



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Lammin MSE-A
Lammin Ikkuna Oy



EPD HUB, HUB-7508

Published on 11.09.2026, last updated on 11.09.2026, valid until 10.09.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Lammin Ikkuna Oy
Address	Paarmamäentie 2, 16900, Lammi, Finland
Contact details	myynti@lammin.fi
Website	www.lammin.fi and www.ikkunastudio.fi

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 1.2, 24 Mar 2025 EN 17213 Windows and doors
Sector	Construction 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	Samuel Kananen, Lammin ikkuna Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Elena Antuña-Bernardo as an authorized verifier for EPD Hub

This EPD is intended for business-to-business 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	Lammin MSE-A
Additional labels	-
Product reference	-
Place(s) of raw material origin	Finland / EU
Place of production	Lammi, Finland
Place(s) of installation and use	Finland
Period for data	Calendar year 2025
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	87,2

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m2 of MSE-A window
Declared unit mass	40,66 kg
Mass of packaging	2,464 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	73,3
GWP-total, A1-A3 (kgCO ₂ e)	52,8
Secondary material, inputs (%)	1,55
Total energy use, A1-A3 (kWh)	500
Net freshwater use, A1-A3 (m ³)	3,43

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Lammin Ikkuna Oy is a Finnish manufacturer of made-to-order windows and doors for residential and non-residential buildings, serving both new construction and renovation projects. The company has roots dating back to 1969, and window and door production has been based in Lammi, Finland, since 1972.

Lammin Ikkuna holds the Avainlippu symbol for Finnish manufacturing, employs approximately 80 people and has an annual turnover of about EUR 15 million.

PRODUCT DESCRIPTION

The studied product is the Lammin MSE-A, a standard inward-opening, double-sash wood-aluminium window manufactured by Lammin Ikkuna Oy. It is designed for use in both residential and non-residential buildings, in both new construction and renovation projects. The reference window size is 1230 x 1480mm with a frame depth of 175mm, representing a typical configuration used for performance and environmental assessments. The inner sash is equipped with a double-pane insulating glass unit (IGU), while the outer sash contains a single glass pane. The external cladding is made from recycled aluminium, helping to reduce the consumption of primary raw materials. The product is manufactured in accordance with the harmonized product standard EN 14351-1. Reference Service Life (RSL) is not specified because use phase has not been declared as per EN 17213 scope requirements.

Further information can be found at:
www.lammin.fi and www.ikkunastudio.fi

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	8	EU
Minerals	62	EU
Fossil materials	4	EU
Bio-based materials	26	Finland

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	4,710
Biogenic carbon content in packaging, kg C	0,971

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m ² of MSE-A window
Mass per declared unit	40,66 kg
Functional unit	-
Reference service life	-

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	ND	ND	ND	ND	ND	ND	ND	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

Not declared = ND

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 product stage environmental impacts include raw materials, packaging and ancillary materials, as well as electricity and fuel consumption, production waste management, and manufacturing material losses, including electricity transmission losses.

The product consists of timber, aluminium, insulating glass units, gaskets and hardware. The materials are transported from different suppliers to Lammin Ikkuna Oy's production facility in Lammi, Finland, using supplier-specific actual distances, mainly by lorry (>32 t, EURO 5). Most materials are sourced within Finland, with road transport distances of approximately 80–400 km; some materials are sourced from abroad, with road and sea transport included.

At the factory, timber components are machined and surface-treated and aluminium profiles are cut and processed before window assembly. Insulating glass units, float glass, gaskets and hardware are installed, after which the finished products are palletised and wrapped for transport. Production losses from the machining of timber and aluminium profiles, paint changeovers and equipment washing, and PVC offcuts are included, based on measured production waste data; glass units and hardware are supplied ready to specification and generate no losses.

