Environmental Product Declaration

In accordance with ISO14025:2006 and EN15804:2012+A2:2019

Ceiling mounted radiant heating panel Arena 900 MP 6m

Owner of the declaration:
Lyngson SIA

Product name:
Ceiling mounted radiant heating panel Arena 900 MP 6m

Declared unit:
1 piece of Ceiling mounted radiant heating panel Arena 900 MP 6m

Product category /PCR:
NPCR Part A:2021 Construction products and services Version 2.0
PSR-0011-ed2.0-EN-2023-06-06

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-8998-8524

Registration number:
NEPD-8998-8524

Issue date: 10.02.2025

Valid to: 10.02.2030

The Norwegian
EPD Foundation

General information

Product:
Ceiling mounted radiant heating panel Arena 900 MP 6m

Program operator:
The Norwegian EPD Foundation
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Declaration number:
NEPD-8998-8524

This declaration is based on Product Category Rules:
NPCR Part A:2021 Construction products and services Version 2.0
PSR-0011-ed2.0-EN-2023-06-06

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, life cycle assessment data and evidences.

Declared unit:
1 piece of Ceiling mounted radiant heating panel Arena 900 MP 6m

Verification:
Independent verification of the declaration and data, according to ISO14025:2010

internal ☐ external ☒

Elisabet Amat
Independent verifier approved by EPD Norway

Owner of the declaration:
Lyngson SIA

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Manufacturer:
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Place of production:
"Akači", Grēnes, Olaines novads, Latvija

Management system:
ISO 9001, ISO 14001, ISO 50001

Organisation no:
LV40003822806

Issue date:
10.02.2025

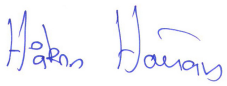
Valid to:
10.02.2030

Year of study:
2023

Comparability:
EPD of construction products may not be able to compare if they do not comply with EN 15804 and are seen in a building context.

The EPD has been worked out by:
Bureau Veritas Latvia

Approved



Manager of EPD Norway

Product

Product description:

Arena is a ceiling mounted radiant heating panel. Ceiling heating panels heat up the surfaces of the room with radiant heat. Surfaces that in turn heat up air and create a draft-free and comfortable room climate. The heat source on the ceiling also makes the interior designer's work much easier and more flexible – there is no obstructing heating installation needed on the walls or floor. Arena can be mounted as single panels or connected in series. It is often external conditions such as trusses, ventilation and lighting that can affect how the panels are mounted. The important thing is not to "obscure" the panel's radiation towards the living zone with, for example, sound absorbers or ventilation drums. Apart from this, Arena is insensitive to high assemblies.

Product specification:

Materials	Value	%
Aluminium sheets 0.9mm	13,800	32,7%
Paint	0,634	1,5%
Steel bolt 6X35	0,220	0,5%
Mineral wool	2,000	4,7%
Steel nuts M6	0,100	0,2%
Milk paper	0,800	1,9%
Steel pipe 35x1.5mm	19,800	47,0%
Steel plate 1 mm	4,800	11,4%
TOTAL	**42,154**	**100,0**

Packaging materials	Value	%
Plastic stretch film	0,150	6,9%
Cardboard sheets	0,800	36,8%
Wooden pallets	1,222	56,3%
TOTAL	**2,172**	**100,0**

Technical data:

- Length – 6000 mm, Height – 70 mm, Width – 900 mm
- 0.9mm thick Aluminium sheet
- 35x1.5mm galvanized Steel pipes
- 2-component polyurethane paint coated, pre-insulated with mineral wool 0.036 W/m·K
- Weight of the product (w/o packaging) - 42,154 kg
- Max working pressure and temperature – 10 bar, 80°C

Market:

Sweden and Norway

Reference service life, product:

50 years according to PSR-0011-ed2.0-EN-2023-06-06

LCA: Calculation rules

Declared unit:

The declared unit associated with Arena radiant heating panels of Lyngson has been defined as follows:

- 1 piece of Arena 900 MP 6m

Cut-off criteria:

All materials have been accounted for in the LCA according to the data provided by manufacturer. There is no missing data for processes in the system boundaries. All the materials and processes, which have been accounted for by the manufacturing company for the relevant manufacturing process are included in the LCI.

General cut-off criteria are given in standard EN 15804:2012+A2, clause 6.3.6. This cut-off rule does not apply for hazardous materials and substances and it is consistent with EN 15804+A2.

