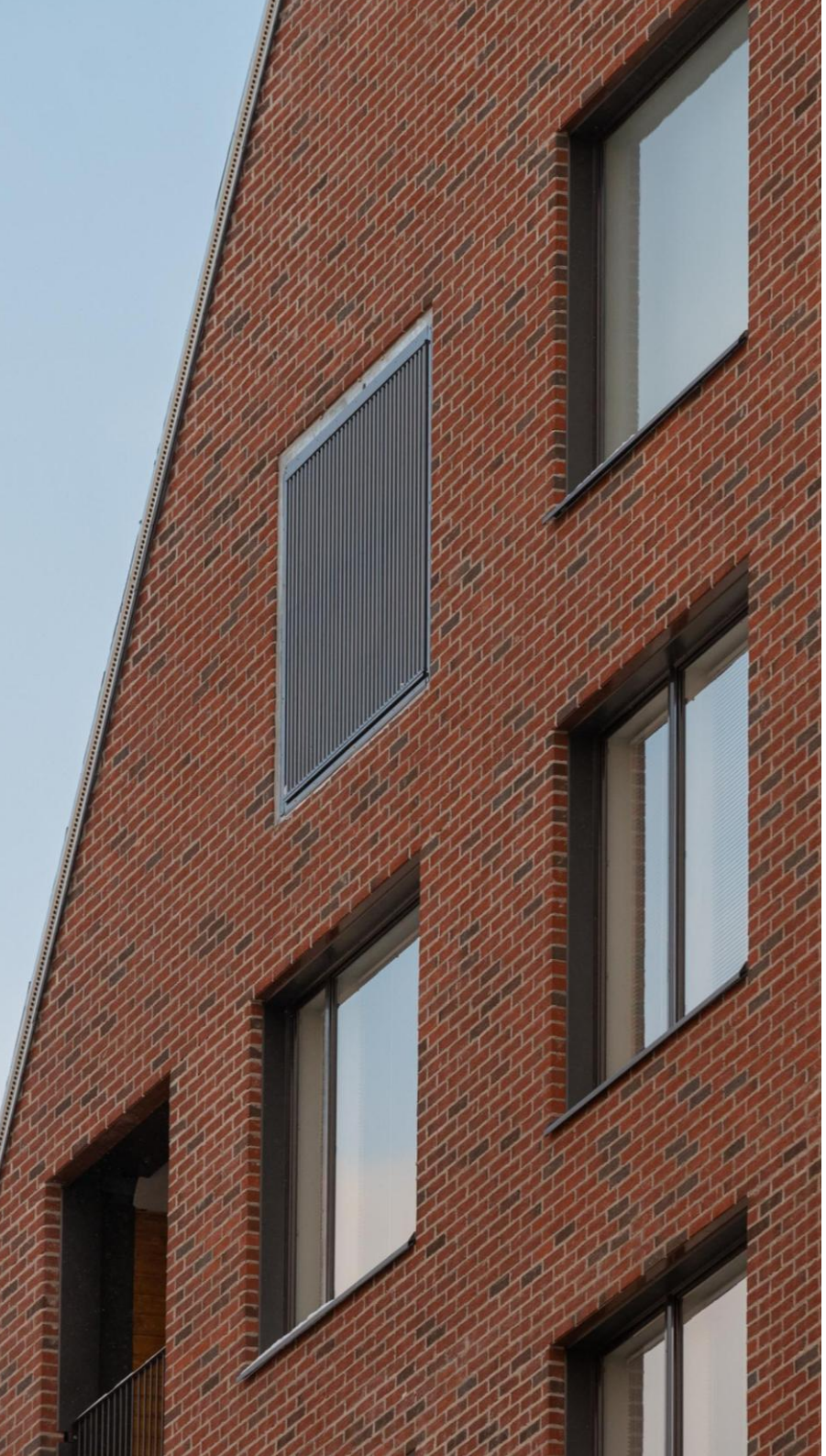


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Climecon Louvres
Climecon

EPD HUB, HUB- 3611
Publishing date 11 July 2025, last updated on 11 July 2025, valid until 11 July 2030.