The factory's electricity is renewable energy (54% wind, 35% hydro, 11% solar from the factory's own rooftop PV). Heat is produced on site in a hybrid boiler fuelled primarily by production wood waste, with light fuel oil as supplementary fuel. Packaging consists of wooden pallets and LDPE wrapping film; ancillary materials comprise water and lubricating oil. Wood waste is incinerated 100% on site for heat production (no off-site waste transport), waste paint is sent to hazardous waste incineration with energy recovery (70 km), aluminium machining scrap to recycling (50 km) and PVC

offcuts to municipal incineration (50 km), based on 2025 operational data. All energy use, internal logistics and ancillary materials related to manufacturing, surface treatment and assembly are included in the product stage.

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.

Transportation to the construction site (A4) includes fuel combustion emissions, emissions from fuel production and related infrastructure impacts.

The average transport distance from the production plant to the construction site is assumed to be 125 km. Transport is modelled as freight transport by lorry. Empty return trips are excluded, as return journeys are assumed to be used for other deliveries. No transport or installation losses are assumed, as the products are made to order for the installation site and are properly packaged.

Energy consumption in module A5 is excluded, as the installation uses only handheld electric tools and the related energy use and environmental impacts are considered very small. According to the Eurostat scenario, packaging waste is partly incinerated, partly recycled and partly landfilled, and a distance of 50 km to waste treatment facilities is assumed.

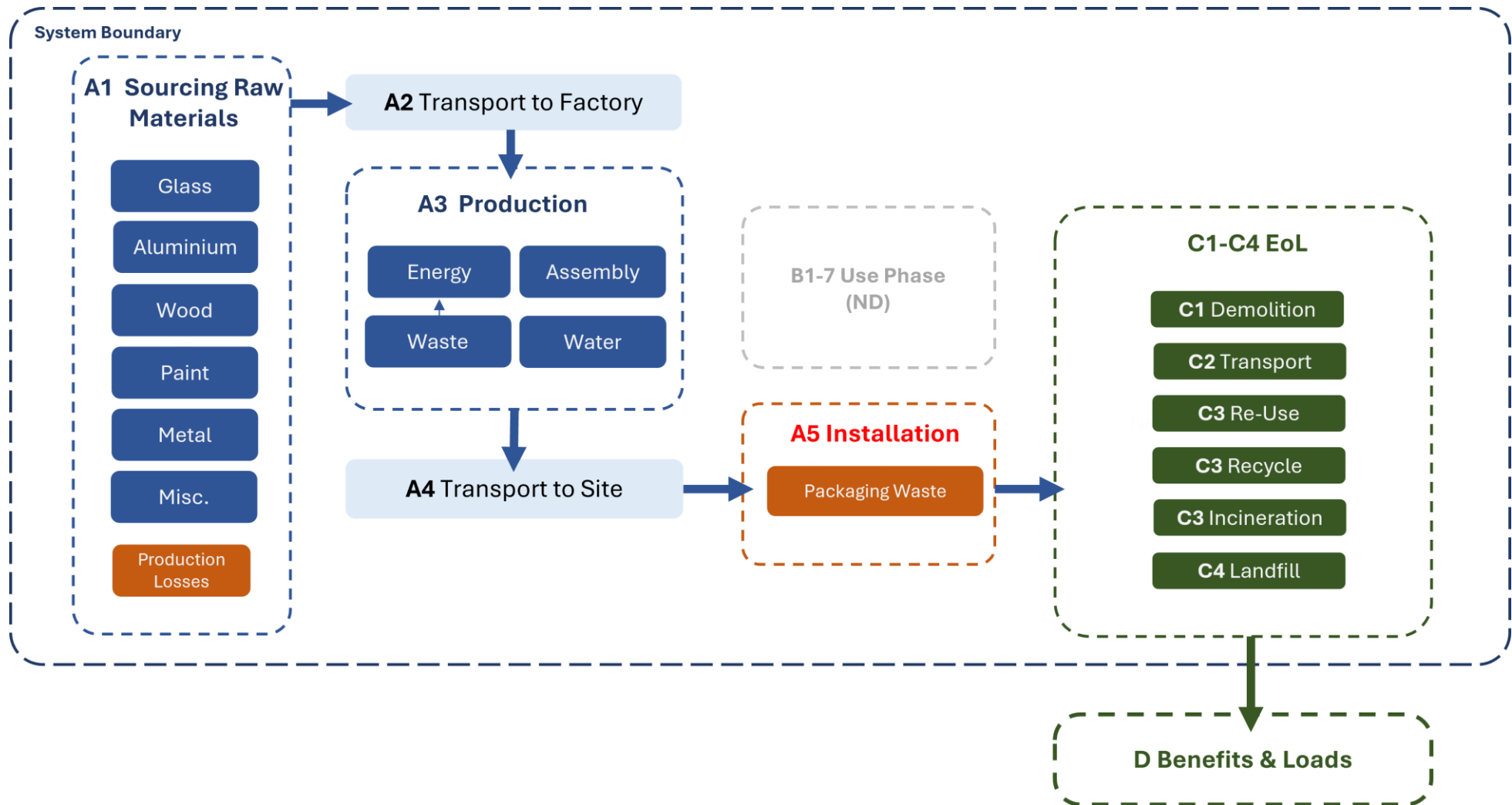
PRODUCT END OF LIFE (C1-C4, D)

