ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

CLIMECON OY

NOX-S

Product EPD

Rakennustieto EPD

EPD Number:	RTS_470.9_26
Publication date:	08.05.2026
Valid until:	08.05.2031

Climecon Oy

GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	Climecon Oy
Address	Lämmittäjänkatu 4 A, 00880 Helsinki
Contact details	Emma Piha, emma.piha@climecon.fi
Website	https://climeconair.com/

PRODUCT IDENTIFICATION

Component-based EPD tool product group	Ventilation products
Product name	NOX-S The results presented in this EPD are based on the representative product NOX-S 200. Results for other product variations can be derived using the scaling table provided in Annex 1
Product number	See Annex 1
Place of production	Kausala, Finland
Geographical area	Product stage, A1-A3: Finland Life cycle stage A4: Finland Life cycle stages A5, C1-C4, D: Europe

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. EN15804 impact assessment indicators are based on EF 3.1. EPD of construction products may not be comparable if they do not comply with EN15804 and seen in a building context.

EPD INFORMATION

EPD program operator	Rakennustieto EPD, Malminkatu 16 A, 00100 Helsinki, Finland https://ymparisto.rakennustieto.fi/
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN15804+A2:2019 serves as the core PCR. RTS EPD PCR 2024 (ver.121124, 20.12.2024) Rakennustieto component-based EPD tool guideline (ver. 121124, 22.9.2025)
Component-based EPD-Tool number	RTS_470.0_26
Product EPD number	RTS_470.9_26
Product EPD verifier	Anni Viitala, Granlund Oy
Product EPD publishing date	08.05.2026
Product EPD valid until	08.05.2031

Jukka Seppänen
RTS EPD Committee Secretary

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Managing Director

VERIFICATION STATEMENT

Verified according to the requirements of EN 15804+A2 (product category rules) Independent verification of the declaration, according to EN ISO 14025:2010	
☒ External	☐ Internal
Third party verifier:  Anni Viitala, Granlund Oy	

PRODUCT INFORMATION

PRODUCT DESCRIPTION

NOX-S

The supply air diffuser NOX-S for visible installation is extremely quiet and flexible in use. Whenever the layout or use of the space changes, the throw pattern may be redirected to achieve a well-functioning, draught-free air distribution. The product can be used for either cooling or heating, which comes in handy in case the use of the rooms changes during the product's lifecycle.The diffuser part may be changed afterwards. The product's features can be changed to be more suitable for either cooling or heating, if the use of the rooms changes during the product's lifecycle. NOT is especially suited for isothermal and low temperature air. NOX is particularly designed for handling overtemperature air. A unique characteristic of NOX is the possibility to turn the vertical throw pattern 30 degrees to the side. This is a huge advantage if the throw pattern becomes obstructed, for example due to changes in the room's layout.

Additional information regarding dimensions and throw pattern available at https://climeconair.com/.

No harmonised test standard for indoor-air is applicable to this product category.

