

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

MSE1-A (2025)
Pihla Group Oy



EPD HUB, HUB-4662
Published on 23.01.2026, last updated on 23.01.2026, valid until 22.01.2031

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	Pihla Group Oy
Address	Äyritie 16, 01510 Vantaa Finland
Contact details	info@pihla.fi
Website	www.pihlapro.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	Timo Nissinen Pihla Group Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Elma Avdyli, 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	MSE1-A (2025)
Additional labels	PihlaPro MSE1-A, Pihla Varma, Tiivi MSE1-A
Product reference	-
Place(s) of raw material origin	Finland
Place of production	Teollisuustie 2, 69150 Eskola Finland
Place(s) of installation and use	Finland
Period for data	2024
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 (%)	52

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m2 of window
Declared unit mass	41.9 kg
Mass of packaging	kg
GWP-fossil, A1-A3 ($kgCO_2e$)	63.2
GWP-total, A1-A3 ($kgCO_2e$)	35.5
Secondary material, inputs (%)	1.02
Secondary material, outputs (%)	57.5
Total energy use, A1-A3 (kWh)	401
Net freshwater use, A1-A3 (m^3)	1.2

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Pihla Group Oy is a domestic window and door operator whose goal is to improve peoples quality of life with windows and doors. We develop and manufacture Finland´s best window and door solutions for consumers, housing associations and construction industry customer´s as well under the Pihla, PihlaPRO, Tiivi, Profin, Klas1, Sydänpuu, Metallityö Välimäki and Puuseppien brands. Our wide range of brands serves all our customers, from renovation and new projects to the most architecturally challenging projects and various public and administrative buildings. Pihla Group have ten production facilities located in Ruovesi, Kannus, Haapajärvi, Pudasjärvi, Kuusamo, Joutsa, Nokia, Hyvinkää, Ylöjärvi and Joensuu. Group employ approximately 800 employees in Finland. Turnover in 2024 was 145 million euros, and during that year group manufactured approximately 250,000 window units and 46,000 doors, and did up to 8,000 window and door renovations. Pihla Group Oy is part of Inwido AB, which is Europe´s largest window and door manufacturer.

PRODUCT DESCRIPTION

Pihla MSE1-A (2025) is a dependable and versatile standard window solution, suitable for a wide range of building types. This inward-opening, double-sash window features a wood-aluminium construction and triple glazing for enhanced performance. The studied product is based on a window size of 1.23 x 1.48 meters with a frame depth of 170 mm. The inner sash is equipped with a double-glazed insulating glass unit, while the aluminium-clad outer sash contains a single-pane glass. As standard, the outer sash utilizes low-carbon glass, supporting sustainable building practices.

Further information can be found at:
www.pihlapro.fi

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	7.4	EU
Minerals	57.7	EU
Fossil materials	2.9	EU
Bio-based materials	32	EU

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	6.09
Biogenic carbon content in packaging, kg C	1.57

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m2 of window
Mass per declared unit	41.9 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	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 product is made of a mixture of primary and secondary metals, the inner sash has double insulating glass unit and the outer sash has single glass. The product also contains some plastic material. The materials are transported to Pihla Group production facility, where the main manufacturing processes include cutting of wood and aluminum parts, surface treatment, glazing and assembly. Finished products are packed on wooden pallets, supported with wooden slats, and the package is protected with plastic film to ensure better weather resistance. The manufacturing process requires electricity and fuels for the different equipment as well as heating. Certain ancillary materials are also included.
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.

According to sales data, the average transport distance from the factory to the construction site was 429 km. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly.

There is no material loss during installation, because the products are always ready-made with special dimensions for each need. Energy consumption for installation with manual tools according to the installation instructions has been ignored, as it is assumed to be very low. No ancillary material is required. This module also considers environmental impacts from

installation process are due to generation of waste packaging materials (A5). This study assumed the loads of preprocessing of packaging waste, namely wooden pallet chipped to be used as secondary fuel and PE sorted for recycling.