Transportation of personnel to and within the manufacturing plant, long-term emissions and infrastructure processes, e.g., manufacturing and maintenance of facilities and manufacturing equipment, have been excluded from this LCA study.

Allocation:

General allocation principles have been applied according to ISO 14044:2006 4.3.4 and in line with the provisions of EN 15804:2012+A2. Incoming energy, water and generation of waste are allocated equally among all products through mass allocation.

Data quality:

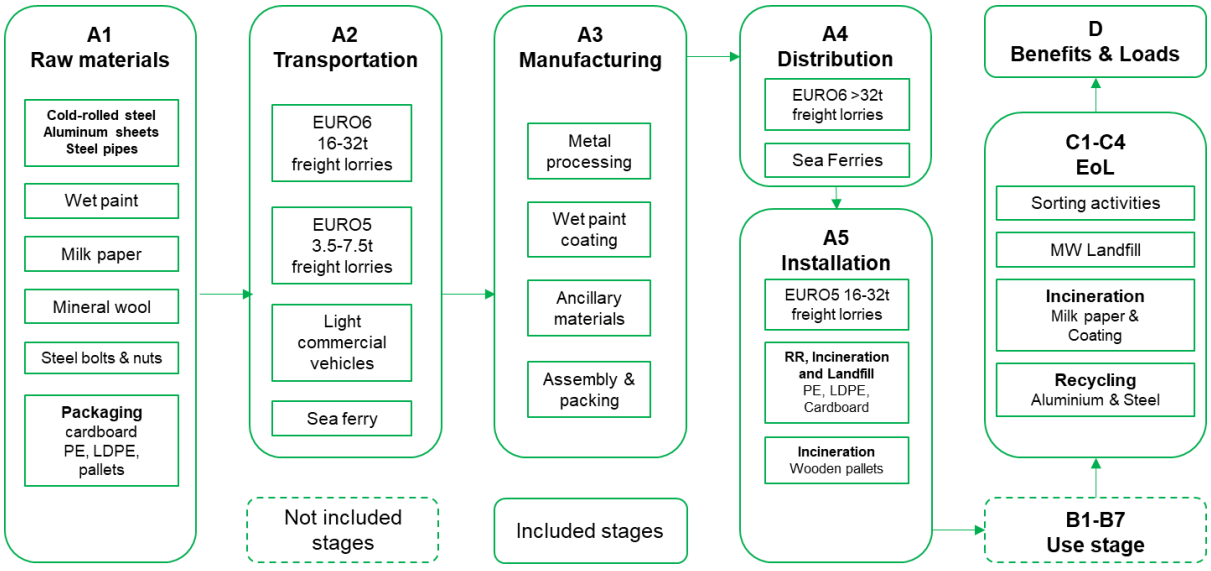
The production data are from 2023, the database data are from 2013 – 2021, i.e., no data is older than 10 years. Database used is mainly Ecoinvent v3.8, with an addition of Carbon Minds 2022.01. The LCA software used is SimaPro 9.6.

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

Product stage			Assembly stage		Use stage							End of life stage				Benefits & loads beyond system boundary
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:

This LCA study has been performed as "Cradle-to-gate with options, modules C1-C4 and module D", also including Construction/installation stage with modules A4-A5. All major materials, use of energy and resources, as well as waste treatment are included for phases A1-A3, A4-A5, C1-C4 and D (see Flowchart below).



LCA: Scenarios and additional technical information

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

- **Raw material supply (A1)**

In module A1 extraction and processing of raw materials and generation of electricity and heat from primary energy resources, used to produce these raw materials, are included. Two major parts of all raw materials necessary for the production of Arena radiant heating panel are 0.9mm thick Aluminum sheets (32.7%) and 35x1.5mm Steel pipes (47.0%). Insulation material, i.e., mineral wool, contributes another 4.7% in terms of weight, Steel plate – 11.4%. All other contents in total results in 4.2% of product's total weight.

Results of impact assessment for three raw materials with valid EPDs of Steel, Steel tubes and Aluminum have been implemented in LCA model in order to be used as a specific dataset replacing the use of an average datasets included in database.

