Environmental Product Declaration

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

Panel 22-500-700

Owner of the declaration:
Lyngson SIA

Product name:
Panel 22-500-700

Declared unit:
1 piece of Panel hot water radiator type 22 size – H500mm x L700mm, capable to produce 1 kW of heating as defined by the manufacturer

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-8997-8524

Registration number:
NEPD-8997-8524

Issue date: 10.02.2025

Valid to: 10.02.2030

The Norwegian
EPD Foundation

General information

Product:
Panel 22-500-700

Program operator:
The Norwegian EPD Foundation
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Declaration number:
NEPD-8997-8524

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 Panel hot water radiator type 22 size – H500mm x L700mm, capable to produce 1 kW of heating as defined by the manufacturer

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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Place of production:
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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:

Panel radiator 22-500-700 is produced out of steel plates as a panel heater with external connection of thermostat and side connections to the infrastructure of the heating systems. These devices have a wide range of applications in closed environments, both in new construction and renovations.

Product specification:

The product composition is Steel and Coating powder.

Materials	Value	%
Steel	19,50	97,9
Coating powder	0,41	2,1
TOTAL	**19,91**	**100,0**

Packaging materials	Value	%
Polyethylene film	0,27	22,1
Cardboard	0,35	28,7
Wooden pallets	0,60	49,2
TOTAL	**1,22**	**100,0**

Technical data:

- Length – 700 mm, Height – 500 mm, Width – 92 mm
- Thickness of steel – 0.40 mm, 0.70 mm and 1.15 mm
- Weight of the product (w/o packaging) - 19,91 kg
- Max working pressure – 6 bar (for greater pressure values consult with manufacturer)

Market:

Sweden, Norway and Finland. Estonia and Latvia

Reference service life, product:

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

LCA: Calculation rules

Declared unit:

Functional unit is taken as PSR-0011-ed2.0-EN-2023-06-06 foresees: "To produce 1 kW of heating as defined by the manufacturer, according to the reference usage scenario and during the 50-year reference lifetime of the product". Therefore, the Functional unit is "1 piece of Panel hot water radiator type 22 size – h500 mm x L700mm, capable to produce 1 kW of heating as defined by the manufacturer" according to EN 442.

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. Flows excluded from the study because of the insignificance and difficulty of attributing them to a particular reference product are listed below:

- Copper scrap from sharpening of electrodes (0.001 kg)

General cut-off criteria are given in standard EN 15804:2012+A2:2019, clause 6.3.6. This cut-off rule does not apply for hazardous materials and substances and it is consistent with EN 15804+A2:2019.

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+A2:2019. Incoming energy, water and generation of waste are allocated equally among all products through mass allocation. The material and energy consumption in manufacturers' data according to recorded production is also indicated per piece of the products produced as radiator that is able to produce 1 kW of heat is of specific dimensions and weight of materials. The effects of primary production of recycled materials has been allocated to the main product in which the material has been used. Panel hot water radiators are produced only in one manufacturing plant.

Data quality:

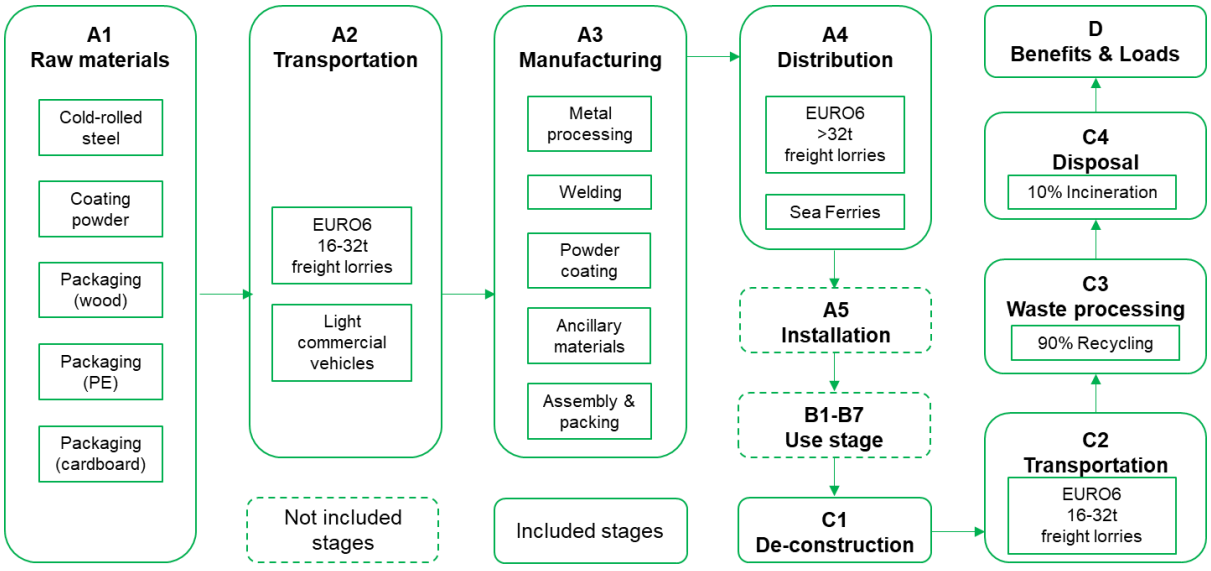
The production data are from 2023, the database data are from 2013 – 2021, i.e., no data is older than 10 years. Database used is mainly Ecoinvent v3.8, with an addition of Carbon Minds 2022.01. The LCA software used is SimaPro 9.6.

