM	ECO Platform	web: www.eco-platform.org
VERIFIED	ECO Portal	web: ECO Portal
VENTRIED		