PRODUCT USE AND MAINTENANCE (B1-B7)

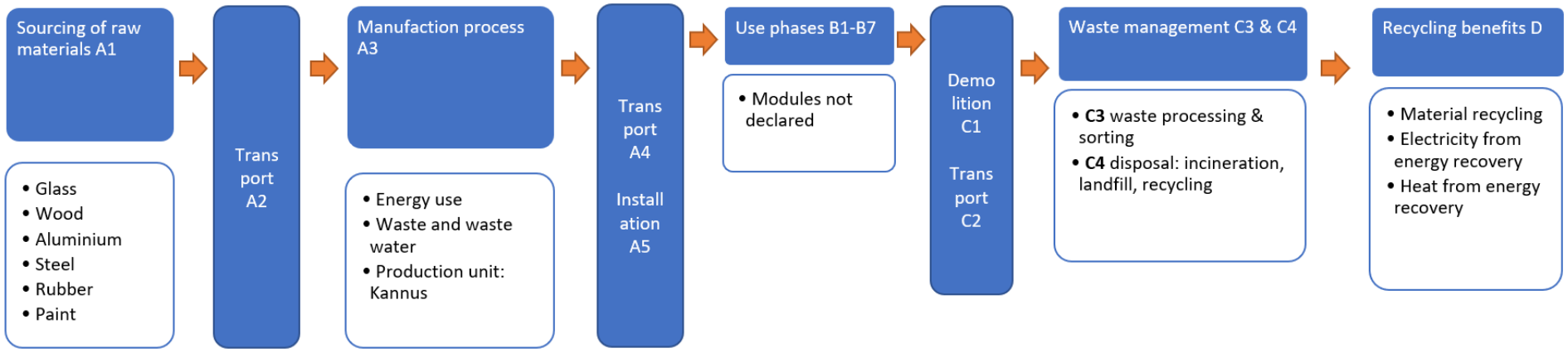
This EPD does not cover the use phase and its effects have not been studied. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. Conservative EoL scenario for Timber door/window from Annex B of EN 17213 has been used. It is assumed that the waste is collected as mixed construction waste and transported to the waste treatment center. Transportation distance to treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2). Module C3 accounts for energy and resource inputs for sorting and treating these waste streams for recycling and incineration with energy recovery. According to the EoL scenario, 33% ends up being burned for energy and 24% for recycling, the rest for landfill.

MANUFACTURING PROCESS

MANUFACTURING PROCESS AND SYSTEM BOUNDARY



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.

The modeling is done with an accurate BOM listing. The materials of the steel parts are all assumed to be the same, although the quantity is very small. In EOL some of the plastics are combined.

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	Allocated by mass or volume
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

The largest contributions to the GWP fossil indicator (kg CO_2-eq.) come from:
A1 Raw material extraction and processing -58%, A3 Manufacturing -4% and A4 Transport to the building site -2% of total impact. End-of-life impacts are minor, and recycling benefits are accounted for in Module D.

PRODUCT & MANUFACTURING SITES GROUPING

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

There is no average result considered in this study since this EPD refers to one specific product produced in one production plant.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD System Verification v3.2.3. 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 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2‘.