End of life (C1–C4). Windows are dismantled mainly with hand-held tools; demolition energy is assumed conservatively at 0.01 kWh per kg of product, i.e. 0.41 kWh per declared unit (Bozdağ & Seçer, 2007) (C1). The dismantled product is transported 50 km by lorry to waste processing (C2). End-of-life waste treatment follows the scenarios of SFS-EN 17213: 30% of glass is recycled and 70% landfilled, while 95% of other materials is directed to recycling or energy recovery and 5% to landfill; wood and plastics are incinerated with energy recovery (C3–C4).

Module D declares the benefits and loads arising from the net output flows leaving the system at the end of life, following SFS-EN 17213. For glass and steel, the recycling process is accounted as a load due to the energy consumption associated with it, and the benefit is the avoided production of virgin glass and steel, as recycled glass and steel can be used as raw materials in other products. For wood and plastics, the benefit arises from the energy recovered in incineration, substituting average electricity and heat production, with the combustion process accounted as the corresponding load. The same applies to the benefits and loads of wood and plastic packaging, as they are partly incinerated with energy recovery and partly recycled.

No benefit is claimed for aluminium: since the aluminium used in the product is already recycled, the net output flow is set to zero to avoid double counting between recycled content and end-of-life recycling. The recycling benefit for steel is reduced by its secondary material content. Landfilled portions are not included in module D; their loads are declared in module C4.

LIFE CYCLE FLOW DIAGRAM



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.

A5 installation energy use is excluded, as installation uses only handheld electric tools and the related energy consumption and environmental impacts are considered negligible

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	Physical Properties
Ancillary materials	Physical Properties
Manufacturing energy and waste	Physical Properties

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	-

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.5. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519174/default/table?lang=en

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c-PCR SFS-EN 17213

Parisi et al. table 12: <https://pmc.ncbi.nlm.nih.gov/articles/PMC7160568/>

[https://stat.fi/fi/tilastot/tietoa-](https://stat.fi/fi/tilastot/tietoa-teemoittain/kasvihuonekaasuinventario/polttoaineluokitus)

[teemoittain/kasvihuonekaasuinventario/polttoaineluokitus](https://stat.fi/fi/tilastot/tietoa-teemoittain/kasvihuonekaasuinventario/polttoaineluokitus)