PRODUCT COMPONENTS

Component	Description	Declared unit	Raw Materials	Weight-%	Origin	Renewable material content (%)	Non-renewable content (%)	Recycled material content (%)
Aluminium components	Aluminium components covers all aluminium materials and their processing used in Kausala production site in 2024. It also covers transport of aluminium components and end of life of aluminium.	1 kg	Aluminium	100	Finland	0	100	14
Coating	Coating component covers all coating and processing related to coating used in Kausala production site in 2024. It also covers transport of components and end of life.	1 kg	Coating powder	100	Finland, Sweden	0	100	0
Electronic components	Electronic components covers all electronic components and their processing used in Kausala production site in 2024. It also covers transport of components and end of life of electronic components.	1 kg	Polyvinylchloride	39.4	Finland	0	100	0
			Cables	16.2	Finland	0	100	0
			Galvanised steel	10.5	Finland	0	100	0
			Building automation controller	29.8	Finland	0	100	0
			Rubber	4.1	Finland	0	100	0
Insulation	Insulation component covers all insulation used in the products in 2024 and its end of life.	1 kg	Polyurethane	42.8	Finland	0	100	0
			polyethylene terephthalate	12.1	Sweden	0	100	100
			Stone wool	26.3	Finland	0	100	0
			Mineral wool	18.8	Finland	0	100	70
Magnetic strip	Covers magnetic strip production and their processing in Kausala production site in 2024. It also covers transport and the end of life.	1 kg	Rubber	10	GB	0	100	0
			Ferrite	81	GB	0	100	0
			Strontium carbonate	9	GB	0	100	0
Polymer components	Polymer components covers all plastic materials and their processing used in Kausala production site in 2024. It also covers transport of plastic components and their end of life.	1 kg	Polypropylene	40.4	Finland	0	100	0
			Polyethylene	10	Finland	0	100	0
			Polyvinylidenchloride	9.7	Finland	0	100	0
			Polyamide	1.1	Finland	0	100	0
			Rubber	3.5	Finland, France	0	100	0
			Biocomposite	35.2	Finland	40	60	0
Steel components	Steel components covers all steel materials and their processing used in Kausala production site in 2024. It covers waste steel handling, transport of steel components and end of life of steel.	1 kg	Stainless steel	18.7	Finland	0	100	4
			Galvanized steel	81.3	Finland, Europe	0	100	4
Energy use	Includes product energy use in B6	1 kWh						

PACKAGING MATERIAL COMPOSITION

Product packaging materials per kilogram of product are presented in the table below.

Material	Quantity [kg]	Weight % of total
Euro pallet	0.0785	56.2
Plastics	0.0113	8.1
Paper	0.0003	0.2
Cardboard	0.0497	35.5
Total weight	0,01 kg	

PRODUCT COMPOSITION

Product components per declared unit are presented in the Annex 1. For the representative product the component composition is:

Component	Component mass [kg]	Weight % of total
Aluminium components	0.18	24 %
Polymer components	0.57	76 %
Total	0.75	

REFERENCE SERVICE LIFE (RSL)

Reference service life is set to 20 years, which is the normal expected service life for air handling units and equipment, according to Building Construction Emissions Database CO2data.fi.

During this period, the products are used as ventilation equipment in indoor conditions. It is assumed that the product is produced and installed as expected and instructed, without flaws in materials. It is assumed that the product is not put under such mechanical stresses that would cause a failure. RSL applies for the reference in-use conditions only.

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	1 year, 2024
Geographical area	Product stage, A1-A3: Finland Life cycle stage A4: Finland Life cycle stages A5, C1-C4, D: Europe

DECLARED UNIT

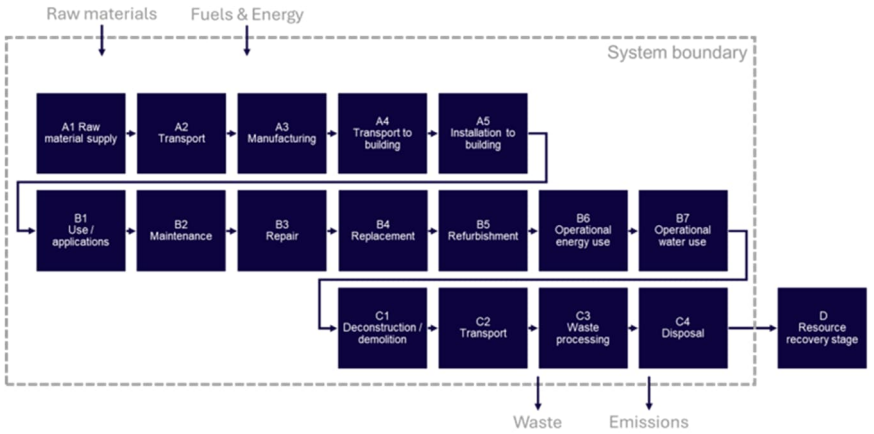
Declared unit	1 unit
Mass per declared unit [kg/unit]	See Annex 1.
Reference service life	20 years

