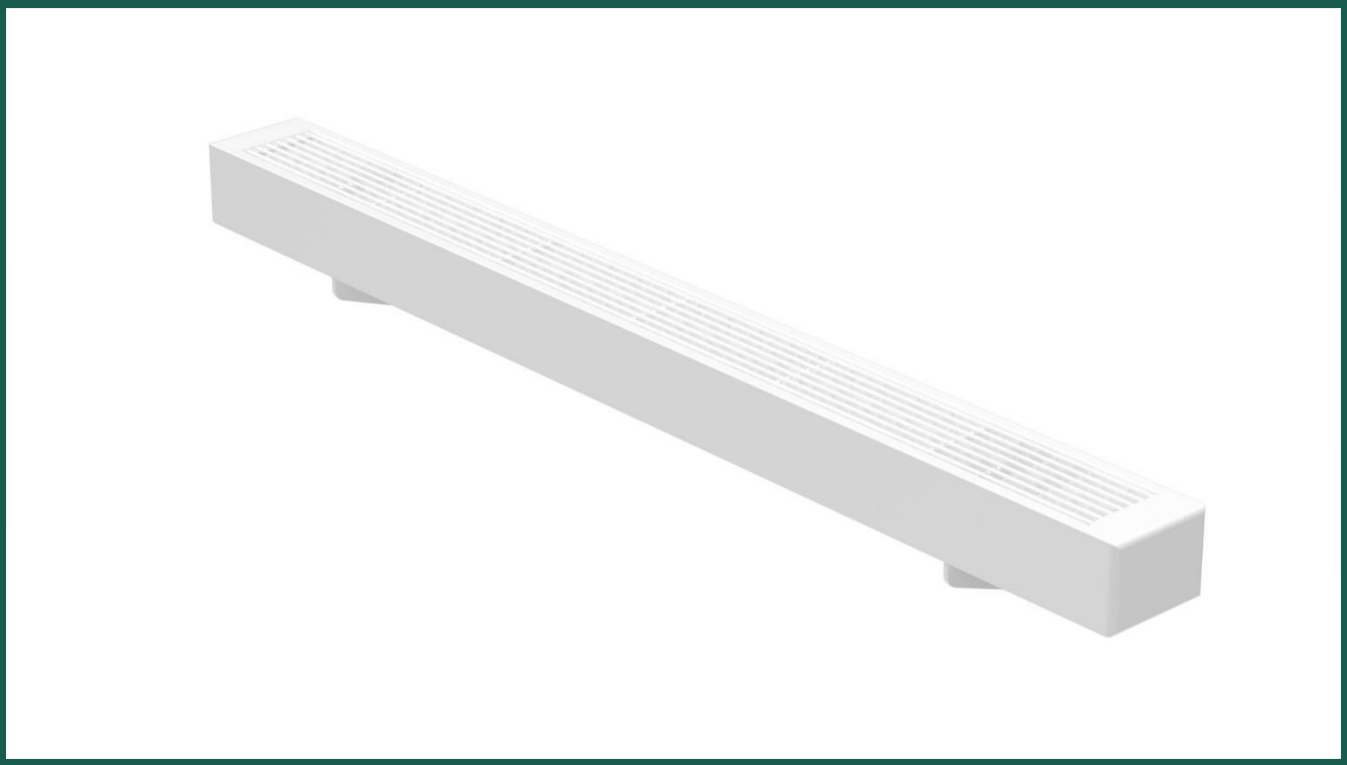
epd-norway
Global Program Operator

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 +A2



The Norwegian
EPD Foundation

Owner of the declaration:
Lyngson SIA

Program holder and publisher: The Norwegian EPD foundation

Declaration number:
NEPD-4527-3783-EN

Registration Number:
NEPD-4527-3783-EN

Issue date: 04.08.2023
Valid to: 04.08.2028

ver-120224

Product name

LISA 22-070-2500

Manufacturer

LYNGSON

General information

Product:
LISA 22-070-2500

Program Operator:
The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
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Declaration Number:
NEPD-4527-3783-EN

This declaration is based on Product Category Rules:
EN 15804:2012+A2:2019 and NPCR Part A Construction products and services ver 2.