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 Dec 2023) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Climecon
Address	Lämmittäjänkatu 4A, 00880, Helsinki, FI
Contact details	info@climecon.fi
Website	https://climeconair.com/en-en/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Manufactured product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Emma Amira Piha
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Climecon Louvres
Additional labels	TUISKU-V, TUISKU-VS, TUISKU-VU, TUISKU-P, TUISKU-PS, TUISKU-PU
Product reference	-
Place(s) of raw material origin	Finland
Place of production	Pihtipudas, Finland
Place(s) of installation and use	Finland
Period for data	Calendar year 2024
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	3.4%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	5.48%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	5,01E+00
GWP-total, A1-A3 ($kgCO_2e$)	4,62E+00
Secondary material, inputs (%)	9,78
Secondary material, outputs (%)	93,1
Total energy use, A1-A3 (kWh)	14,5
Net freshwater use, A1-A3 (m^3)	0,05

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

We are Climecon, a responsible forerunner in indoor air design. With our indoor air design, we take a holistic approach to the well-being of people, buildings, and the environment. We design our solutions and products in a human-centric way, taking into account the perspective and needs of different users.

PRODUCT DESCRIPTION

Climecon offers a wide range of high-quality outdoor louvres that are designed to prevent snow and water from entering intake air vents. Our extensive selection covers the needs of all types of projects and weather conditions. TUISKU rain and snow cover is the best alternative for achieving a finished end result.

Our products have been carefully developed and thoroughly tested to meet even the most demanding weather conditions in the Northern latitudes. The water separation capacity of TUISKU is in the best A-class in the entire operating range. TUISKU snow and rain covers prevent snow and water from getting into the ducts, and are tested by VTT. The recommended face velocity is 0.7 m/s. The coating meets the high C4 climate resistance class and retains its colour without crackling for several decades, despite the most challenging climatic conditions or solar radiation.

By utilizing the various installation options of the TUISKU snow and rain cover, the direction of the grilles, and the different colours, a finished and well-functioning whole can be obtained for the facade of a building. This environmental product declaration covers the following products:

- TUISKU-P, TUISKU-PU, and TUISKU-PS with vertical vanes
- TUISKU-V, TUISKU-VU, and TUISKU-VS with horizontal vanes

The TUISKU-PU and TUISKU-VU models are flush mounted to the building. The TUISKU P and V models take in air through the front surface of the grille. TUISKU PS and VS models take in air through the front and sides of the grille. This EPD was calculate by extracting an average mass from all basic louvre modules, which was used as the reference product.

All modules, both singular and multi-piece, are available with an anti-frost (AF) heating element designed to be used in locations where ice and frost build up on the surface of the louver due to weather circumstances. De-frosting prevents clogging and the increase of pressure loss, and the devices do not burden the building structures.

Cover dimensions must be minimum 100 mm larger than opening on all sides. Individually dimensioned (non-standard) sizes are possible. Larger than 2200×2000 mm units are made of two or more sections joined together modularly. Multi-piece TUISKU louvers for modular installation are easily handled with an additional TUISKU-AK mounting frame. Tuisku-AK mounting frame suits installations of 4, 6, 8, and 9 modules. The mounting frame helps in installation of both flush and surface mounted TUISKU louvers.

TUISKU louvres are available in various materials, such as galvanized, stainless and acid resistant steel.

Further information can be found at: https://climeconair.com/en-en/

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	98	Finland
Minerals	-	-
Fossil materials	2	Switzerland
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,0777

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 kg
Functional unit	-
Reference service life	30 years

SUBSTANCES, REACH - VERY HIGH CONCERN

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

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
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		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory.

The cold rolled galvanized steel sheets are cut to specified shapes and bent mechanically in Maarla production site. Hydraulic oil is used during the process to reduce the wear of machines and to ensure stable cutting and bending conditions. The steel parts are powder coated with colour chosen by the customer, which requires liquified natural gas. The final product is then assembled from the coated steel parts with steel rivets. The manufacturing process requires electricity for the different equipment as well as district heating. The steel waste produced at the plant is directed to recycling. The loss of material is considered, as well as wastewater treatment. A wooden pallet, steel screws and packaging plastics are used as a packaging material for transporting the product from the factory gate.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Average distance of transportation from production plant to building site is assumed as 325 km, which is the distance between the location of production site and Climecon's headquarters in Helsinki. The louvres are mainly sold in Finland. The transportation method is assumed to be lorry. Vehicle capacity is assumed to be 100% which means full load. In reality, it may vary, but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Transportation does not cause losses as product are packaged properly. Installation consumes 0.01 kWh of energy for assembling 1 kg of product.