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	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

System boundary:

LCA has been performed as "Cradle-to-gate with options, modules C1-C4 and module D", including also module A4. All major materials, resource and energy use in manufacturing, as well as waste are included for phases A1-A3, A4, C1-C4 and D, see flowchart below. The following information describes the scenarios in the different modules of the EPD.



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 for the production of these raw materials are included. Main raw material for production of HW panel radiator is Steel. For manufacturing of the product, Coating powder also is required.

- **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 exception of local supplier of wooden pallets and Freight lorry of lower capacity (7.5-16 t).

Steel is transported from 2 different suppliers. Packaging materials and other ancillary materials are supplied both locally and from countries of EU.

Material	Type of vehicle	Weight, kg per FU	Distance, km	kg*km
Steel	Lorry 16-32t, EURO6	1,99E+01	473	9,41E+03
Steel T76	Lorry 16-32t, EURO6	6,00E-01	2943	1,77E+03
Coating powder	Lorry 16-32t, EURO6	4,14E-01	25	1,04E+01
PE packaging film	Light commercial vehicle	2,00E-02	36	7,20E-01
EU pallets	Lorry 16-32t, EURO6	6,00E-01	3	1,80E+00
Cardbord	Lorry 16-32t, EURO6	3,50E-01	300	1,05E+02

- **Manufacturing (A3)**

The manufacturing of the product (module A3) includes several stages of metal processing such as stamping, welding, degreasing, powder coating, drying and then the assembling and packing of the final product. HW panel radiators are produced within the limits of the same plant. Local mix of Electricity is one of the main source of energy for manufacturing purposes. Natural gas is used for the purpose of Heat production in powder coating 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 Lyngson SIA installed one of the largest solar panel parks in Latvia. Within the project, 1700+ solar panels with the total capacity of 560 kW were installed on the roof of the manufacturing plant. According to manufacturer provided data, solar panels cover 23% share of the company's own consumption of electricity. Electricity generated from solar panel park is used for the production needs.

Not all materials are used to full potential, therefore, some waste flows are produced during the manufacturing phase. Types of waste, created in the manufacturing process, are related to the packaging of the incoming raw materials and main raw material – Steel (production waste).

Waste packaging materials, i.e., all sorts of Plastics, Wood, Cardboard and Steel, that are coming with Raw materials declared in module A1, are collected at the gate of the manufacturer by the waste treatment company. The wastewater is treated by local wastewater treatment company, that has specific requirements for contents of wastewater coming from manufacturer.

The secondary material used in the final product is Steel – according to manufacturer provided data, recycled share of incoming Steel correlates with post-consumer material share in raw material, i.e., steel produced by oxygen converter process method. For the purpose of this study Steel is represented by cold-rolled low-alloyed steel that has >20% of post-consumer material (iron scrap).

Manufacturing process for HW panel radiator foresees the use of Coating powder 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. Transportation of ancillary materials has been accounted for in Manufacturing module A3.