- **Transport of raw materials (A2)**

For module A2, the transportation of raw materials and packaging materials to the production plant, the following assumptions have been made (see Table below). According to manufacturer provided data, EURO6 emission standard has been applied as a standard value for all Freight lorries, with only exceptions of local supplier of Packaging materials.

Material	Type of vehicle	Weight, kg per DU	Distance, km	kg*km
Bolts & nuts	Lorry 16-32t, EURO6	3,20E-01	412	1,32E+02
Bolts & nuts	Sea Ferry	3,20E-01	281	8,99E+01
Aluminium sheets	Lorry 16-32t, EURO6	1,42E+01	564	7,98E+03
Aluminium sheets	Sea Ferry	1,42E+01	281	3,98E+03
Insulation	Lorry 16-32t, EURO6	2,00E+00	294	5,88E+02
Insulation	Sea Ferry	2,00E+00	85	1,70E+02
Milk paper	Lorry 16-32t, EURO6	8,00E-01	359	2,87E+02
Milk paper	Sea Ferry	8,00E-01	281	2,25E+02
Cardboard	Lorry 16-32t, EURO6	8,00E-01	300	2,40E+02
Pallets	Lorry 3.5-7.5t, EURO5	1,22E+00	3	3,66E+00
PE film	Light commercial vehicle	1,50E-01	3	4,50E-01
Paint	Lorry 16-32t, EURO6	1,15E+00	25	2,88E+01
Steel	Lorry 16-32t, EURO6	4,80E+00	192	9,22E+02
Steel	Sea Ferry	4,80E+00	281	1,35E+03
Steel pipes	Lorry 16-32t, EURO6	2,00E+01	192	3,84E+03
Steel pipes	Sea Ferry	2,00E+01	281	5,62E+03

- **Manufacturing (A3)**

The manufacturing of the product (module A3) includes several stages of metal processing such as straightening (from coil), punching, cutting to the product specific dimensions, rolling and application of 2-component PU paint.

After metal works, product is assembled and packed using Plastic, Wooden pallets and Cardboard. Arena ceiling mounted radiant heating panels are produced within the limits of the same plant. Electricity is the only source of energy for manufacturing purposes – no Heat is applied in the process. Internal transportation of materials and product is organized with Electric skid-steer loaders, therefore, no Diesel consumption has been declared by manufacturer.

In 2021 Lygson SIA installed one of the largest solar panel parks in Latvia. Within the project, 1700+ solar panels with the total capacity of 560 kW have been installed on the roof of the manufacturing plant. According to manufacturer provided data, solar panels cover 25.1% share of the company's own consumption of electricity. Electricity generated from solar panel park is used for the production needs.

Manufacturing process for Arena ceiling mounted radiant heating panel foresees the use of Wet paint and ancillary materials, i.e., cleaning agents, maintenance oil and degreasers. Safety Data Sheets (SDS) have been provided on all chemicals used in module A3.

Considering the fact that manufacturing process involves use of paint and thinners, emissions to air specific to this process have been considered in this study.

Transport from production place to assembly/user (A4)

Transport from production place to assembly/user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy consumption	Unit	Value (l/t)
Stockholm, Sweden					
Road, Lorry, >32t, EURO6	Default value from Ecoinvent 3.8	354	0,0226	l/tkm	7,99
Water, Sea ferry	Default value from Ecoinvent 3.8	281	0,0298	l/tkm	8,37
Oslo, Norway					
Road, Lorry, >32t, EURO6	Default value from Ecoinvent 3.8	840	0,0226	l/tkm	18,97
Water, Sea ferry	Default value from Ecoinvent 3.8	281	0,0298	l/tkm	8,37

Module A4 contains the scenarios defined by manufacturer and includes transportation from production site in Latvia, Olaine to customers, including additional 100km of Road transporttion to account for deviations:

- 60.0% trade towards Sweden with 354 km distance for Road transport and 281 km for Sea transport
- 44.0% trade towards Norway with 840 km distance for Road transport and 281 km for Sea transport

Following table represents capacity utilisation rates that have been used in the model due to limitations of Ecoinvent database. Real capacity utilisation rates, provided by manufacturer, are at the level of 90%.