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, EF 3.1

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 ₂ e	3,62E+01	1,64E+00	1,50E+01	5,28E+01	5,70E-01	3,79E+00	ND	ND	ND	ND	ND	ND	ND	1,47E-01	3,83E-01	1,92E+01	4,80E+00	-5,73E+00
GWP – fossil	kg CO ₂ e	6,31E+01	1,64E+00	8,49E+00	7,33E+01	5,69E-01	2,21E-01	ND	ND	ND	ND	ND	ND	ND	1,42E-01	3,83E-01	1,93E+00	3,89E+00	-4,78E+00
GWP – biogenic	kg CO ₂ e	-2,74E+01	5,77E-04	6,52E+00	-2,09E+01	2,95E-04	3,57E+00	ND	ND	ND	ND	ND	ND	ND	4,29E-03	1,79E-04	1,73E+01	9,10E-01	-9,47E-01
GWP – LULUC	kg CO ₂ e	4,59E-01	6,32E-04	5,93E-03	4,66E-01	2,00E-04	1,28E-04	ND	ND	ND	ND	ND	ND	ND	3,93E-04	1,27E-04	1,64E-04	2,82E-04	-5,17E-03
Ozone depletion pot.	kg CFC-11e	6,36E-06	3,23E-08	1,90E-07	6,58E-06	1,29E-08	1,34E-09	ND	ND	ND	ND	ND	ND	ND	2,63E-09	8,38E-09	4,73E-09	2,38E-08	-6,92E-08
Acidification potential	mol H ⁺ e	3,83E-01	6,09E-03	4,60E-02	4,35E-01	1,84E-03	4,80E-04	ND	ND	ND	ND	ND	ND	ND	7,98E-04	1,22E-03	2,91E-03	4,08E-03	-3,67E-02
EP-freshwater ²⁾	kg Pe	1,55E-02	1,36E-04	1,39E-03	1,71E-02	4,05E-05	2,37E-05	ND	ND	ND	ND	ND	ND	ND	1,40E-04	2,63E-05	1,62E-04	6,20E-05	-2,95E-03
EP-marine	kg Ne	8,85E-02	2,15E-03	1,65E-02	1,07E-01	6,48E-04	4,91E-04	ND	ND	ND	ND	ND	ND	ND	1,29E-04	4,15E-04	1,38E-03	1,24E-03	-8,28E-03
EP-terrestrial	mol Ne	9,13E-01	2,34E-02	1,71E-01	1,11E+00	7,03E-03	1,96E-03	ND	ND	ND	ND	ND	ND	ND	1,14E-03	4,51E-03	1,26E-02	1,08E-02	-9,90E-02
POCP (“smog”) ³⁾	kg NMVOCe	2,69E-01	9,34E-03	1,97E-01	4,75E-01	3,04E-03	6,39E-04	ND	ND	ND	ND	ND	ND	ND	3,56E-04	1,87E-03	3,38E-03	5,04E-03	-2,27E-02
ADP-minerals & metals ⁴⁾	kg Sbe	1,74E-03	4,65E-06	5,03E-05	1,79E-03	1,65E-06	2,50E-07	ND	ND	ND	ND	ND	ND	ND	1,89E-06	1,32E-06	2,55E-06	1,76E-06	-4,07E-05
ADP-fossil resources	MJ	9,78E+02	2,36E+01	1,13E+02	1,11E+03	8,28E+00	1,19E+00	ND	ND	ND	ND	ND	ND	ND	3,00E+00	5,42E+00	3,68E+00	2,10E+01	-6,00E+01
Water use ⁵⁾	m ³ e depr.	3,96E+03	1,35E-01	2,54E+00	3,96E+03	4,78E-02	4,43E-02	ND	ND	ND	ND	ND	ND	ND	8,05E-02	2,83E-02	4,88E-01	2,54E-01	-2,56E+00