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
Helsinki, Finland					
Road, Lorry, >32t, EURO6	Default value from Ecoinvent 3.8	437	0,0226	l/tkm	9,87
Water, Sea ferry	Default value from Ecoinvent 3.8	85	0,0298	l/tkm	2,53
Copenhagen, Denmark					
Road, Lorry, >32t, EURO6	Default value from Ecoinvent 3.8	578	0,0226	l/tkm	13,05
Water, Sea ferry	Default value from Ecoinvent 3.8	404	0,0298	l/tkm	12,03

Module A4 contains the scenarios defined by manufacturer and includes transportation from production site in Latvia, Olaine to customers, including 200km radius:

- 65.0% trade towards Sweden with 354 km distance for Road transport and 281 km for Sea transport
- 32.0% trade towards Norway with 840 km distance for Road transport and 281 km for Sea transport
- 1.6% trade towards Finland with 437 km distance for Road transport and 85 km for Sea transport;
- 0.8% trade towards Estonia with 434 km distance for Road transport;
- 0.6% trade within Latvia with 100 km distance for Road 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%.

End of Life (C1, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	0,0
Collected as mixed construction waste	kg	0,0
Reuse	kg	0,0
Recycling	kg	17,92
Energy recovery	kg	0,0
To landfill	kg	1,99

- **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 a HW panel radiator before its transportation to waste processing.

- **Waste processing (C3)**

As per PEF Annex C v2.1 May 2020, the recycling rate (R2) for Steel 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 (C4)**

Module C4 represents Incineration activities for final disposal of metals mentioned in the description of module C3. 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, since Norway and Sweden combined represent 97% of the market, it has been assumed that incineration without energy recovery is the only disposal method for Steel.

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	0
Substitution of thermal energy, district heating, in Norway	MJ	0
Substitution of primary steel with net scrap	kg	12,9

As described above, this study also considers module D, representing Reuse, Recovery and Recycling potential, where 90% share of the final product and subtracted part of post-consumer material share in raw material used for manufacturing purposes have been considered as avoided product. Module also represents additional load of Steel production.

LCA: Results

To ensure transparency for potential user of the product and in accordance with PSR-0011, the table of environmental impacts represents the environmental impact of the functional unit, i.e., the emission of 1 kW heating power.

The EPD was drawn up on the basis of 1 kW of heating power being supplied. The impact of the stages of the life cycle of an installed product is calculated by the user of the declaration by multiplying the impact concerned by the total heating capacity.

Core environmental impact indicators

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP - total	kg CO_2 eq	6,2E+01	1,3E+00	0,0E+00	2,7E-01	4,9E-02	7,7E-03	-1,5E+01
GWP - fossil	kg CO_2 eq	6,2E+01	1,3E+00	0,0E+00	2,7E-01	4,9E-02	7,5E-03	-1,5E+01
GWP - biogenic	kg CO_2 eq	5,4E-02	7,7E-05	0,0E+00	1,6E-05	1,4E-04	3,2E-05	1,3E-02
GWP - luluc	kg CO_2 eq	2,3E-02	1,6E-05	0,0E+00	2,2E-06	1,0E-04	1,2E-07	3,0E-03
ODP	kg CFC11 eq	1,8E-06	3,1E-07	0,0E+00	6,4E-08	1,8E-09	1,7E-09	-4,9E-07
AP	molc H+ eq	1,6E-01	2,2E-02	0,0E+00	5,3E-04	2,4E-04	5,3E-05	-4,4E-02
EP- freshwater	kg P eq	3,8E-04	7,3E-07	0,0E+00	1,4E-07	2,5E-06	4,5E-08	-6,2E-04
EP -marine	kg N eq	3,4E-02	5,4E-03	0,0E+00	8,9E-05	4,5E-05	2,2E-05	-1,0E-02
EP - terrestrial	molc N eq	3,7E-01	6,0E-02	0,0E+00	9,9E-04	5,0E-04	2,4E-04	-1,2E-01
POCP	kg NMVOC eq	1,1E-01	1,5E-02	0,0E+00	3,5E-04	1,3E-04	7,3E-05	-8,0E-02
ADP-M&M[2]	kg Sb-Eq	2,3E-05	4,0E-08	0,0E+00	1,2E-08	1,5E-09	3,4E-10	-8,0E-07
ADP-fossil[2]	MJ	7,4E+02	1,9E+01	0,0E+00	3,8E+00	6,4E-01	1,0E-01	-1,2E+02
WDP[2]	m^3	1,9E+01	-3,2E-03	0,0E+00	-6,4E-04	7,4E-03	-3,8E-02	-1,1E+00