Assembly (A5)

	Unit	Value
Water consumption	m^3	0
Electricity consumption	kWh	0,043
Other energy carriers	MJ	0
Material loss	kg	0
Output materials from waste treatment	kg	0
Packaging materials for waste treatment	kg	2,17

It has been assumed that for installation of the product hammer drill is to be used for installation of mounting fittings as required by the guidelines. The residual mix of electricity used for this purpose is based on shares of market. Waste treatment activities and transport of each packaging material have been considered in this module. Taking into account specific market and only two destination countries for the final product, waste treatment scenarios have been aligned with scenarios of both represented destinations, i.e., Norway (40%) and Sweden (60%). Recycling rates, distribution shares between Incineration and final disposal are different in both represented countries, therefore, both scenarios have been adapted.

End of Life (C1, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	0
Collected as mixed construction waste	kg	0
Reuse	kg	0
Recycling	kg	34,848
Energy recovery	kg	0,800
To landfill	kg	2,000

Note: 4.506kg, that represents Steel (10%) and Aluminium (10%) waste share after separation for recycling (90%) purposes, has been considered for Incineration without Energy recovery.

- **Demolition (C1)**

It has been assumed that no particular activities in module C1 are causing a relevant environmental impact within the demolition or the disassembling of Arena ceiling mounted radiant heating panel before its transportation to waste processing.

- **Waste processing (C3)**

As a waste processing activity in module C3, recycling, i.e., sorting of Waste bulk iron has been considered in respective shares for Steel and Aluminium in order for LCA model to consider impacts from sorting activities. It has been assumed and confirmed by the manufacturer as well that all parts representing product content, i.e., Aluminium sheets, steel plates and pipes,

insulation material and covering milk paper are all suitable for disassembling activities to represent separate waste flows for respective waste treatment.

As per PEF Annex C v2.1 May 2020, recycling rate (R2) both for Steel and Aluminium is 90%, therefore, this value has been considered in module C3. As for share remaining after separation, it has been assumed that incineration without energy recovery is taking place, therefore, shifting the remaining 10% share to module C4. Disposal rates (R3) for Norway and Sweden per Eurostat data are predominantly, i.e., 97-99%, leaning towards incineration, leaving only insignificant part of 1-3% for landfilling activities. Therefore, it has been considered **that incineration without energy recovery** is the only disposal method for metals.

Considering product contents of "milk paper", it has been assumed that "milk paper" is incinerated at the EoL and energy is recovered from this process.

It has been assumed that Steel and Aluminium are considered for recycling, therefore, accounting for the net benefit within module D.

- **Disposal (C4)**

Module C4 represents **Incineration activities for final disposal of Steel and Aluminum** mentioned in the description of Waste processing C3. Another part of module C4 is considering disposal of insulation material, i.e., mineral wool. Considering common waste treatment scenarios for insulation materials, it has been assumed that **mineral wool insulation is landfilled** at the EoL.

Transport to waste processing (C2)

Transport from production place to assembly/user (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy consumption	Unit	Value (l/t)
Road, Lorry 16-32t, EURO6	Default value from Ecoinvent 3.8	100	0,0431	l/tkm	4,31

For module C2 an average transportation with 100km distance has been assumed, as suggested by PSR-0011-ed2.0-EN-2023-06-06. EURO6 16-32t Freight lorry has been used for calculations in module C2.

Benefits and loads beyond the system boundaries (D)

Benefits and loads beyond the system boundaries (D)	Unit	Value
Substitution of electricity, in Norway	MJ	1,4
Substitution of thermal energy, district heating, in Norway	MJ	0
Substitution of primary steel with net scrap	kg	16

As described above, this study also considers module D, representing Reuse, Recovery and Recycling potential, where net benefit of avoided Aluminium (SM 18.2%) and Steel (SM 25.7%) has been modelled considering Secondary material used in all raw materials. Additionally, energy recovered from incineration activities has been considered in this module as an avoided impact. Generated electricity has been modelled according to the share of each respective market, i.e., residual mixes of Norway and Sweden, and district/industrial Heat generated from Natural gas has been considered for both.

