

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

## MdimLed Universal



The Norwegian EPD Foundation

**Owner of the declaration:**

CTM Lyng AS

**Product:**

MdimLed Universal

**Declared unit:**

1 pcs

**This declaration is based on Product Category Rules:**

CEN Standard EN 15804:2012+A2:2019, EN 50693:2019 and PCR EPD Italy 007 serves as core PCR  
PCR EPD Italy 012 - Electronic and electrical products and systems - Switches

**Program operator:**

The Norwegian EPD Foundation

**Declaration number:**

NEPD-9268-8857

**Registration number:**

NEPD-9268-8857

**Issue date:** 03.03.2025

**Valid to:** 03.03.2030

**EPD software:**

LCAno EPD generator ID: 237356

## General information

### Product

MdimLed Universal

### 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-9268-8857

### This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019, EN 50693:2019 and PCR  
EPD Italy 007 serves as core PCR  
PCR EPD Italy 012 - Electronic and electrical products and systems -  
Switches

### 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 pcs MdimLed Universal

### Declared unit with option:

A1,A2,A3,A4,A5,B6,C1,C2,C3,C4,D

### Functional unit:

1 pc of Light dimmer, installed and used to dim LED lights, during a  
service life of 7 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: NEPD57.

Third party verifier:

Elisabet Amat, GREENIZE projects

(no signature required)

### Owner of the declaration:

CTM Lyng AS  
Contact person: Vidar Gangstad  
Phone: +47 40006023  
e-mail: [vidar@ctmlyng.no](mailto:vidar@ctmlyng.no)

### Manufacturer:

CTM Lyng AS  
Verkstedveien 19  
7125 Vanvikan, Norway

### Place of production:

CTM Lyng production site Vanvikan (Norway)  
Verkstedveien 19  
7125 Vanvikan, Norway

### Management system:

NS-EN ISO 9001:2015

### Organisation no:

936285244

### Issue date:

03.03.2025

### Valid to:

03.03.2030

### 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.

Developer of EPD: Vidar Gangstad - CTM Lyng AS

Reviewer of company-specific input data and EPD: Ståle Sund - CTM  
Lyng AS

### Approved:

Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

Light dimmer used to dim LED lights.

### Product specification

MdimLed Universal can dim most dimmable light/lamp types from lowest to highest level. Light level is indicated in the display from 1-99 and regulated with the up and down control buttons. MDimLed remembers the last set level when switched on. "AutoHertz" means that the dimmer itself finds out whether it is connected to 230V in 50 or 60 Hz.

Materials	kg	%
Electronic - Cable	0,02	18,23
Electronic - Capacitor	0,00	1,57
Electronic - Diode	0,00	0,37
Electronic - Inductor	0,00	2,15
Electronic - Integrated circuit	0,00	0,68
Electronic - LED chip	0,00	0,01
Electronic - Printed wiring board	0,02	18,23
Electronic - Resistor	0,00	0,67
Electronic - Switch	0,00	0,97
Electronic - Transistor	0,00	3,47
Electronic - Unspecified	0,00	0,96
Plastic - Plexiglass (PMMA)	0,00	0,04
Plastic compound - PC and ABS	0,01	12,37
Electronic - Solder material	0,00	0,01
Metal - Steel	0,02	17,23
Plastic - Acrylonitrile butadiene styrene (ABS)	0,01	14,05
Plastic - Polycarbonate (PC)	0,01	8,99
Total	0,09	100,00

Packaging	kg	%
Packaging - Cardboard	0,01	79,49
Packaging - Paper	0,00	20,51
Total incl. packaging	0,11	100,00

### Technical data:

Link to the CE Declaration and product data on our website:

<https://ctmlyng.no/produkter/mdimled-ph-universal/>

### Market:

Norway.

### Reference service life, product

7 years. Estimated based on the characteristics of the product and the intended application.

### Reference service life, building or construction works

60 years. Standard service life for buildings according to the PCR Part A of EPD Norway.