SYSTEM BOUNDARY

	Product Stage			Construction Process Stage		Use Stage							End-of-Life Stage				Benefits and loads beyond the system boundary		
	Raw material supply	Transport	Manufacturing	Transport to building	Installation to building	Use/applications	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling
Stage	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
Included	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Declared	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D

Mandatory
Mandatory as per the RTS PCR section 6.2.1 rules and terms
Optional modules based on scenarios

The studied system boundary was cradle to gate with options. Studied system covers the following steps of life cycle according to EN 15804: **A1** Raw material supply, **A2** Transport, **A3** Manufacturing, **A4** Transport to building, **A5** Installation to building, **B1** Use, **B2** Maintenance, **B3** Repairs, **B4** Replacement, **B5** Refurbishment, **B6** Operational energy use, **B7** Operational water use, **C1** Deconstruction, **C2** Transportation of end-of-life **C3** Waste processing and **C4** Disposal. The benefits and loads beyond the system boundary are included to stage **D**, which consist of product reuse, recovery and recycling. The life cycle stages are presented in the following figure.



LCA System Boundary of studied products

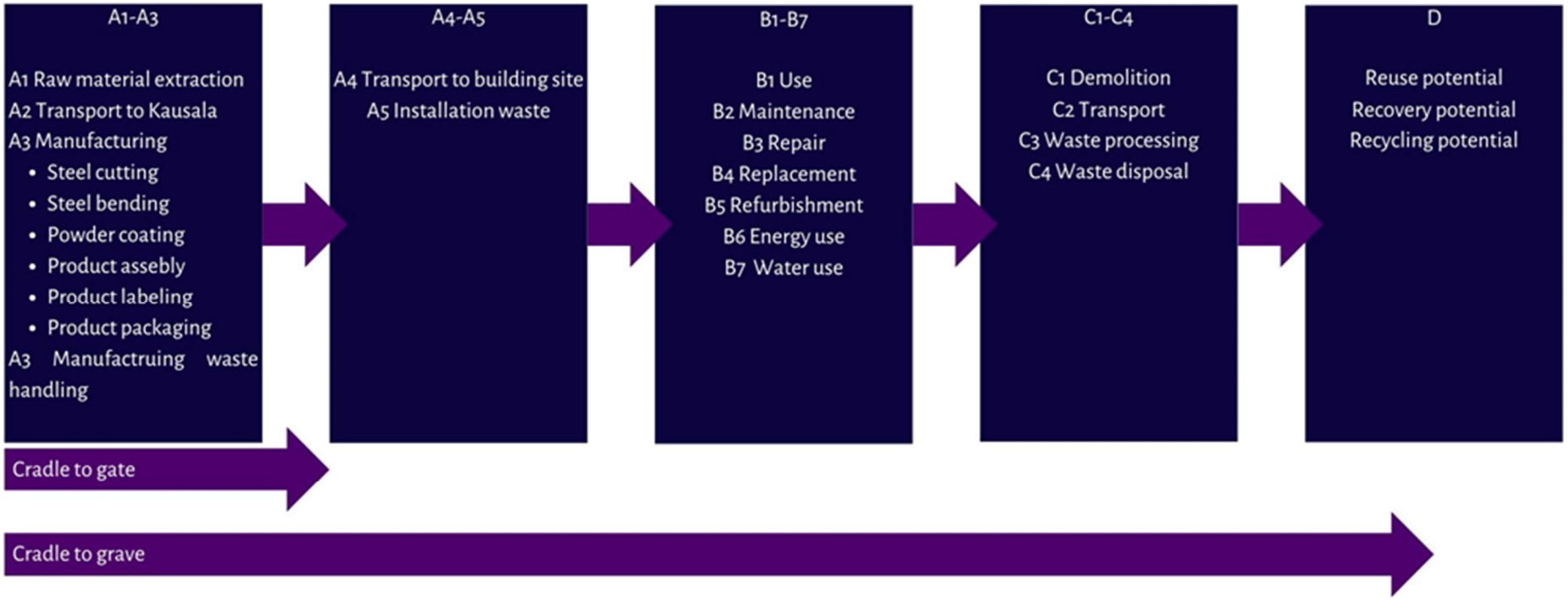
The study does not omit any life cycle stages, processes or data needs that are mandatory according to EN 15804 and RTS PCR.