Statements:
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 LISA Panel radiator type 22 size – H70mm x L2500mm, 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 ☒

Signature

Elisabet Amat
Independent verifier approved by EPD Norway

Owner of the declaration:
Lyngson SIA
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Manufacturer:
Lyngson SIA
"Akači", Grēnes, Olaines novads, Latvija
+371 67 79 67 10
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Place of production:
"Akači", Grēnes, Olaines novads, Latvija

Management system:
ISO 9001, ISO 14001, ISO 50001

Organisation no:
LV40003822806

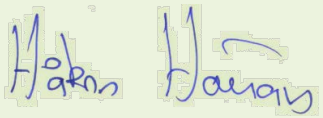
Issue date:
04.08.2023

Valid to:
04.08.2028

Year of study:
2023

Comparability:
EPDs from other programmes than EPD Norge may not be comparable.

The EPD has been worked out by:
Bureau Veritas Latvia



Approved (Manager of EPD Norway)

Product

Product description:

Radiator/convector LISA 22-070-2500 is produced out of steel plates and rectangular steel pipes 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.

Products materials	KG	%
Steel	17,24	97,0
Coating powder	0,54	3,0
TOTAL	**17,78**	**100,0**
Packaging materials	KG	%
Polyethylene film	0,36	17,6
Cardboard	0,49	23,9
Wooden pallets	1,20	58,5
TOTAL	**2,05**	**100,0**

Technical data:

- Length – 2500 mm, Height – 70 mm, Width – 92 mm
- Thickness of steel pipes – 1.8 mm
- Weight of the product (w/o packaging) - 17,78 kg
- Reference lifetime - 50 years (per PSR-0011)
- Max working pressure – 6 bar (for greater pressure values consult with manufacturer)

Market:

Sweden, Norway, Denmark, and Finland

Reference service life, product:

50 years according to PSR-0011-ed1.0-EN-2018 02 09

LCA: Calculation rules

Functional/Declared unit:

Functional unit is taken as PSR-0011-ed1.0-EN-2018 02 09 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 LISA Panel radiator type 22 size – h70 mm x L2500mm, capable to produce 1 kW of heating as defined by the manufacturer" according to EN 442.

Data quality:

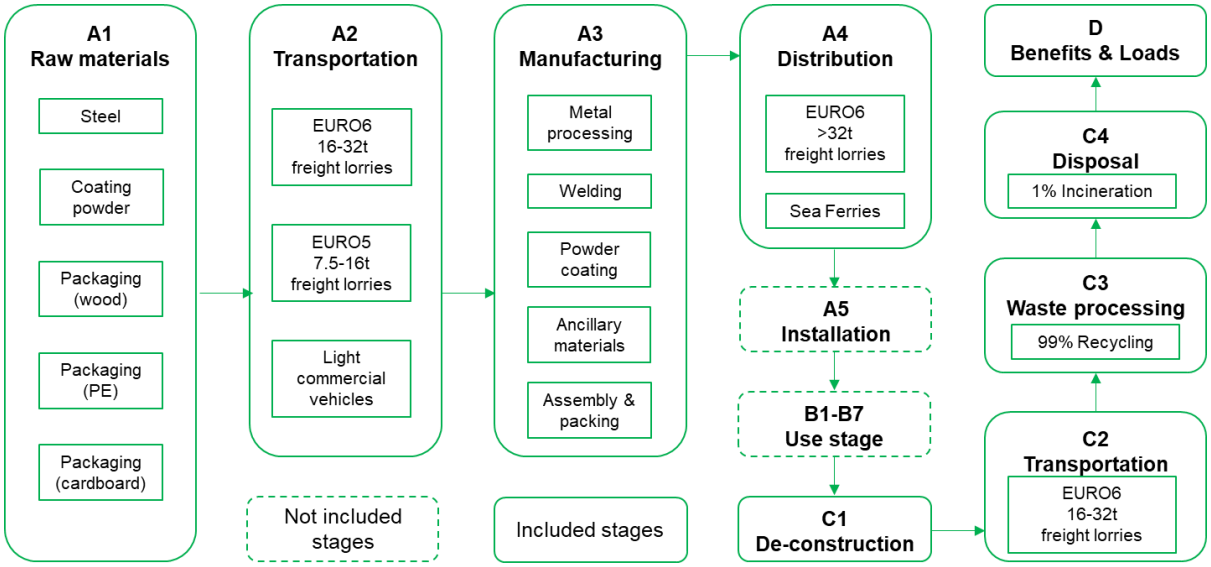
The production data are from 2022, the database data are from 2013 – 2021 i.e. no data is older than 10 years. Database used is mainly Ecoinvent v3.8, with an addition of Carbon Minds 2022.01. The LCA software used is SimaPro 9.4.