## LCA: Calculation rules

### Declared unit:

1 pcs MdimLed Universal

### 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:

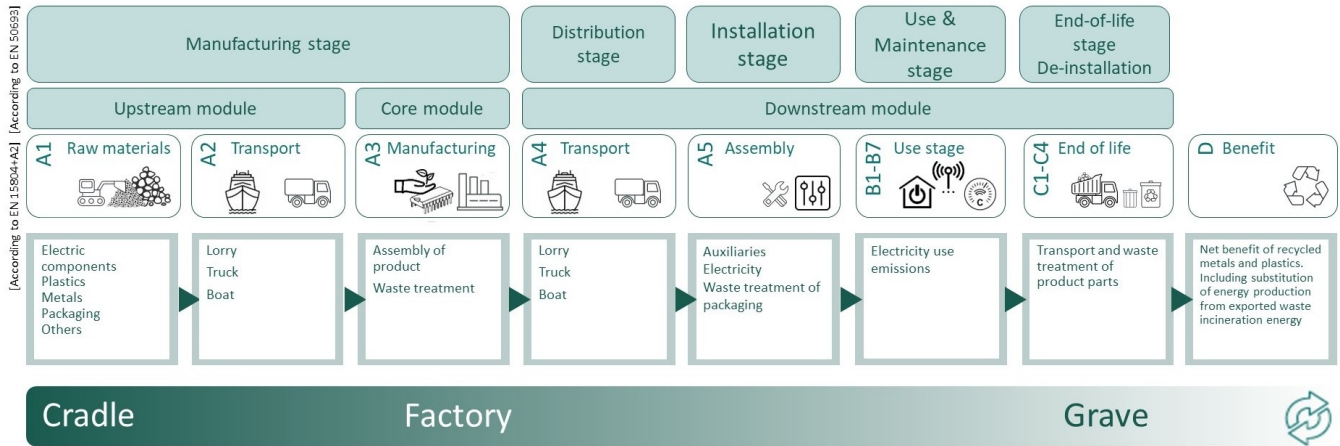
Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the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

Materials	Source	Data quality	Year
Electronic - Cable	ecoinvent 3.6	Database	2019
Electronic - Capacitor	ecoinvent 3.6	Database	2019
Electronic - Diode	ecoinvent 3.6	Database	2019
Electronic - Inductor	ecoinvent 3.6	Database	2019
Electronic - Integrated circuit	ecoinvent 3.6	Database	2019
Electronic - LED chip	Scholand et al. (2012) + Ecoinvent 3.6	Scientific literature + database	2017
Electronic - Printed wiring board	Modified ecoinvent 3.6	Database	2019
Electronic - Resistor	ecoinvent 3.6	Database	2019
Electronic - Solder material	ecoinvent 3.6	Database	2019
Electronic - Switch	ecoinvent 3.6	Database	2019
Electronic - Transistor	ecoinvent 3.6	Database	2019
Electronic - Unspecified	ecoinvent 3.6	Database	2019
Metal - Steel	ecoinvent 3.6	Database	2019
Packaging - Cardboard	ecoinvent 3.6	Database	2019
Packaging - Paper	ecoinvent 3.6	Database	2019
Plastic - Acrylonitrile butadiene styrene (ABS)	ecoinvent 3.6	Database	2019
Plastic - Plexiglass (PMMA)	ecoinvent 3.6	Database	2019
Plastic - Polycarbonate (PC)	ecoinvent 3.6	Database	2019
Plastic compound - PC and ABS	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	X	MND	X	X	X	X	X

### System boundary:



### Additional technical information:

The reference product MdimLed Universal, represents all four colors that the product comes in: Polar White (1418217), White (1418216), Black (1418219) and Silver (1418218).

## 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 distance from the production site in Vanvikan to the warehouses we deliver to was included. This transport consist of 14 km by ferry and 516 km by truck. An average distance of 300 km by truck was also added as additional transport to market.

Modules A5 = installation is done by manual labour. The use of portable electrical devices such as drills usually have low energy requirements falling under the cut-off criterion of 1% and are therefore neglected (especially for small retail devices). No product scraps are generated during installation, but the end-of-life treatment of packaging is systematically accounted for in this module.

Module B6 = The operational energy use of the switch is calculated based on the methodology provided in the PCR EPD Italy 012 Part B for switches. To calculate the electricity use of the LED dimmer, the following scenario parameters have been applied:

- Power consumed (Puse) = 0.184 watt
- Reference service life (RSL) = 7 years
- Number of hours in a year = 8760 hours (according to section 4.2.3.5 of the PCR)
- Operating time coefficient (a) = 50 percent (according to section 4.2.3.5 of the PCR)
- Reference current = 100% (according to section 4.2.3.5 of the PCR – used to calculate Puse)

Module C1 = De-installation is done by manual labour. The use of portable electrical devices such as drills usually have low energy requirements falling under the cut-off criterion of 1% and are therefore neglected (especially for small retail devices).