LCA: Results

Core environmental impact indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP - total	kg CO_2 eq	1,4E+02	2,9E+00	2,3E-01	0,0E+00	5,7E-01	1,5E-01	2,9E-02	-1,2E+02
GWP - fossil	kg CO_2 eq	1,4E+02	2,9E+00	2,3E-01	0,0E+00	5,7E-01	1,5E-01	2,8E-02	-1,2E+02
GWP - biogenic	kg CO_2 eq	1,2E-01	1,7E-04	3,5E-04	0,0E+00	3,3E-05	4,2E-04	5,3E-04	-4,0E-01
GWP - luluc	kg CO_2 eq	8,4E-01	3,5E-05	9,4E-05	0,0E+00	4,6E-06	1,7E-05	1,9E-06	-1,8E+00
ODP	kg CFC11 eq	7,4E-06	6,8E-07	1,0E-08	0,0E+00	1,4E-07	5,8E-09	4,6E-09	-8,2E-06
AP	molc H+ eq	7,8E-01	4,8E-02	5,8E-04	0,0E+00	1,1E-03	3,5E-04	1,2E-03	-7,4E-01
EP- freshwater	kg P eq	2,1E-02	1,6E-06	3,0E-07	0,0E+00	2,9E-07	5,4E-07	2,0E-07	-4,9E-03
EP -marine	kg N eq	1,2E-01	1,2E-02	2,6E-04	0,0E+00	1,9E-04	1,5E-04	5,7E-04	-1,1E-01
EP - terrestrial	molc N eq	1,4E+00	1,3E-01	2,9E-03	0,0E+00	2,1E-03	1,7E-03	6,6E-03	-1,1E+00
POCP	kg NMVOC eq	7,3E-01	3,3E-02	7,5E-04	0,0E+00	7,4E-04	4,4E-04	1,8E-03	-4,3E-01
ADP-M&M[2]	kg Sb-Eq	2,4E-04	8,9E-08	5,3E-09	0,0E+00	2,5E-08	6,0E-09	3,4E-09	1,6E-03
ADP-fossil[2]	MJ	1,5E+03	4,1E+01	7,1E-01	0,0E+00	8,1E+00	4,3E-01	3,6E-01	-1,5E+03
WDP[2]	m^3	2,3E+01	-7,1E-03	8,7E-03	0,0E+00	-1,3E-03	1,1E-02	6,2E-03	-2,9E+01

GWP-total: *Global Warming Potential;* ***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; See "additional Norwegian requirements" for indicator given as PO4 eq.* ***EP-marine:*** *Eutrophication potential, fraction of nutrients reaching freshwater end compartment;* ***EP-terrestrial:*** *Eutrophication potential, Accumulated Exceedance;* ***POCP****: Formation potential of tropospheric ozone;* ***ADP-M&M****: Abiotic depletion potential for non-fossil resources (minerals and metals);* ***ADP-fossil:*** *Abiotic depletion potential for fossil resources;* ***WDP:*** *Water deprivation potential, deprivation weighted water consumption*

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

Additional environmental impact indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	8,6E-06	1,9E-07	5,6E-09	0,0E+00	3,8E-08	2,9E-09	1,2E-08	-9,5E-06
IRP[1]	kBq U235 eq.	6,9E+00	1,8E-01	8,0E-03	0,0E+00	3,5E-02	7,4E-03	9,4E-04	-5,7E+00
ETP-fw[2]	CTUe	2,0E+03	1,6E+01	1,2E+00	0,0E+00	3,3E+00	1,8E+00	1,1E+01	-2,1E+03
HTP-c[2]	CTUh	1,8E-07	3,5E-10	4,4E-10	0,0E+00	4,2E-11	2,6E-10	1,1E-09	-4,5E-07
HTP-nc[2]	CTUh	2,8E-06	2,4E-08	1,9E-09	0,0E+00	5,1E-09	1,8E-09	1,7E-09	-3,5E-06
SQP[2]	Dimensionless	5,5E+02	1,1E-01	4,7E-02	0,0E+00	2,2E-02	3,0E-02	6,4E-01	-4,8E+01

PM: *Particulate matter emissions;* ***IRP:*** *Ionising radiation, human health;* ***ETP-fw:*** *Ecotoxicity (freshwater);* ***ETP-c:*** *Human toxicity, cancer effects;* ***HTP-nc:*** *Human toxicity, non-cancer effects;* ***SQP:*** *Land use related impacts / soil quality*

[1] 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.