Descriptions of End-of-Waste points that specify the system boundary are presented below.

- A1 module: The end of waste point of the post-consumer recycled content of the goods is after the waste processing in the previous life cycle. The post-consumer recycled content enters the system burden free. The supply transportation of the post-consumer recycled content is included to the system along with the respective materials.
- A3 module: The end of waste point of the production scraps is the point where it is processed to be ready to use in following life cycles. For example, for incinerated waste streams, it is the incineration of the materials, which results as energy that is then available for consumption in the following life cycle. For paper waste, it is ready to be used as secondary raw material after sorting.
- A5 module: End of waste point of the packaging materials in A5 module is the point where it is processed and to be ready to use in following life cycles.
- C3-C4 module: End of waste point of the studied product is the step when materials are collected and handled in the sorting plant. For metal-based materials, the end of waste point is when materials are sorted and pressed and available to be used to replace primary materials.

THE PRODUCTION PROCESSES OF THE STUDIED PRODUCT

Production stage (A3) of Manufacturer' production site covers the following manufacturing processes; raw material supply, processing and packaging the final product. After that, products are transported to the customer. The production processes of the studied product are presented in the following figure.



CUT-OFF CRITERIA

This study follows the cut-off criteria stated in RTS PCR and EN 15804 -standard. This study does not exclude any modules or processes which represent more than 1 % of the emissions of the studied life cycle stage. The study does not exclude any hazardous materials or substances.

Excluded processes and the criteria for exclusion are given in the following table

Process excluded from study	Cut-off criteria	Quantified contribution from process
Capital goods (machinery and building)	Contribution per declared unit is negligible and well below 1 %.	< 1%

ALLOCATION

Allocation rules used are made according to ISO14044:2006. Allocation is avoided when possible and when necessary, allocation is made based on physical shares while also avoiding double calculations. Allocation is required if the production process produces more than one product and the flows of materials, energy and waste cannot be separately measured for the studied product. Allocation used in generic data sources follows the requirements of the EN 15804 -standard. It should be noticed that the allocation method 'Allocation, cut-off, EN15804' has been used for EcoInvent 3.10.1 data, which complies with EN 15804.

Allocation could not be avoided for the following inputs as the information was only measured at a factory process level. The inputs were allocated to studied product components based on production volume in kilograms.

- Electricity: only measured on factory level.
- Heating: only measured on factory level.
- Production waste flows: only measured on factory level.
- Production water consumption: only measured on factory level.
- Packaging materials: only measured on factory level.
- Ancillary materials: only measured on factory level.

According to EN 15804, flows leaving the system at the end-of-waste boundary of the product stage (A1-A3) are allocated as co-products. According to EN 15804, processes that have a very low contribution to the overall revenue may be neglected in co-product allocation.

KEY ASSUMPTIONS

The scenarios included are currently in use and are representative for one of the most likely scenario alternatives.

A4 Transport to building: Transport to the building site was assessed based on the transportation distance from Climecon's production site to Helsinki. Scenario parameters are presented in the Scenario documentation section.

A5 Installation to building: As the products are made-to-measure, installed without machinery that consumes energy and there is no installation waste. Therefore, the Installation to building A5 consists of only treatment of the packaging materials.

- A5 Transportation: Transportation distance 75 km road driving by lorry. (SYKE 2021.)
- A5 Waste treatment and final disposal:
    - Wood: 95% reused (Co2data.fi), 0,15% recycled, 4,85% incinerated (Statistics Finland)
    - Plastics: 73,45 % recycled, 12,45 % incinerated, 13,7% incinerated without energy recovery, 0,39 % landfilled, according to Statistics Finland
    - Cardboard: 96% recycled, 4% incinerated (Statistics Finland)

B1-B7 Use stage: Stages B1-B5 and B7 were assessed, and they did not have any inputs. Based on sales data of 2024, 93 % of the products were sold to residential customers and 7 % others. It is assumed that the residential buildings are running the low voltage and others are running medium voltage. B6 stage is included as a separate EPD component into the system as not all products consume energy. Scenario parameters are presented in the Scenario documentation section.