Treatment of packaging material waste (wood, steel and plastic) is considered in this module. According to Statistics Finland, it is assumed that 97% of wood and 12.46 % of plastic is incinerated with energy recovery, while 3% of wood and 73.45 % of plastic is recycled. The remaining 13.7 % of waste plastic is incinerated without energy recovery, and 0.4% is landfilled. According to co2data.fi, 95% of the steel is recycled, while 5% is assumed to be landfilled. Moreover, direct emission to air of carbon dioxide are considered as well to balance emissions of the biogenic CO2.

PRODUCT USE AND MAINTENANCE (B1-B7)

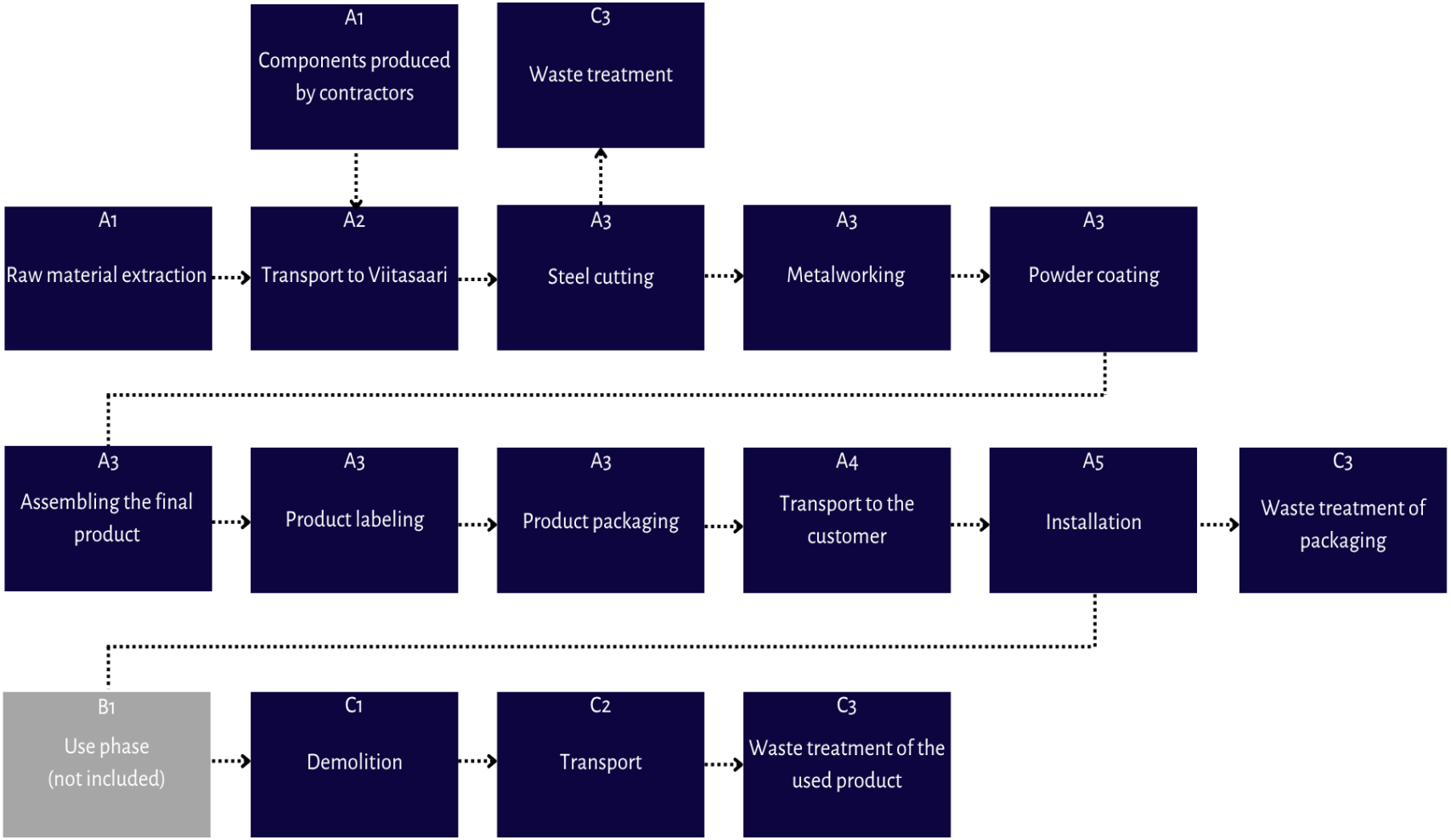
This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