[2] 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

Resource use

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
RPEE	MJ	6,4E+02	4,5E-02	1,4E-01	0,0E+00	9,3E-03	2,5E-01	3,3E-03	-4,4E+02
RPEM	MJ	5,9E+01	1,5E-02	1,0E-02	0,0E+00	3,1E-03	8,9E-03	2,7E-03	-7,2E+00
PERT	MJ	7,0E+02	5,9E-02	1,5E-01	0,0E+00	1,2E-02	2,6E-01	6,0E-03	-4,4E+02
NRPE	MJ	1,5E+03	4,1E+01	7,1E-01	0,0E+00	8,1E+00	4,3E-01	3,6E-01	-1,5E+03
NRPM	MJ	1,1E-01	7,1E-05	9,3E-06	0,0E+00	3,4E-06	1,6E-05	5,0E-06	-7,4E-02
PENRT	MJ	1,5E+03	4,1E+01	7,1E-01	0,0E+00	8,1E+00	4,3E-01	3,6E-01	-1,5E+03
SM	kg	9,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	2,6E+01
RSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
NRSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
W	m^3	3,8E+00	1,2E-04	1,4E-03	0,0E+00	2,1E-05	1,3E-03	1,7E-03	-2,5E+00

RPEE *Renewable primary energy resources used as energy carrier;* ***RPEM*** *Renewable primary energy resources used as raw materials;* ***PERT*** *Total use of renewable primary energy resources;* ***NRPE*** *Nonrenewable primary energy resources used as energy carrier;* ***NRPM*** *Nonrenewable primary energy resources used as 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;* ***W*** *Use of net fresh water.*

End of life – Waste

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HW	kg	1,7E+00	7,4E-05	1,4E-06	0,0E+00	2,1E-05	3,8E-07	8,2E-07	2,5E-02
NHW	kg	5,4E+01	1,8E-03	1,7E-02	0,0E+00	3,3E-04	7,1E-03	2,0E+00	-3,6E+01
RW	kg	1,3E-02	2,9E-04	5,9E-06	0,0E+00	5,8E-05	4,2E-06	1,4E-06	-5,3E-03

HW *Hazardous waste disposed;* ***NHW*** *Non-hazardous waste disposed;* ***RW*** *Radioactive waste disposed.*

End of life – output flow

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
CR	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
MR	kg	5,6E-01	0,0E+00	6,9E-01	0,0E+00	0,0E+00	3,5E+01	0,0E+00	0,0E+00
MER	kg	1,3E-02	0,0E+00	1,5E+00	0,0E+00	0,0E+00	8,0E-01	0,0E+00	0,0E+00
EEE	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	3,5E+00
ETE	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	7,3E+00

CR *Components for reuse;* ***MR*** *Materials for recycling;* ***MER*** *Materials for energy recovery;* ***EEE*** *Exported electric energy;* ***ETE*** *Exported thermal energy.*

Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Unit	Value
Biogenic carbon content in product	kg C	3,8E-01
Biogenic carbon content in the accompanying packaging	kg C	1,0E+00

Additional requirements

Location based electricity mix from the use of electricity in manufacturing

National mix from import, medium voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3). 25.1% of consumed electricity is provided by manufacturer's solar panel park on the roof of the factory. Therefore, emission factor acquired from Ecoinvent v3.8, representing Latvian electricity mix (0.532 $kgCO_2eq/kWh$), has been recalculated to represent emission factor that is specific to manufacturing plant and has solar power share included in it:

National electricity grid	Data source	GWP_{total} [kg CO2 - eq/kWh]
Weighted value, considering 25.1% share of solar panel system generation and Latvian mix	Ecoinvent v3.8	0,399

Additional environmental impact indicators required for construction products

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.

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-IOBC	kg CO_2 eq.	1,4E+02	2,9E+00	2,3E-01	0,0E+00	5,7E-01	1,5E-01	2,7E-02	-1,2E+02

GWP-IOBC *Global warming potential calculated according to the principle of instantaneous oxidation.*

Hazardous substances

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.

- ☒ The product contains no substances given by the REACH Candidate list.
- ☐ The product contains substances given by the REACH Candidate list that are less than 0,1 % by weight.
- ☐ The product contains dangerous substances, more then 0,1% by weight, given by the REACH Candidate List, see table.
- ☐ The product contains no substances given by the REACH Candidate list.
- ☐ The product is classified as hazardous waste, see table.

Indoor environment

The product meets the requirements for low emissions.

Carbon footprint

While a carbon footprint analysis has not been conducted for the product separately, the results section does include an evaluation of Global Warming Potential (GWP) with such an analysis. The GWP total results presented in this EPD document represents the carbon footprint of the product studied

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ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
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