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, EF 3.1

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	1,89E-06	1,60E-07	6,73E-07	2,72E-06	5,76E-08	9,64E-09	ND	ND	ND	ND	ND	ND	ND	2,88E-09	3,07E-08	3,40E-08	6,24E-08	-3,96E-07
Ionizing radiation ⁶⁾	kBq 11235e	1,56E+00	2,31E-02	2,67E-01	1,85E+00	8,91E-03	3,05E-03	ND	ND	ND	ND	ND	ND	ND	7,74E-02	6,37E-03	1,72E-02	9,96E-03	-1,35E+00
Ecotoxicity (freshwater)	CTUe	6,51E+02	3,74E+00	6,90E+01	7,24E+02	1,12E+00	2,14E+00	ND	ND	ND	ND	ND	ND	ND	4,89E-01	3,54E+00	4,90E+01	1,29E+03	1,65E+02
Human toxicity, cancer	CTUh	6,99E-08	2,59E-10	1,13E-08	8,15E-08	9,00E-11	5,40E-11	ND	ND	ND	ND	ND	ND	ND	4,16E-11	6,46E-11	4,93E-10	7,02E-09	-7,57E-11
Human tox. non-cancer	CTUh	2,32E-06	1,45E-08	1,10E-07	2,44E-06	5,16E-09	2,38E-09	ND	ND	ND	ND	ND	ND	ND	2,28E-09	3,37E-09	2,72E-08	1,25E-08	2,62E-09
SQP ⁷⁾	-	3,18E+03	2,32E+01	3,55E+02	3,55E+03	8,37E+00	1,14E+00	ND	ND	ND	ND	ND	ND	ND	6,45E-01	3,24E+00	5,26E+00	1,18E+01	-8,44E+01

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	4,94E+02	3,49E-01	1,96E+02	6,91E+02	1,29E-01	-3,45E+01	ND	ND	ND	ND	ND	ND	ND	8,67E-01	8,83E-02	-1,66E+02	-8,61E+00	-2,47E+01
Renew. PER as material	MJ	2,43E+02	0,00E+00	-4,48E+01	1,98E+02	0,00E+00	-3,55E+01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,55E+02	-8,14E+00	9,42E+00
Total use of renew. PER	MJ	7,37E+02	3,49E-01	1,52E+02	8,89E+02	1,29E-01	-7,01E+01	ND	ND	ND	ND	ND	ND	ND	8,67E-01	8,83E-02	-3,21E+02	-1,68E+01	-1,53E+01
Non-re. PER as energy	MJ	9,02E+02	2,36E+01	1,02E+02	1,03E+03	8,28E+00	-3,50E+00	ND	ND	ND	ND	ND	ND	ND	3,00E+00	5,42E+00	-2,16E+01	-1,22E+00	-6,00E+01
Non-re. PER as material	MJ	1,40E+01	0,00E+00	6,94E+00	2,09E+01	0,00E+00	-7,27E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,30E+01	-6,84E-01	2,60E+00
Total use of non-re. PER	MJ	9,16E+02	2,36E+01	1,09E+02	1,05E+03	8,28E+00	-1,08E+01	ND	ND	ND	ND	ND	ND	ND	3,00E+00	5,42E+00	-3,45E+01	-1,91E+00	-5,74E+01
Secondary materials	kg	6,30E-01	9,95E-03	1,97E-01	8,37E-01	3,51E-03	9,21E-04	ND	ND	ND	ND	ND	ND	ND	5,23E-04	2,42E-03	4,98E-03	8,15E-03	6,74E+00
Renew. secondary fuels	MJ	1,73E-01	1,28E-04	8,32E+01	8,33E+01	4,64E-05	9,36E-06	ND	ND	ND	ND	ND	ND	ND	5,12E-06	3,18E-05	9,81E-05	4,07E-05	5,90E-02
Non-ren. secondary fuels	MJ	6,24E-02	0,00E+00	0,00E+00	6,24E-02	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	3,38E+00	3,16E-03	5,18E-02	3,43E+00	1,10E-03	-3,06E-03	ND	ND	ND	ND	ND	ND	ND	1,87E-03	6,54E-04	-3,99E-03	-6,61E-02	-5,53E-02