End of life scenario was assumed based on the common practices of construction products in Finland and product's market area in Finland. During the demolition phase C1, the entire final product is dismantled, using the mass of the final product as the input data. Demolition is assumed to consume 0,01 kWh/kg of product. The source of energy is diesel fuel used by construction machines (C1). It is assumed that 100% of the waste is collected and transported to the waste treatment centre. Transportation distance to treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2). 95% of steel is assumed to be recycled in Finland, according to co2data.fi (C3). It is assumed that the remaining 5% of steel is taken to landfill for final disposal (C4).

Module D covers the net benefits and loads arising from the reuse of product and packaging or the recycling or recovery of energy from end-of-waste state materials. Due to the recycling process, the end-of-life product is converted into recycled steel, while majority of the timber (97%), 12.46% of plastic packaging, and 4% of cardboard are incinerated with energy recovery (D). The remaining 3% of wood, 73.45 % of plastics, and 96% of cardboard are recycled (D), according to Statistic Finland.

MANUFACTURING PROCESS

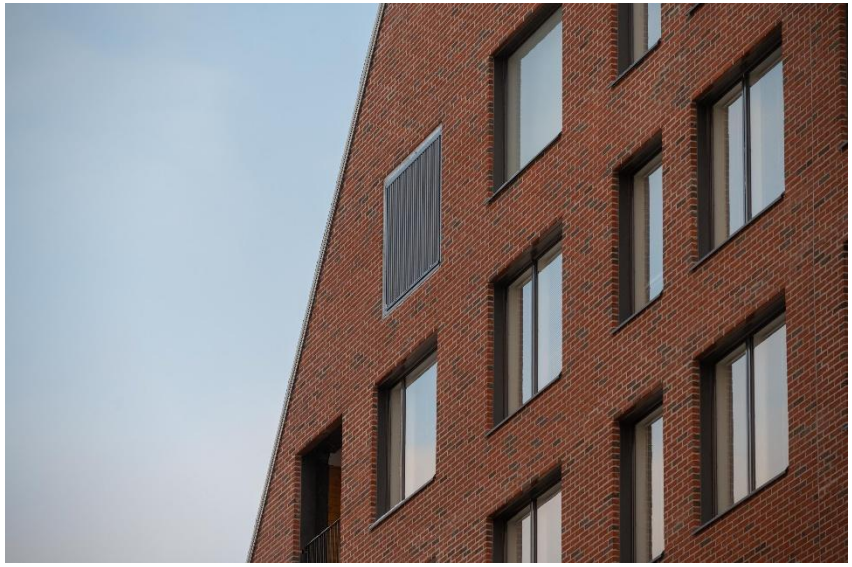


LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.



VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	3,4

This environmental product declaration covers Climecon Oy's snow and rain covers designed by Climecon and manufactured by Maarla in Viitasaari, Finland. The EPD contains six products:

- TUISKU-V, TUISKU-VU, and TUISKU-VS
- TUISKU-P, TUISKU-PU, and TUISKU-PS

All of the louvres have the same manufacturing materials, process and locations. The products are used in the same way regardless of the product size and type. The differences occur in the number of rivets used in the assembly and the amount of powder coating used in the finished product.

The emission density is the lowest in TUISKU-P in size 4000x2900x400 (2,26E+00/kg of product) and the highest in TUISKU-PU in size 600x600x300, with GWP-fossil A1-A3 of 2,34E+00/kg of product. The GWP-fossil variation in different product sizes is 3.4%.