C1-C4, D End of life scenario: End of life scenario was assumed based on the common practices of construction products in Finland and product's market area in Europe (SYKE 2021.)

At the end of its life cycle, the product is dismantled from the building and transported for further processing, where the material fractions are separated from each other. At the product level, the End-of-Waste point is reached once the waste has been treated by material fraction and has potentially been directed to further use.

- C1 Deconstruction/demolition: During the demolition phase C1, the entire final product is dismantled, using the mass of the final product as the input data. The energy use (diesel usage) in the demolition stage is assumed at 1.3 kWh/t (Erlandsson, M. & Pettersson, D., 2015.)
- C2 Transportation: Transportation distance 75 km road driving by lorry. (SYKE 2021.)
- C3-C4 Waste treatment and final disposal (see treatment processes in Table 22):
    - Steel: 95 % recycled, 5 % landfilled, according to CO2data.fi
    - Aluminium: 96 % recycled, 4 % landfilled, according to CO2data.fi
    - Plastics: 73,45 % recycled, 12,45 % incinerated, 13,7% incinerated without energy recovery, 0,39 % landfilled, according to Statistic Finland
    - SER waste: 100 % recycled, according to Statistics Finland
    - Insulation: 100 % final disposal
    - Coating: 100 % final disposal
    - Magnetic strip: 100% recycled, according to Statistics Finland
- Module D covers the net benefits and loads arising from the reuse of products or the recycling or recovery of energy from end-of-waste state materials.
    - Recovery: when a product is incinerated at its end-of-life and the produced heat is recovered, the benefits can include avoiding the production of energy.
    - Plastics: Net calorific value as received of the plastic waste was, according to the EcoInvent's dataset "Treatment of waste plastic, mixture, municipal incineration", 3.93MJ/kg electric energy and 7.67MJ/kg thermal energy
    - Recycling: Benefits from the recycling of materials were included to the assessment. Only share of primary raw materials in the product composition were included to the component D.
    - Electronic waste: Benefits from avoided primary electronics production due to the recycling of electronics at the end of life.
    - Aluminium and steel components: Benefits from avoided primary metal production due to the recycling of materials at the end of life.
    - Magnetic strip: Benefits from avoided primary metal production due to the recycling of materials end of life was included.

DATA QUALITY

The quality requirements for the life cycle assessment were set according to the EN ISO 14044 standard (4.2.3.6) and EN 15804 standard (6.3.7).

This LCA study follows the standard EN 15804:2012+A2:2019 and PCR and no decisions are made based on the values.

PROCEDURED FOR COLLECTION PROCESS SPECIFIC DATA

Production specific data was collected directly from the manufacturer's production plant. The data represents the production of the studied product at the plant from the materials transported to the facility and represents 1 year average. The data represents the year 2024, which was the latest year with full year data. All gathered data was used without excluding categories in advance following the system boundaries set in earlier chapters.

CRITERIA FOR CHOOSING THE GENERIC DATA

Generic data that was used for upstream and downstream processes represents complementary data from EcoInvent database.

The datasets were chosen to represent the studied system as closely as possible. When available supplier specific information was used for instance in form of EN 15804 EPDs or emissions profile of local energy supplier. When supplier-specific information was not available the information sources were chosen based on their technical and geographical representativeness. Only when country specific or European data has not been available has global level data been used (concerns mainly data from EcoInvent).

As up-to-date data as possible was chosen and no more than five years old for producer specific data and ten years for generic data was used.