Allocation:

General allocation principles were 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. 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. LISA Hot Water radiators are produced only in one manufacturing plant.

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.



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, clause 6.3.6. This cut-off rule does not apply for hazardous materials and substances and it is consistent with EN 15804+A2.

Infrastructure processes, e.g. manufacturing and maintenance of facilities and manufacturing equipment, have been excluded from this LCA study.

LCA: Scenarios and additional technical information

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

Product stage (A1, A2, A3)

- **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 radiator/convector LISA is steel pipes and plates. 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). For some materials additional transportation mode of Light commercial vehicle has been used.

Steel is transported from 3 different suppliers that are located in European Union (EU). 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 pipes	Lorry 16-32t, EURO6	1,19E+01	1880	2,24E+04
Steel coil	Lorry 16-32t, EURO6	3,95E+00	545	2,15E+03
Steel PLATE	Lorry 16-32t, EURO6	2,57E+00	30	7,72E+01
Oil for maintanance	Light commercial vehicle	6,86E-03	30	2,06E-01
Cooling liquid	Light commercial vehicle	2,15E-03	30	6,45E-02
Chemicals for washing	Light commercial vehicle	6,95E-04	30	2,09E-02
Coating powder	Lorry 16-32t, EURO6	5,40E-01	25	1,35E+01
Plastic plugs	Light commercial vehicle	2,00E-02	36	7,02E-01
PE packaging film	Light commercial vehicle	3,60E-01	3	1,08E+00
Gardobond additives	Lorry 16-32t, EURO6	3,87E-02	550	2,13E+01
EU pallets	Lorry 7.5-16t, EURO5	1,20E+00	3	3,60E+00
Cardbord	Lorry 16-32t, EURO6	4,90E-01	300	1,47E+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. LISA HW 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 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 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 ranges from 20% to 80% depending on supplier and type of material, i.e. Steel plate and Steel pipe. For the purpose of this study Steel plates are represented by Unalloyed steel (converter production), that has 23% of post-consumer material (iron scrap), while Steel coil and Steel pipes are represented by Low-alloyed steel (electric production), that has 85% of post-consumer material (iron scrap).

Manufacturing process for LISA HW 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.

Transport from production place to assembly/user (A4)

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

- 46.5% trade towards Stockholm, Sweden with 354 km distance for Road transport and 281 km for Sea transport
- 32.5% trade towards Oslo, Norway with 840 km distance for Road transport and 281 km for Sea transport
- 2.4% trade towards Helsinki, Finland with 437 km distance for Road transport and 85 km for Sea transport;
- 18.6% trade towards Copenhagen, Denmark with 578 km distance for Road transport and 404 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 as follows:

- 90% capacity utilisation rate for Stockholm, Sweden
- 95% capacity utilisation rate for Oslo, Norway
- 90% capacity utilisation rate for Helsinki, Finland
- 90% capacity utilisation rate for Copenhagen, Denmark

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance KM	Fuel/Energy consumption	value (l/t)
Stockholm, Sweden					
Road	Default value from Ecoinvent 3.8	Lorry, >32t, EURO6	354	0,0226 l/tkm	7,99
Water	Default value from Ecoinvent 3.8	Sea ferry	281	0,0298 l/tkm	8,37
Oslo, Norway					
Road	Default value from Ecoinvent 3.8	Lorry, >32t, EURO6	840	0,0226 l/tkm	18,97
Water	Default value from Ecoinvent 3.8	Sea ferry	281	0,0298 l/tkm	8,37
Helsinki, Finland					
Road	Default value from Ecoinvent 3.8	Lorry, >32t, EURO6	437	0,0226 l/tkm	9,87
Water	Default value from Ecoinvent 3.8	Sea ferry	85	0,0298 l/tkm	2,53
Copenhagen, Denmark					
Road	Default value from Ecoinvent 3.8	Lorry, >32t, EURO6	578	0,0226 l/tkm	13,05
Water	Default value from Ecoinvent 3.8	Sea ferry	404	0,0298 l/tkm	12,03

Assembly (A5)

Module A5 has not been declared in this study.

End of Life (C1, C3, C4)

- **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 LISA HW radiator before its transportation to waste processing.

- **Waste processing (C3)**

As a waste processing activity in module C3, recycling, i.e. sorting of Scrap steel, has been considered, as per PSR-0011. Recycling represents 99% share of the product weight with remaining 1% representing Scrap steel and Paint for Incineration treatment in module C4 only as a method of final disposal.