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	1,46E+01	1,38E-01	1,71E+00	1,64E+01	4,68E-02	8,93E-03	ND	ND	ND	ND	ND	ND	ND	5,43E-02	1,43E-02	9,73E-02	4,99E-02	-3,80E-01
Non-hazardous waste	kg	4,61E+01	2,79E+00	6,47E+01	1,14E+02	9,72E-01	3,28E+00	ND	ND	ND	ND	ND	ND	ND	7,00E-01	2,36E-01	2,10E+01	5,00E+01	-1,09E+01
Radioactive waste	kg	9,22E-03	5,55E-06	6,66E-05	9,29E-03	2,15E-06	7,59E-07	ND	ND	ND	ND	ND	ND	ND	1,96E-05	1,56E-06	4,38E-06	2,44E-06	-3,49E-04

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	1,14E-05	0,00E+00	0,00E+00	1,14E-05	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	4,89E+00	0,00E+00	1,40E-01	5,03E+00	0,00E+00	7,97E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,07E+01	0,00E+00	0,00E+00
Materials for energy rec	kg	5,76E-02	0,00E+00	3,05E-01	3,63E-01	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,05E+01	1,01E+00	0,00E+00
Exported energy	MJ	2,01E+00	0,00E+00	0,00E+00	2,01E+00	0,00E+00	4,43E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	6,05E+01	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	1,86E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,55E+01	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	2,56E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	3,50E+01	0,00E+00	0,00E+00

ADDITIONAL INDICATOR – GWP-GHG

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 ₂ e	6,36E+01	1,64E+00	8,49E+00	7,37E+01	5,69E-01	2,21E-01	ND	ND	ND	ND	ND	ND	ND	1,42E-01	3,83E-01	1,94E+00	3,89E+00	-4,78E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO₂ is set to zero

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Heat production, light fuel oil, at industrial furnace 1MW, europeWithoutSwitzerland, Ecoinvent, 0.10 kgCO₂e/MJ
2. Heat production, wood chips from industry, at furnace 1000kW, state-of-the-art 2014, World, Ecoinvent, 0.0295 kgCO₂e/MJ
3. Secondary Fuels: Waste wood, World, Ecoinvent
4. Market for wood chips, wet, measured as dry mass, Albania, Ecoinvent, -1.768717 kgCO₂e/kg
5. Diesel, burned in building machine, World, Ecoinvent, 0.10 kgCO₂e/MJ
6. Electricity production, photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted, Finland, Ecoinvent, 0.12 kgCO₂e/kWh
7. Electricity production, hydro, run-of-river, Finland, Ecoinvent, 0.0044 kgCO₂e/kWh
8. Electricity production, wind, 1-3MW turbine, onshore, Finland, Ecoinvent, 0.0190 kgCO₂e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry, >32 metric ton, diesel, EURO 5, 125.0 km

Transport to the building site (A4) - Scenario documentation

Scenario parameter	Value
Capacity utilization (including empty return) %	50
Bulk density of transported products	135
Volume capacity utilization factor	<1

Installation at the building site (A5) - Scenario documentation

Scenario parameter	Value
Energy: type and consumption (MJ or kWh)	
Water use (m ³)	
Ancillary materials: type and mass (kg)	
Waste materials: type and mass (kg)	2.348 kg wooden packaging, 0.116 kg plastic wrap
Waste materials: output routes	Eurostat scenario: Wooden packaging: 0.749 kg recycling, 0.702 incineration, 0,89 kg landfill. Plastic packaging: 0,043 kg incineration, 0,046 kg recycled, 0.027 kg landfill.
Direct emissions (kg)	

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	40,66 kg
Collection process: Mixed waste (kg)	-
Recovery: re-use (kg)	0
Recovery: recycling (kg)	10,7
Recovery: energy recovery (kg)	11,6
Disposal (kg)	18,4
Scenario assumptions e.g. transportation (mode, km) & other	By lorry: Incineration 50 km, landfill 50 km, recycling 50km

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

Elena Antuña-Bernardo as an authorized verifier for EPD Hub Limited
11.09.2026