Module C2 = Transport from the installation site to the nearest waste treatment facility is based on an average distance of 300 km.

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 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, plastics, and electronic components 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 4 (km) - Europe	36,7 %	300	0,044	l/tkm	13,20
Assembly (A5)	Unit	Value			
Waste, packaging, paper printed, to average treatment - A5 including transport (kg)	kg	0,0037			
Waste, packaging, corrugated board box, to average treatment - A5 including transport (kg)	kg	0,014			
Operational energy (B6)	Unit	Value			
Electricity, Norway (kWh)	kWh/DU	9,20			
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) - Europe	36,7 %	300	0,044	l/tkm	13,20
Waste processing (C3)	Unit	Value			
Waste treatment per kg used PWB, shredding and separation - C3 (kg)	kg	0,026			
Waste treatment per kg electronics scrap from PWB, with components, recycling of metals C3 (kg)	kg	0,013			
Steel to recycling (kg)	kg	0,013			
Waste treatment of plastic mixture, incineration with energy recovery and fly ash extraction (kg)	kg	0,022			
Waste treatment per kg used electronic plug connector, manual separation (kg)	kg	0,013			
Copper to recycling (kg)	kg	0,00073			
Waste treatment per kg used electronic cable, manual separation (kg)	kg	0,0026			
Acrylonitrile butadiene styrene (ABS) to recycling	kg	0,0025			










Disposal (C4)	Unit	Value			
Landfilling of ashes from incineration of Plastic mixture, process per kg ashes and residues (kg)	kg	0,00080			
Landfilling of hazardous waste (kg)	kg	0,013			
Landfilling of steel (kg)	kg	0,0033			
Landfilling of plastic mixture (kg)	kg	0,022			
Landfilling of copper (kg)	kg	0,00048			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of electricity, in Norway (MJ)	MJ	0,035			
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	0,53			
Substitution of primary metals with net scrap from PWB, with components (kg)	kg	0,0038			
Substitution of primary steel with net scrap (kg)	kg	0,0032			
Substitution of primary copper with net scrap (kg)	kg	0,00012			
Substitution of acrylonitrile butadiene styrene, ABS, granulate (kg)	kg	0,0025			

## 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	
 GWP-total	kg CO <sub>2</sub> -eq	4,28E+00	0	6,81E-04	5,41E-03	3,13E-02	
 GWP-fossil	kg CO <sub>2</sub> -eq	4,29E+00	0	6,42E-04	5,40E-03	2,94E-04	
 GWP-biogenic	kg CO <sub>2</sub> -eq	-1,51E-02	0	3,73E-05	2,22E-06	3,10E-02	
 GWP-luluc	kg CO <sub>2</sub> -eq	7,60E-03	0	2,29E-06	1,91E-06	9,73E-08	
 ODP	kg CFC11 -eq	3,06E-07	0	4,00E-11	1,24E-09	6,20E-11	
 AP	mol H <sup>+</sup> -eq	4,33E-02	0	4,43E-06	2,75E-05	1,39E-06	
 EP-FreshWater	kg P -eq	7,92E-04	0	4,04E-08	4,28E-08	2,42E-09	
 EP-Marine	kg N -eq	5,27E-03	0	5,42E-07	9,36E-06	4,61E-07	
 EP-Terrestrial	mol N -eq	6,25E-02	0	6,57E-06	1,03E-04	4,99E-06	
 POCP	kg NMVOC -eq	1,90E-02	0	1,77E-06	2,95E-05	1,43E-06	
 ADP-minerals&metals <sup>1</sup>	kg Sb-eq	1,41E-03	0	4,15E-08	1,48E-07	7,16E-09	
 ADP-fossil <sup>1</sup>	MJ	5,41E+01	0	7,79E-03	8,21E-02	4,12E-03	
 WDP <sup>1</sup>	m <sup>3</sup>	1,51E+02	0	1,32E+00	7,84E-02	5,22E-03	