- **Disposal (C4)**

Module C4 represents Incineration activities for final disposal of 1% share of the product. As Ecoinvent v3.8 scrap steel incineration dataset suggests, 472.89 grams of 1kg of incineration residue represents recyclable amount of Steel scrap that has been also considered in module D as an addition to Recycled amount of the product. Incineration is carried out without energy recovery and is considered only as a method of waste disposal.

Type	Unit	Value
Hazardous waste disposed	kg	0
Collected as mixed construction waste	kg	0
Reuse	kg	0
Recycling	kg	17,69
Energy recovery	kg	0,0
To landfill	kg	0,09

Transport to waste processing (C2)

For module C2 an average transportation with 100km distance has been assumed, as suggested by PSR-0011-ed1.0-EN-2018 02 09. EURO6 16-32t Freight lorry has been used for calculations in module C2.

Benefits and loads beyond the system boundaries (D)

As described above, this study also considers module D, where benefits and loads associated with avoided product, i.e. Steel, have been considered, also taking into account post-consumer material share in the product.

LCA: Results

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

Product stage			Assembly stage		Use stage							End of life stage				Benefits & loads beoyond 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

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	A2	A3	A4	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	2,7E+01	3,4E+00	6,7E+00	1,4E+00	0,0E+00	2,4E-01	4,8E-02	6,9E-04	-1,6E+01
GWP-fossil	kg CO2 eq.	2,7E+01	3,4E+00	8,2E+00	1,4E+00	0,0E+00	2,4E-01	4,8E-02	6,7E-04	-1,6E+01
GWP-biogenic	kg CO2 eq.	2,8E-01	1,1E-03	-1,6E+00	4,0E-04	0,0E+00	7,6E-05	4,6E-04	3,7E-06	8,2E-02
GWP-luluc	kg CO2 eq.	3,3E-02	2,7E-05	9,6E-03	1,6E-05	0,0E+00	1,9E-06	9,8E-05	1,0E-08	3,2E-03
ODP	kg CFC11 eq.	1,6E-06	8,0E-07	1,1E-06	3,1E-07	0,0E+00	5,7E-08	1,8E-09	1,5E-10	-5,2E-07
AP	mol H+ eq.	1,3E-01	6,7E-03	3,3E-02	2,3E-02	0,0E+00	4,8E-04	2,4E-04	4,7E-06	-4,7E-02
EP-freshwater	kg P eq.	1,1E-02	1,4E-05	1,2E-03	5,9E-06	0,0E+00	9,8E-07	2,2E-05	1,9E-06	-7,0E-03
EP-marine	kg N eq.	3,5E-02	1,1E-03	7,3E-03	5,5E-03	0,0E+00	7,9E-05	4,9E-05	2,0E-06	-1,2E-02
EP-terrestrial	mol N eq.	2,3E-01	1,2E-02	7,0E-02	6,1E-02	0,0E+00	8,8E-04	4,9E-04	2,2E-05	-1,3E-01
POCP	kg NMVOC eq.	9,7E-02	4,4E-03	2,3E-02	1,6E-02	0,0E+00	3,1E-04	1,3E-04	6,5E-06	-8,5E-02
ADP-min. & met.	kg Sb eq.	3,6E-05	1,5E-07	4,3E-06	4,1E-08	0,0E+00	1,0E-08	1,4E-09	3,0E-11	-8,5E-07
ADP-fossil	MJ	3,1E+02	4,8E+01	1,4E+02	1,9E+01	0,0E+00	3,4E+00	6,2E-01	9,2E-03	-1,2E+02
WDP	m3	1,5E+01	-8,0E-03	2,0E+00	-3,3E-03	0,0E+00	-5,7E-04	7,3E-03	-3,4E-03	-1,2E+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-terrestial:*** *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 counsumption*

Additional environmental impact indicators

Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
PM	Disease inc.	2,4E-06	2,3E-07	3,9E-07	8,8E-08	0,0E+00	1,6E-08	2,1E-09	3,6E-10	-8,2E-07
IRP	kBq U-235 eq	2,2E+00	2,1E-01	6,6E-01	8,4E-02	0,0E+00	1,5E-02	6,9E-03	4,0E-05	1,2E+00
ETP-fw	CTUe	8,1E+02	1,9E+01	5,6E+01	7,4E+00	0,0E+00	1,4E+00	6,6E-01	6,0E-02	-4,2E+02
HTP-c	CTUh	3,9E-07	2,5E-10	1,1E-08	1,6E-10	0,0E+00	1,8E-11	7,5E-12	2,7E-12	2,3E-07
HTP-nc	CTUh	1,8E-06	3,0E-08	4,2E-08	1,1E-08	0,0E+00	2,1E-09	3,7E-10	3,0E-11	-3,0E-07
SQP	Pt	3,9E+01	1,3E-01	1,8E+02	5,0E-02	0,0E+00	9,2E-03	5,4E-02	1,5E-02	-8,9E+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*

Classification of disclaimers to the declaration of core and additional environmental impact indicators

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
	Acidification potential, Accumulated Exceedance (AP)	None
ILCD type / level 2	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2

Disclaimer 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.