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	C1	C2	C3	C4	D
PM	Disease incidence	9,0E-07	8,6E-08	0,0E+00	1,8E-08	2,1E-09	4,1E-09	-7,7E-07
IRP[1]	kBq U235 eq.	6,7E-01	8,1E-02	0,0E+00	1,7E-02	2,8E-03	4,4E-04	3,3E-01
ETP-fw[2]	CTUe	1,7E+02	7,2E+00	0,0E+00	1,6E+00	6,8E-01	6,8E-01	-4,0E+02
HTP-c[2]	CTUh	3,7E-08	1,6E-10	0,0E+00	2,0E-11	7,7E-12	3,1E-11	2,1E-07
HTP-nc[2]	CTUh	1,4E-07	1,1E-08	0,0E+00	2,4E-09	3,7E-10	3,3E-10	-2,9E-07
SQP[2]	Dimensionless	1,2E+02	4,9E-02	0,0E+00	1,0E-02	5,5E-02	1,7E-01	-8,5E+00

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	C1	C2	C3	C4	D
RPEE	MJ	5,5E+01	2,0E-02	0,0E+00	4,4E-03	7,0E-02	1,4E-04	6,1E+00
RPEM	MJ	2,3E+01	6,7E-03	0,0E+00	1,5E-03	7,1E-03	5,1E-05	9,6E-01
PERT	MJ	7,8E+01	2,7E-02	0,0E+00	5,8E-03	7,7E-02	1,9E-04	7,0E+00
NRPE	MJ	7,4E+02	1,9E+01	0,0E+00	3,8E+00	6,4E-01	1,0E-01	-1,2E+02
NRPM	MJ	8,9E-03	3,3E-05	0,0E+00	1,6E-06	2,3E-05	2,3E-07	-5,2E-03
PENRT	MJ	7,4E+02	1,9E+01	0,0E+00	3,8E+00	6,4E-01	1,0E-01	-1,2E+02
SM	kg	5,3E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
RSF	MJ	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
W	m^3	5,3E-01	5,3E-05	0,0E+00	9,8E-06	2,7E-04	-8,8E-04	-5,5E-02

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	C1	C2	C3	C4	D
HW	kg	1,8E-01	3,3E-05	0,0E+00	1,0E-05	2,2E-07	2,7E-07	-2,0E-03
NHW	kg	2,4E+00	8,1E-04	0,0E+00	1,6E-04	2,0E-03	7,0E-06	2,3E+00
RW	kg	9,9E-03	1,3E-04	0,0E+00	2,7E-05	2,0E-06	7,3E-07	2,3E-04

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

End of life – output flow

Parameter	Unit	A1-A3	A4	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
MR	kg	1,0E+00	0,0E+00	0,0E+00	0,0E+00	1,8E+01	0,0E+00	0,0E+00
MER	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	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
ETE	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+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	0,0E+00
Biogenic carbon content in the accompanying packaging	kg C	4,8E-01

Additional requirements

Location based electricity mix from the use of electricity in manufacturing

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 prosess (foreground/core) per functional unit. 23% 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 kgCO2eq/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 23% share of solar panel system generation and Latvian mix	Ecoinvent v3.8	0,410

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	C1	C2	C3	C4	D
GWP-IOBC	kg CO_2 eq.	6,2E+01	1,3E+00	0,0E+00	2,7E-01	4,8E-02	7,3E-03	-1,4E+01

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

Bibliography

ISO 14025:2010	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
EN 15804:2012+A2:2019	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products
ISO 21930:2017	Sustainability in building construction - Environmental declaration of building products
PCR-ed4-EN-2021-09-06	PCR Product Category Rules for Electrical, Electronic and HVAC-R Products by PEP ecopassport® PROGRAM
PSR-0011-ed2.0-EN-2023-06-06	PSR specific rules for hot water radiators or towel radiators by PEP ecopassport® PROGRAM
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EPD-Norge GPI	The Norwegian EPD Foundation/EPD-Norge, General Programme Instructions 2019. Version 3.0 dated 2019.04.24
LCA background report	Šiškins A., (2025) LCA background report v3.0 for Panel radiator 22-500-700 by Lyngson SIA

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