Indicator	Unit	B6	C1	C2	C3	C4	D
 GWP-total	kg CO <sub>2</sub> -eq	2,24E-01	0,00E+00	5,45E-03	6,18E-02	5,41E-03	-2,39E-01
 GWP-fossil	kg CO <sub>2</sub> -eq	2,17E-01	0,00E+00	5,45E-03	6,18E-02	5,38E-03	-2,38E-01
 GWP-biogenic	kg CO <sub>2</sub> -eq	6,00E-03	0,00E+00	2,22E-06	1,41E-05	2,69E-06	-6,78E-04
 GWP-luluc	kg CO <sub>2</sub> -eq	8,95E-04	0,00E+00	1,91E-06	2,08E-05	2,50E-05	-4,27E-04
 ODP	kg CFC11 -eq	1,49E-08	0,00E+00	1,24E-09	7,84E-10	2,30E-10	-2,25E-04
 AP	mol H <sup>+</sup> -eq	1,70E-03	0,00E+00	2,23E-05	4,38E-05	1,53E-05	-1,40E-02
 EP-FreshWater	kg P -eq	1,56E-05	0,00E+00	4,28E-08	2,02E-07	1,29E-07	-7,72E-05
 EP-Marine	kg N -eq	1,86E-04	0,00E+00	6,61E-06	1,16E-05	6,04E-06	-7,27E-04
 EP-Terrestrial	mol N -eq	2,43E-03	0,00E+00	7,31E-05	1,25E-04	3,69E-05	-9,94E-03
 POCP	kg NMVOC -eq	6,52E-04	0,00E+00	2,24E-05	3,39E-05	1,69E-05	-2,85E-03
 ADP-minerals&metals <sup>1</sup>	kg Sb-eq	1,62E-05	0,00E+00	1,48E-07	9,63E-08	1,83E-08	-3,32E-04
 ADP-fossil <sup>1</sup>	MJ	2,96E+00	0,00E+00	8,22E-02	8,61E-02	3,73E-02	-3,18E+00
 WDP <sup>1</sup>	m <sup>3</sup>	5,16E+02	0,00E+00	7,84E-02	1,17E+00	9,79E-02	-7,03E+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
 PM	Disease incidence	2,29E-07	0	3,20E-11	3,92E-10	2,00E-11
 IRP <sup>2</sup>	kgBq U235 -eq	1,99E-01	0	1,38E-04	3,59E-04	1,76E-05
 ETP-fw <sup>1</sup>	CTUe	4,13E+02	0	3,50E-02	6,05E-02	5,49E-03
 HTP-c <sup>1</sup>	CTUh	4,76E-09	0	2,00E-12	0,00E+00	0,00E+00
 HTP-nc <sup>1</sup>	CTUh	2,49E-07	0	4,00E-11	6,50E-11	6,00E-12
 SQP <sup>1</sup>	dimensionless	1,60E+01	0	3,94E-03	5,67E-02	2,76E-03

Indicator	Unit	B6	C1	C2	C3	C4	D
 PM	Disease incidence	1,22E-08	0,00E+00	3,92E-10	2,67E-10	2,82E-10	-2,98E-08
 IRP <sup>2</sup>	kgBq U235 -eq	5,37E-02	0,00E+00	3,59E-04	4,56E-04	7,85E-05	-1,09E-02
 ETP-fw <sup>1</sup>	CTUe	1,35E+01	0,00E+00	6,05E-02	2,75E-01	2,45E+00	-9,94E+01
 HTP-c <sup>1</sup>	CTUh	6,44E-10	0,00E+00	0,00E+00	2,25E-10	1,20E-11	-4,80E-10
 HTP-nc <sup>1</sup>	CTUh	1,52E-08	0,00E+00	6,50E-11	1,33E-08	9,50E-11	-3,18E-08
 SQP <sup>1</sup>	dimensionless	1,49E+00	0,00E+00	5,67E-02	2,63E-02	1,00E-01	-2,40E+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 =  $9,0 \cdot 10^{-3}$  = 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
	PERE	MJ	5,51E+00	0	9,76E-02	1,16E-03	6,78E-05
	PERM	MJ	1,71E-01	0	0,00E+00	0,00E+00	-1,71E-01
	PERT	MJ	5,68E+00	0	9,76E-02	1,16E-03	-1,71E-01
	PENRE	MJ	5,25E+01	0	7,80E-03	8,22E-02	4,12E-03
	PENRM	MJ	1,87E+00	0	0,00E+00	0,00E+00	0,00E+00
	PENRT	MJ	5,43E+01	0	7,80E-03	8,22E-02	4,12E-03
	SM	kg	4,78E-02	0	0,00E+00	0,00E+00	0,00E+00
	RSF	MJ	7,70E-02	0	7,77E-05	4,15E-05	2,25E-06
	NRSF	MJ	-8,62E-03	0	1,92E-04	1,48E-04	9,27E-06
	FW	m <sup>3</sup>	4,30E-02	0	7,44E-04	8,65E-06	1,94E-06