ENVIRONMENTAL IMPACT DATA

CLIMECON NOX-S, 1 UNIT

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total1)	kg CO2e	5,19E+00	8,93E-03	1,05E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,52E-04	6,04E-03	3,84E-01	2,09E-01	-2,05E+00
GWP – fossil	kg CO2e	5,33E+00	8,92E-03	1,35E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,52E-04	6,03E-03	2,68E-01	1,90E-01	-2,02E+00
GWP – biogenic	kg CO2e	-1,74E-01	2,02E-06	9,16E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,59E-08	1,37E-06	1,16E-01	1,91E-02	0,00E+00
GWP – LULUC	kg CO2e	3,31E-02	3,98E-06	7,48E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,74E-08	2,70E-06	5,72E-05	1,50E-06	-2,51E-02
Ozone depletion pot.	kg CFC-11e	2,85E-07	1,31E-10	1,33E-11	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,39E-12	6,74E-11	5,77E-10	7,08E-11	-5,37E-08
Acidification potential	mol H+e	2,91E-02	3,03E-05	8,56E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,18E-06	2,06E-05	2,71E-04	4,46E-05	-8,68E-03
EP-freshwater2)	kg Pe	1,72E-03	6,92E-07	2,86E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,71E-09	4,70E-07	1,71E-05	7,55E-07	-5,81E-04
EP-marine	kg Ne	4,87E-03	9,60E-06	4,09E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,47E-06	6,76E-06	1,06E-04	2,49E-05	-1,43E-03
EP-terrestrial	mol Ne	4,80E-02	1,08E-04	3,21E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,61E-05	7,36E-05	6,95E-04	2,13E-04	-1,36E-02
POCP (“smog”)3)	kg NMVOCe	1,82E-02	4,47E-05	9,88E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,81E-06	3,03E-05	2,07E-04	5,40E-05	-8,43E-03
ADP-minerals & metals4)	kg Sbe	3,38E-05	2,48E-08	6,97E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,26E-10	1,28E-08	1,18E-06	1,38E-08	7,02E-06
ADP-fossil resources	MJ	8,64E+01	1,29E-01	1,68E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,60E-03	8,73E-02	4,67E-01	3,92E-02	-4,58E+01
Water use5)	m3e depr.	-3,18E+00	6,38E-04	1,11E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,15E-05	4,33E-04	2,58E-02	1,25E-02	-2,33E+00

1)GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO_4e.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy8)	MJ	1,61E+01	1,77E-03	-4,63E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,91E-05	1,20E-03	6,56E-02	1,57E-03	-7,45E+00
Renew. PER as material	MJ	7,89E-01	0,00E+00	-7,89E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	1,69E+01	1,77E-03	-1,25E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,91E-05	1,20E-03	6,56E-02	1,57E-03	-7,45E+00
Non-re. PER as energy	MJ	8,18E+01	1,29E-01	-2,10E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,60E-03	8,73E-02	-1,97E+01	-2,86E+00	-5,04E+01
Non-re. PER as material	MJ	1,54E+01	0,00E+00	-2,85E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,30E+01	-2,12E+00	0,00E+00
Total use of non-re. PER	MJ	9,71E+01	1,29E-01	-4,95E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,60E-03	8,73E-02	-3,27E+01	-4,99E+00	-5,04E+01
Secondary materials	kg	1,18E-01	5,49E-05	2,38E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,92E-06	3,73E-05	1,58E-03	3,45E-05	4,44E-01
Renew. secondary fuels	MJ	2,66E-02	6,98E-07	2,08E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,00E-09	4,74E-07	1,77E-05	1,12E-06	-2,02E-02
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m3	8,34E-02	1,91E-05	1,95E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,04E-07	1,29E-05	4,87E-04	1,88E-04	-5,06E-02

1)PER = primary energy resources; Non-ren = Non renewable

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,70E-01	2,19E-04	3,34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,12E-06	1,48E-04	1,07E-02	3,28E-03	-2,93E-01
Non-hazardous waste	kg	1,51E+01	4,05E-03	1,09E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,98E-05	2,74E-03	3,07E-01	1,22E-01	-8,56E+00
Radioactive waste	kg	2,19E-04	2,75E-08	7,59E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,00E-10	1,87E-08	1,05E-06	1,77E-08	-8,16E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	4,00E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	7,21E-02	0,00E+00	2,68E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,90E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	2,10E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	2,57E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,70E-01	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	5,04E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,25E-01	0,00E+00	0,00E+00