Disclaimer 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

Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
RPEE	MJ	1,8E+01	5,5E-02	1,7E+01	2,1E-02	0,0E+00	3,9E-03	6,9E-02	1,3E-05	6,4E+00
RPEM	MJ	3,4E+00	1,8E-02	3,4E+01	6,9E-03	0,0E+00	1,3E-03	7,0E-03	4,5E-06	1,0E+00
TPE	MJ	2,2E+01	7,3E-02	5,0E+01	2,7E-02	0,0E+00	5,2E-03	7,6E-02	1,7E-05	7,5E+00
NRPE	MJ	3,1E+02	4,8E+01	1,4E+02	1,9E+01	0,0E+00	3,4E+00	6,2E-01	9,2E-03	-1,2E+02
NRPM	MJ	4,4E-02	2,0E-05	7,9E-03	3,4E-05	0,0E+00	1,4E-06	2,3E-05	2,1E-08	-5,5E-03
TRPE	MJ	3,1E+02	4,8E+01	1,4E+02	1,9E+01	0,0E+00	3,4E+00	6,2E-01	9,2E-03	-1,2E+02
SM	kg	1,3E+01	0,0E+00	0,0E+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	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	0,0E+00
W	m^3	4,4E-01	1,2E-04	6,0E-02	5,4E-05	0,0E+00	8,7E-06	2,6E-04	-7,9E-05	-5,9E-02

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE 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

Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
HW	kg	1,0E-03	1,3E-04	1,4E-04	3,4E-05	0,0E+00	8,9E-06	2,2E-07	2,4E-08	-2,1E-03
NHW	kg	8,9E+00	2,0E-03	2,3E-01	8,3E-04	0,0E+00	1,4E-04	2,0E-03	6,2E-07	2,4E+00
RW	kg	8,7E-04	3,4E-04	3,2E-04	1,4E-04	0,0E+00	2,4E-05	2,0E-06	6,5E-08	2,4E-04

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

End of life – output flow

Indicator	Unit	A1	A2	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	0,0E+00	0,0E+00
MR	kg	0,0E+00	0,0E+00	1,2E+00	0,0E+00	0,0E+00	0,0E+00	1,8E+01	8,4E-02	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	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	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	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	4,5E-01

Additional Norwegian requirements

Greenhouse gas emission from the use of electricity in the manufacturing phase

National production mix from import, medium voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing prosess (A3). 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 (0.555 $kgCO_2eq/kWh$), has been recalculated to represent emission factor that is specific to manufacturing plant and has solar power share included in it:

National electricity grid	Unit	Value
Weighted value, considering 23% share of solar panel system generation	kg CO2 -eq/kWh	0,427

Additional environmental impact indicators required in NPCR Part A for construction products

EP-freshwater is also declared in different units - PO_4^{3-} eq.

Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
EP-freshwater*	kg PO_4 eq.	3,5E-02	4,2E-05	3,7E-03	1,8E-05	0,0E+00	3,0E-06	6,6E-05	5,8E-06	-2,1E-02

EP-freshwater* *Eutrophication potential, fraction of nutrients reaching freshwater end compartment. Declared as PO_4^{3-} eq.*

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 of Swedish public procurement legislation.

Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
GWP-IOBC	kg CO2 eq.	2,6E+01	3,3E+00	8,1E+00	1,4E+00	0,0E+00	2,4E-01	4,7E-02	6,5E-04	-1,5E+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 or the Norwegian priority list.
- ☐ The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- ☐ The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- ☐ The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiften, Annex III), see table.

Indoor environment

The product meets the requirements for low emissions.

Carbon footprint

Carbon footprint has not been worked out for the product.

Bibliography

ISO 14025:2010	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14040:2006	Environmental management – Life cycle assessment – Principles and framework
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EN 15804:2012+A2:2019	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products
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LCA software SimaPro 9.4	
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