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_2e	2.77E+01	1.21E+00	6.58E+00	3.55E+01	2.08E+00	6.05E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.26E-01	2.49E+01	6.88E-02	9.02E+00
GWP – fossil	kg CO_2e	5.79E+01	1.21E+00	4.12E+00	6.32E+01	2.08E+00	4.94E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.25E-01	2.75E+00	2.04E-01	9.43E+00
GWP – biogenic	kg CO_2e	-3.04E+01	0.00E+00	2.42E+00	-2.80E+01	0.00E+00	6.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	2.21E+01	-1.35E-01	-1.51E-05
GWP – LULUC	kg CO_2e	1.95E-01	5.35E-04	4.21E-02	2.38E-01	7.83E-04	8.26E-05	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.01E-04	1.19E-03	1.29E-04	-4.08E-01
Ozone depletion pot.	kg CFC_{-11}e	5.29E-06	1.82E-08	7.40E-08	5.38E-06	4.19E-08	6.93E-10	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.33E-09	3.31E-08	5.15E-09	-1.78E-07
Acidification potential	mol H^+e	2.97E-01	4.10E-03	3.52E-02	3.37E-01	6.72E-03	1.95E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.69E-04	6.40E-03	1.40E-03	3.71E-02
EP-freshwater[2)]	kg Pe	5.25E-03	9.32E-05	1.14E-03	6.49E-03	1.41E-04	2.26E-05	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.76E-05	4.24E-04	2.51E-05	-3.38E-03
EP-marine	kg Ne	6.61E-02	1.35E-03	1.42E-02	8.17E-02	2.28E-03	4.91E-05	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.53E-04	1.19E-03	8.05E-04	6.97E-03
EP-terrestrial	mol Ne	5.50E-01	1.47E-02	1.50E-01	7.14E-01	2.49E-02	4.51E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.75E-03	1.25E-02	5.80E-03	5.54E-02
POCP ("smog")[3)]	kg NMVOCe	1.86E-01	6.09E-03	4.91E-02	2.41E-01	1.10E-02	1.67E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.13E-03	5.02E-03	2.02E-03	1.39E-02
ADP-minerals & metals[4)]	kg Sbe	6.07E-04	3.37E-06	2.31E-05	6.33E-04	5.75E-06	1.35E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	6.29E-07	2.09E-05	4.53E-07	2.46E-04
ADP-fossil resources	MJ	7.58E+02	1.75E+01	1.86E+02	9.62E+02	3.02E+01	8.38E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.27E+00	2.18E+01	4.41E+00	-2.99E+01
Water use[5)]	m^3e depr.	5.78E+06	8.68E-02	2.94E+00	5.78E+06	1.55E-01	1.65E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.62E-02	2.77E-01	2.11E-02	-3.04E+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, 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	1.64E-06	1.21E-07	2.27E-06	4.03E-06	2.07E-07	2.59E-09	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.26E-08	9.18E-08	3.21E-08	1.81E-06
Ionizing radiation[6)]	kBq U235e	2.21E+00	1.56E-02	7.18E+00	9.41E+00	3.64E-02	1.53E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.85E-03	1.14E-01	3.99E-03	-3.74E+00
Ecotoxicity (freshwater)	CTUe	1.16E+03	2.45E+00	1.43E+01	1.18E+03	3.56E+00	1.22E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.63E-01	2.55E+01	2.04E+00	1.08E+02
Human toxicity, cancer	CTUh	4.10E-08	1.99E-10	7.63E-09	4.89E-08	3.43E-10	1.24E-11	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.72E-11	1.32E-09	5.10E-11	-2.75E-08
Human tox. non-cancer	CTUh	2.48E-06	1.13E-08	5.99E-08	2.55E-06	1.96E-08	4.53E-10	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.12E-09	2.24E-08	1.30E-09	-6.68E-08
SQP[7)]	-	2.01E+02	1.76E+01	7.44E+02	9.63E+02	3.04E+01	4.10E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.30E+00	8.00E+00	1.03E+01	-6.06E+02

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	2.28E+02	2.43E-01	1.27E+02	3.55E+02	4.92E-01	1.31E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.48E-02	1.45E+00	-1.13E+01	-4.59E+02
Renew. PER as material	MJ	4.02E+02	0.00E+00	-3.53E+01	3.67E+02	0.00E+00	-5.25E+01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-3.09E+02	-5.51E+00	0.00E+00
Total use of renew. PER	MJ	6.30E+02	2.43E-01	9.15E+01	7.22E+02	4.92E-01	-5.24E+01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.48E-02	-3.08E+02	-1.68E+01	-4.59E+02
Non-re. PER as energy	MJ	8.89E+02	1.75E+01	1.81E+02	1.09E+03	3.02E+01	-8.60E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.27E+00	6.65E+00	2.43E+00	-6.12E+01
Non-re. PER as material	MJ	8.21E+01	0.00E+00	-9.48E-01	8.11E+01	0.00E+00	-5.16E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-7.02E+01	-5.77E+00	0.00E+00
Total use of non-re. PER	MJ	9.71E+02	1.75E+01	1.80E+02	1.17E+03	3.02E+01	-6.02E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.27E+00	-6.36E+01	-3.35E+00	-6.12E+01
Secondary materials	kg	4.26E-01	7.47E-03	2.29E-01	6.63E-01	1.31E-02	4.86E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.39E-03	2.78E-02	2.34E-03	8.66E-01
Renew. secondary fuels	MJ	4.53E-02	9.48E-05	1.77E+00	1.82E+00	1.65E-04	2.92E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.77E-05	1.35E-04	3.10E-05	3.76E-03
Non-ren. secondary fuels	MJ	9.34E-02	0.00E+00	0.00E+00	9.34E-02	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	1.14E+00	2.59E-03	6.40E-02	1.20E+00	4.46E-03	5.05E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.84E-04	4.72E-03	-6.53E-02	-6.27E-01