BIOGENIC CARBON CONTENT

Impact category	Unit	A1-A3
Biogenic carbon content in product	kgC	3,43E-02
Biogenic carbon content in accompanying packaging	kgC	2,25E-02

NOTE 1 kg biogenic carbon is equivalent to 44/12 kg of CO2

SCENARIO DOCUMENTATION

Manufacturing (A3) energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, wind, >3MW turbine, onshore Ecoinvent 3.10.1, 2024, Finland
Electricity CO_2e / kWh	0,0316
Own electricity production data source and quality	Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted, Ecoinvent 3.10.1, 2024, Finland
Electricity CO2e / kWh	0,0802
District heating data source and quality	Heat production, light fuel oil, at industrial furnace 1MW Ecoinvent 3.10.1, 2024, Europe
	Heat production, at coal coke industrial furnace 1-10MW Ecoinvent 3.10.1, 2024, World
	Heat production, softwood chips from forest, at furnace 1000kW Ecoinvent 3.10.1, 2024, World
Energy CO_2e / kWh	0,49

Transport scenario documentation (A4)

Scenario parameter	Value
Specific transport CO2e emissions, kg CO2e / tkm	Truck: diesel, load capacity 32 t. Specific transport emissions 0,11 kgCO2e / tkm
Average transport distance, km	100
Capacity utilization (including empty return) %	45 % for truck
Weight of transported products [kg] (including product and packaging)	See Annex 1.
Volume capacity utilization factor	Not applicable

Installation scenario of the product in the building (A5)

Scenario parameter	Value	
Ancillary materials for installation	-	
Water use	-	
Other resource use	-	
Quantitative description of energy type (regional mix) and consumption during the installation process	-	
Waste materials on the building site before waste processing, generated by the product's installation	Packaging materials per 1 kg of product:	
	Euro pallet	0,0561
	Plastics	0,0081
	Paper	0,0002
	Cardboard	0,0355
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	-	
Direct emissions to ambient air, soil and water	-	

Use scenario (B6-B7)

B6-B7 Scenario information	Unit		
Ancillary materials	0 kg		
Net freshwater consumption	0 m3		
Type of energy carrier	Electricity	0.0	kWh
Power output of equipment			
Characteristic performance, e.g. energy efficiency, emissions, variation of performance with capacity utilisation etc.	Modelled with		
	7 %	Market group for electricity, medium voltage, Europe	0,3 kgCO2eq/kWh
	93 %	Market group for electricity, low voltage, Europe	
		Ecoinvent 3.10.1, 2024	
Further assumptions for scenario development, e.g. frequency and period of use, number of occupants	-		

End of life scenario documentation C1-C4

Product components

		Aluminium	Coating	Insulation	Electronics	Magnetic strip	Polymers	Steel
Process flow								
Collection process specified by type	kg collected separately	1,0	1,0	1,0	1,0	1,0	1,0	1,0
	kg collected with mixed construction waste							
Recovery system specified by type	kg for reuse							
	kg for recycling	0,96			1,0	1,0	0,7345	0,95
	kg for energy recovery						0,1245	
Disposal specified by type	kg material for final deposition	0,04	1,0	1,0	0	0	0,141	0,05
Assumptions for scenario development	units as appropriate	Waste materials are transported 75 km by truck to recycling facility with a truck capacity utilization of 45%						

Packaging materials

		Cardboard	Euro pallet	Polypropylene	Polyethylene
Process flow					
Collection process specified by type	kg collected separately	1,0	1,0	1,0	1,0
	kg collected with mixed construction waste				
Recovery system specified by type	kg for reuse		0,95		
	kg for recycling	0,96	0,0015	0,84	0,84
	kg for energy recovery	0,04	0,048	0,16	0,16
Disposal specified by type	kg material for final deposition				
Assumptions for scenario development	units as appropriate	Waste materials are transported 75 km by truck to recycling facility with a truck capacity utilization of 45%			