Indicator		Unit	B6	C1	C2	C3	C4	D
	PERE	MJ	3,84E+01	0,00E+00	1,16E-03	1,25E-02	1,13E-02	-5,42E-01
	PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	PERT	MJ	3,84E+01	0,00E+00	1,16E-03	1,25E-02	1,13E-02	-5,42E-01
	PENRE	MJ	2,97E+00	0,00E+00	8,22E-02	8,61E-02	3,73E-02	-3,18E+00
	PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	-1,87E+00	0,00E+00	0,00E+00
	PENRT	MJ	2,97E+00	0,00E+00	8,22E-02	-1,78E+00	3,73E-02	-3,18E+00
	SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,85E-04	8,92E-05
	RSF	MJ	3,01E-02	0,00E+00	4,15E-05	1,58E-04	3,16E-05	8,90E-05
	NRSF	MJ	7,50E-02	0,00E+00	1,48E-04	-1,34E-05	2,48E-03	-1,24E-02
	FW	m <sup>3</sup>	2,86E-01	0,00E+00	8,66E-06	1,20E-04	2,46E-05	-2,54E-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
	HWD	kg	2,03E-02	0	3,62E-05	4,19E-06	0,00E+00
	NHWD	kg	4,67E-01	0	6,42E-04	3,93E-03	1,82E-02
	RWD	kg	1,50E-04	0	6,89E-08	5,60E-07	0,00E+00



Indicator		Unit	B6	C1	C2	C3	C4	D
	HWD	kg	1,90E-03	0,00E+00	4,19E-06	6,59E-06	1,34E-02	-8,15E-04
	NHWD	kg	2,28E-01	0,00E+00	3,93E-03	8,90E-03	2,59E-02	-3,94E-02
	RWD	kg	2,65E-05	0,00E+00	5,60E-07	3,27E-07	4,23E-08	-9,42E-06

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
	CRU	kg	0,00E+00	0	0,00E+00	0,00E+00	0,00E+00
	MFR	kg	0,00E+00	0	2,74E-04	0,00E+00	1,69E-02
	MER	kg	0,00E+00	0	1,76E-04	0,00E+00	1,27E-03
	EEE	MJ	0,00E+00	0	1,15E-04	0,00E+00	1,04E-03
	EET	MJ	0,00E+00	0	1,73E-03	0,00E+00	1,57E-02

Indicator		Unit	B6	C1	C2	C3	C4	D
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	MFR	kg	0,00E+00	0,00E+00	0,00E+00	1,66E-02	1,97E-06	-3,49E-06
	MER	kg	0,00E+00	0,00E+00	0,00E+00	2,20E-02	4,83E-08	-4,59E-07
	EEE	MJ	0,00E+00	0,00E+00	0,00E+00	3,38E-02	3,13E-06	-1,13E-06
	EET	MJ	0,00E+00	0,00E+00	0,00E+00	5,12E-01	4,74E-05	-1,70E-05

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	8,45E-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

### Dangerous substances

The product contains no substances on the REACH Candidate list at or above 100 ppm, 0,01 % by weight.

### Indoor environment

## Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products							
Indicator	Unit	A1	A2	A3	A4	A5	
GWPIOBC	kg CO <sub>2</sub> -eq	4,31E+00	0	6,77E-04	5,41E-03	2,94E-04	
Indicator	Unit	B6	C1	C2	C3	C4	D
GWPIOBC	kg CO <sub>2</sub> -eq	2,23E-01	0,00E+00	5,45E-03	6,18E-02	5,49E-03	-2,41E-01

GWPI-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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