An average weight extracted from all basic louvre modules was used as the reference product. EPD data can be scaled for different louvre sizes by multiplying EPD result table by the mass of product.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

Municipal waste by treatment method in Finland, 2018-2023, Statistics Finland, 2025.
Available at:
https://pxdata.stat.fi/PxWeb/pxweb/en/StatFin/StatFin__jate/statfin_jate_pxt_12cv.px/

Emissions database for construction, Finnish Environmental Institute, 2023.
Available at: https://co2data.fi/

la Eriksson and Göran Finnveden. Energy Recovery from Waste Incineration—TheImportance of Technology Data and SystemBoundaries on CO2Emissions. 2017.
Available at:
https://www.researchgate.net/publication/316088617_Energy_Recovery_from_Waste_Incineration-The_Importance_of_Technology_Data_and_System_Boundaries_on_CO2_Emissions

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	4,71E+00	2,11E-01	-3,03E-01	4,62E+00	4,05E-02	6,84E-01	MND	MND	MND	MND	MND	MND	MND	3,61E-03	5,39E-03	2,10E-02	5,06E-04	-1,91E+00
GWP – fossil	kg CO_2e	4,64E+00	2,11E-01	1,61E-01	5,01E+00	4,05E-02	7,23E-03	MND	MND	MND	MND	MND	MND	MND	3,60E-03	5,38E-03	2,10E-02	5,06E-04	-1,89E+00
GWP – biogenic	kg CO_2e	4,66E-02	4,24E-05	-4,64E-01	-4,17E-01	9,17E-06	6,77E-01	MND	MND	MND	MND	MND	MND	MND	3,68E-07	1,22E-06	-4,47E-05	-4,28E-07	-1,61E-02
GWP – LULUC	kg CO_2e	2,02E-02	9,63E-05	3,43E-04	2,07E-02	1,81E-05	2,10E-06	MND	MND	MND	MND	MND	MND	MND	3,69E-07	2,41E-06	2,60E-05	2,30E-07	-6,60E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	5,19E-08	3,16E-09	6,88E-08	1,24E-07	5,97E-10	9,75E-11	MND	MND	MND	MND	MND	MND	MND	5,52E-11	7,95E-11	2,83E-10	1,51E-11	-8,83E-09
Acidification potential	mol H^+e	4,52E-02	2,39E-03	8,41E-04	4,84E-02	1,38E-04	6,13E-05	MND	MND	MND	MND	MND	MND	MND	3,25E-05	1,84E-05	2,50E-04	4,38E-06	-8,29E-03
EP-freshwater[2)]	kg Pe	1,19E-03	1,33E-05	7,56E-03	8,76E-03	3,15E-06	1,25E-06	MND	MND	MND	MND	MND	MND	MND	1,04E-07	4,19E-07	1,35E-05	3,61E-07	-8,73E-04
EP-marine	kg Ne	4,66E-03	6,40E-04	2,92E-04	5,60E-03	4,53E-05	2,94E-05	MND	MND	MND	MND	MND	MND	MND	1,51E-05	6,03E-06	5,54E-05	1,38E-06	-1,68E-03
EP-terrestrial	mol Ne	1,50E-01	7,07E-03	2,98E-03	1,60E-01	4,93E-04	3,05E-04	MND	MND	MND	MND	MND	MND	MND	1,65E-04	6,56E-05	6,26E-04	1,49E-05	-1,81E-02
POCP ("smog")[3)]	kg NMVOCe	6,37E-02	2,16E-03	9,77E-04	6,69E-02	2,03E-04	8,64E-05	MND	MND	MND	MND	MND	MND	MND	4,93E-05	2,70E-05	1,86E-04	5,40E-06	-6,09E-03
ADP-minerals & metals[4)]	kg Sbe	1,19E-05	4,89E-07	2,18E-06	1,45E-05	1,13E-07	1,12E-08	MND	MND	MND	MND	MND	MND	MND	1,29E-09	1,50E-08	1,49E-06	8,79E-10	-1,56E-05
ADP-fossil resources	MJ	2,56E+01	2,91E+00	1,74E+01	4,59E+01	5,87E-01	8,38E-02	MND	MND	MND	MND	MND	MND	MND	4,72E-02	7,81E-02	2,82E-01	1,22E-02	-1,94E+01
Water use[5)]	m^3e depr.	7,50E-01	1,27E-02	1,76E-01	9,39E-01	2,90E-03	5,13E-03	MND	MND	MND	MND	MND	MND	MND	1,18E-04	3,86E-04	5,08E-03	4,98E-05	-3,60E-01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) 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 experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	3,21E-07	1,60E-08	4,17E-08	3,79E-07	4,05E-09	1,31E-09	MND	MND	MND	MND	MND	MND	MND	9,25E-10	5,39E-10	3,40E-09	8,29E-11	-1,21E-07
Ionizing radiation[6]	kBq U235e	3,05E-01	2,36E-03	2,48E-01	5,55E-01	5,12E-04	7,32E-05	MND	MND	MND	MND	MND	MND	MND	2,09E-05	6,80E-05	2,39E-03	1,09E-05	-3,77E-02
Ecotoxicity (freshwater)	CTUe	2,36E+01	3,63E-01	4,18E+00	2,82E+01	8,31E-02	2,15E-02	MND	MND	MND	MND	MND	MND	MND	2,60E-03	1,10E-02	1,65E-01	3,74E-03	-4,45E+00
Human toxicity, cancer	CTUh	8,05E-09	3,77E-11	1,61E-10	8,25E-09	6,68E-12	4,99E-12	MND	MND	MND	MND	MND	MND	MND	3,71E-13	8,88E-13	1,88E-11	1,43E-13	-3,15E-10
Human tox. non-cancer	CTUh	8,56E-08	1,55E-09	2,58E-09	8,98E-08	3,80E-10	3,11E-10	MND	MND	MND	MND	MND	MND	MND	5,87E-12	5,06E-11	1,28E-09	6,85E-12	-1,51E-08
SQP[7]	-	1,23E+02	2,09E+00	1,19E+01	1,37E+02	5,91E-01	2,45E-02	MND	MND	MND	MND	MND	MND	MND	3,30E-03	7,87E-02	5,50E-01	2,62E-02	-6,41E+00