REFERENCES

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ANNEX 1: PRODUCT COVERAGE & SCALING FACTORS

Coverage	NOX-S 125	NOX-S 160	NOX-S 200	NOX-S 250	NOX-S 315
Product number	8635883	8635884	8635885	8635886	8635887
Product weight [kg]	0,388	0,52	0,751	0,896	1,116
Product weight with packaging materials [kg]	0,392	0,525	0,759	0,905	1,127
Aluminium components [kg]	0,108	0,14	0,18	0,226	0,286
Coating [kg]	0	0	0	0	0
Electronic components [kg]	0	0	0	0	0
Insulation [kg]	0	0	0	0	0
Magnetic strip [kg]	0	0	0	0	0
Polymer components [kg]	0,28	0,38	0,571	0,67	0,83
Steel components [kg]	0	0	0	0	0
Energy use [kWh]	0	0	0	0	0

Impact category	Unit	NOX-S 125	NOX-S 160	NOX-S 200	NOX-S 250	NOX-S 315
GWP – total1)	kg CO2e	0,55	0,72	1,00	1,22	1,52
GWP – fossil	kg CO2e	0,54	0,72	1,00	1,21	1,52
GWP – biogenic	kg CO2e	0,48	0,65	1,00	1,16	1,44
GWP – LULUC	kg CO2e	0,59	0,77	1,00	1,25	1,58
Ozone depletion pot.	kg CFC-11e	0,58	0,75	1,00	1,24	1,56
Acidification potential	mol H+e	0,55	0,73	1,00	1,22	1,53
EP-freshwater2)	kg Pe	0,56	0,73	1,00	1,22	1,53
EP-marine	kg Ne	0,55	0,73	1,00	1,22	1,53
EP-terrestrial	mol Ne	0,55	0,73	1,00	1,22	1,53
POCP (“smog”)3)	kg NMVOCe	0,54	0,71	1,00	1,21	1,51
ADP-minerals & metals4)	kg Sbe	0,53	0,71	1,00	1,20	1,51
ADP-fossil resources	MJ	0,53	0,71	1,00	1,20	1,50
Water use5)	m3e depr.	0,63	0,81	1,00	1,28	1,63
Renew. PER as energy8)	MJ	0,56	0,73	1,00	1,22	1,54
Renew. PER as material	MJ	0,52	0,69	1,00	1,19	1,49
Total use of renew. PER	MJ	0,56	0,73	1,00	1,22	1,53
Non-re. PER as energy	MJ	0,55	0,72	1,00	1,22	1,52
Non-re. PER as material	MJ	0,49	0,67	1,00	1,17	1,45
Total use of non-re. PER	MJ	0,54	0,71	1,00	1,21	1,51
Secondary materials	kg	0,50	0,68	1,00	1,18	1,47
Renew. secondary fuels	MJ	0,51	0,68	1,00	1,19	1,48
Non-ren. secondary fuels	MJ	1,00	1,00	1,00	1,00	1,00

Impact category	Unit	NOX-S 125	NOX-S 160	NOX-S 200	NOX-S 250	NOX-S 315
Use of net fresh water	m3	0,57	0,74	1,00	1,23	1,55
Hazardous waste	kg	0,53	0,71	1,00	1,20	1,50
Non-hazardous waste	kg	0,52	0,70	1,00	1,20	1,49
Radioactive waste	kg	0,57	0,75	1,00	1,23	1,55
Components for re-use	kg	1,00	1,00	1,00	1,00	1,00
Materials for recycling	kg	0,60	0,77	1,00	1,25	1,58
Materials for energy recovery	kg	0,52	0,70	1,00	1,20	1,49
Exported energy - Electricity	MJ	1,00	1,00	1,00	1,00	1,00
Exported energy - Heat	MJ	1,00	1,00	1,00	1,00	1,00
Biogenic carbon content in product	kg	0,49	0,67	1,00	1,17	1,45
Biogenic carbon content in accompanying packaging	kg	0,52	0,69	1,00	1,19	1,49