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	4.61E+00	2.94E-02	2.47E-01	4.88E+00	4.37E-02	2.51E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.54E-03	6.37E-01	8.04E-03	-1.42E+00
Non-hazardous waste	kg	5.16E+01	5.47E-01	7.38E+00	5.95E+01	8.75E-01	1.25E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.03E-01	7.34E+00	8.80E+01	4.16E+00
Radioactive waste	kg	3.66E-03	3.83E-06	1.71E-03	5.38E-03	9.00E-06	3.92E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	6.98E-07	2.91E-05	9.77E-07	-1.00E-03

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	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
Materials for recycling	kg	8.29E-02	0.00E+00	0.00E+00	8.29E-02	0.00E+00	4.00E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.02E+01	0.00E+00	0.00E+00
Materials for energy rec	kg	3.23E-02	0.00E+00	5.03E+00	5.06E+00	0.00E+00	3.46E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.39E+01	0.00E+00	0.00E+00
Exported energy	MJ	2.27E-01	0.00E+00	0.00E+00	2.27E-01	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
Exported energy – Electricity	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
Exported energy – Heat	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
ADP-elements	kg Sbe	5.02E-04	3.28E-06	2.31E-05	5.28E-04	5.62E-06	1.32E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	6.13E-07	1.91E-05	4.39E-07	2.34E-04
ADP-fossil	MJ	4.90E+02	1.73E+01	5.49E+01	5.63E+02	2.96E+01	5.70E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.23E+00	1.99E+01	4.34E+00	3.32E+01

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_2e	5.81E+01	1.21E+00	4.16E+00	6.34E+01	2.08E+00	4.95E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.26E-01	2.75E+00	2.04E-01	9.02E+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, wood pellet, at furnace 9kW, Albania, Ecoinvent, 0.0163 kgCO2e/MJ
2. Diesel, burned in building machine, World, Ecoinvent, 0.10 kgCO2e/MJ
3. Electricity production, nuclear, pressure water reactor, Finland, Ecoinvent, 0.0071 kgCO2e/kWh
4. Electricity production, hydro, run-of-river, Finland, Ecoinvent, 0.0044 kgCO2e/kWh
5. Electricity production, photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted, Finland, Ecoinvent, 0.12 kgCO2e/kWh
6. Electricity production, wind, 1-3MW turbine, onshore, Finland, Ecoinvent, 0.0195 kgCO2e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry >32 metric ton, EURO5, 429 km

Transport scenario documentation A4

Scenario parameter	Value
Capacity utilization (including empty return) %	50
Bulk density of transported products	0.00E+00
Volume capacity utilization factor	<1

Installation scenario documentation - A5 (Installation waste)

1. Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, 0.04 kg
2. Wood chipping, industrial residual wood, stationary electric chipper, Ecoinvent, Materials for energy recovery, 3.46 kg

Use stages scenario documentation - C1-C4 (Data source)

1. Treatment of waste glass, sanitary landfill, Ecoinvent, 16.93 kg
2. Treatment of waste glass sheet, sorting plant, Ecoinvent, Materials for recycling, 7.25 kg
3. Treatment of waste wood, untreated, sanitary landfill, Ecoinvent, 0.67 kg
4. Wood chipping, industrial residual wood, stationary electric chipper, Ecoinvent, Materials for energy recovery, 12.72 kg
5. Treatment of scrap aluminium, municipal incineration, Ecoinvent, 0.14 kg
6. Treatment of aluminium scrap, post-consumer, by collecting, sorting, cleaning, pressing, Ecoinvent, Materials for recycling, 2.7 kg
7. Treatment of waste emulsion paint, sanitary landfill, Ecoinvent, 0.04 kg
8. Treatment of waste emulsion paint, hazardous waste incineration, Ecoinvent, Materials for energy recovery, 0.76 kg
9. Treatment of scrap steel, inert material landfill, Ecoinvent, 0.014 kg
10. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.26 kg
11. Treatment of waste plastic, mixture, sanitary landfill, Ecoinvent, 0.021 kg
12. Treatment of waste polyethylene terephthalate, for recycling, unsorted, sorting, Ecoinvent, Materials for energy recovery, 0.39 kg

Scenario information	Value
Scenario assumptions e.g. transportation	End-of-life product is transported 50 km with an average lorry.

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 15802+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

Elma Avdyli, as an authorized verifier acting for EPD Hub Limited
12.12.2025