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8]	MJ	3,58E+00	3,65E-02	4,09E+00	7,71E+00	8,05E-03	-2,60E+00	MND	MND	MND	MND	MND	MND	MND	2,99E-04	1,07E-03	5,26E-02	1,70E-04	-2,03E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	4,14E+00	4,14E+00	0,00E+00	-4,14E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-4,02E+00
Total use of renew. PER	MJ	3,58E+00	3,65E-02	8,23E+00	1,18E+01	8,05E-03	-6,74E+00	MND	MND	MND	MND	MND	MND	MND	2,99E-04	1,07E-03	5,26E-02	1,70E-04	-6,05E+00
Non-re. PER as energy	MJ	2,54E+01	2,91E+00	1,63E+01	4,46E+01	5,87E-01	7,55E-02	MND	MND	MND	MND	MND	MND	MND	4,72E-02	7,81E-02	2,82E-01	1,22E-02	-1,94E+01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	8,49E-03	8,49E-03	0,00E+00	-8,49E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-8,50E-04
Total use of non-re. PER	MJ	2,54E+01	2,91E+00	1,63E+01	4,46E+01	5,87E-01	6,70E-02	MND	MND	MND	MND	MND	MND	MND	4,72E-02	7,81E-02	2,82E-01	1,22E-02	-1,94E+01
Secondary materials	kg	9,78E-02	1,27E-03	1,18E-03	1,00E-01	2,50E-04	7,62E-05	MND	MND	MND	MND	MND	MND	MND	1,96E-05	3,32E-05	3,44E-04	3,44E-06	8,67E-01
Renew. secondary fuels	MJ	1,21E-03	1,23E-05	1,84E-05	1,24E-03	3,18E-06	2,83E-07	MND	MND	MND	MND	MND	MND	MND	5,12E-08	4,22E-07	1,60E-05	6,71E-08	-1,27E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	4,71E-02	3,66E-04	4,03E-03	5,15E-02	8,68E-05	3,60E-05	MND	MND	MND	MND	MND	MND	MND	3,12E-06	1,15E-05	1,50E-04	-4,85E-05	-7,37E-03

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,77E-01	4,52E-03	1,93E-02	3,01E-01	9,95E-04	1,06E-03	MND	MND	MND	MND	MND	MND	MND	5,25E-05	1,32E-04	1,85E-03	1,61E-05	-5,44E-01
Non-hazardous waste	kg	1,61E+01	8,06E-02	1,03E+00	1,72E+01	1,84E-02	1,57E-01	MND	MND	MND	MND	MND	MND	MND	7,15E-04	2,45E-03	6,67E-02	7,17E-02	-5,02E+00
Radioactive waste	kg	7,81E-05	5,79E-07	1,87E-04	2,66E-04	1,25E-07	1,81E-08	MND	MND	MND	MND	MND	MND	MND	5,12E-09	1,67E-08	6,13E-07	2,67E-09	-9,47E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	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	3,90E-03	3,90E-03	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	1,01E+00	1,01E+00	0,00E+00	6,15E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,31E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,51E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,93E+00	MND	MND	MND	MND	MND	MND	MND	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	0,00E+00	0,00E+00	0,00E+00	4,42E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,49E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	4,68E+00	2,10E-01	1,60E-01	5,05E+00	4,02E-02	7,18E-03	MND	MND	MND	MND	MND	MND	MND	3,59E-03	5,35E-03	2,10E-02	5,02E-04	-1,88E+00
Ozone depletion Pot.	kg $CFC_{-11}e$	4,75E-08	2,52E-09	1,12E-07	1,62E-07	4,77E-10	7,83E-11	MND	MND	MND	MND	MND	MND	MND	4,37E-11	6,34E-11	2,33E-10	1,20E-11	-8,79E-09
Acidification	kg SO_2e	3,01E-02	1,89E-03	5,82E-04	3,26E-02	1,05E-04	4,33E-05	MND	MND	MND	MND	MND	MND	MND	2,29E-05	1,40E-05	2,01E-04	3,38E-06	-6,77E-03
Eutrophication	kg PO_4^3e	7,02E-03	2,61E-04	2,37E-04	7,52E-03	2,57E-05	1,27E-05	MND	MND	MND	MND	MND	MND	MND	5,34E-06	3,41E-06	2,92E-05	9,81E-07	-1,09E-03
POCP (“smog”)	kg C_2H_4e	2,22E-03	1,09E-04	6,17E-05	2,39E-03	9,39E-06	3,35E-06	MND	MND	MND	MND	MND	MND	MND	1,71E-06	1,25E-06	1,19E-05	2,67E-07	-8,88E-04
ADP-elements	kg Sbe	1,15E-05	4,78E-07	2,10E-06	1,41E-05	1,10E-07	1,03E-08	MND	MND	MND	MND	MND	MND	MND	1,26E-09	1,46E-08	1,49E-06	8,58E-10	-1,56E-05
ADP-fossil	MJ	2,03E+01	2,87E+00	1,67E+01	3,99E+01	5,79E-01	8,26E-02	MND	MND	MND	MND	MND	MND	MND	4,68E-02	7,70E-02	2,41E-01	1,20E-02	-1,88E+01

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	4,66E+00	2,11E-01	1,61E-01	5,03E+00	4,05E-02	7,23E-03	MND	MND	MND	MND	MND	MND	MND	3,61E-03	5,38E-03	2,11E-02	5,06E-04	-1,89E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Nuclear power; world; LCA inventory for nuclear energy (OneClickLCA 2023)
Electricity CO2e / kWh	0,011
District heating data source and quality	Heat production, softwood chips from forest, at furnace 1000kW (Reference product: heat, district or industrial, other than natural gas); world; Ecoinvent 3.10.1 Heat production, softwood chips from forest, at furnace 1000kW (Reference product: heat, district or industrial, other than natural gas); world; Ecoinvent 3.10.1
District heating CO2e / kWh	0,0127

Transport scenario documentation A4

Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	Market for transport, freight, lorry >32 metric ton, EURO5
Average transport distance, km	325
Capacity utilization (including empty return) %	100
Bulk density of transported products	34,3
Volume capacity utilization factor	1

Installation scenario documentation A5

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	-
Water use / m³	-
Other resource use / kg	-
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	0,01
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	0,1567
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	0,1567
Direct emissions to ambient air, soil and water / kg	-

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	1,1569
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	0,93715
Recovery process – kg for energy recovery	0,15062
Disposal (total) – kg for final deposition	0,069101
Scenario assumptions e.g. transportation	End-of-life product is transported 50 km with an average lorry

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

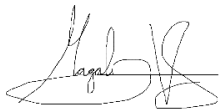
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
11.07.2025



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