ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

VILPE Eco Sense Roof Fan & VILPE Sense Basic Kit Mob.
VILPE Oy

EPD HUB, HUB-3731
Published on 29.07.2025, last updated on 29.07.2030

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	VILPE Oy
Address	Kauppatie 9, FI-65610 Mustasaari
Contact details	sales@vilpe.com
Website	https://www.vilpe.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, B6, and modules C1-C4, D
EPD author	Milja Sarapaa, VILPE Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

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	VILPE Eco Sense Roof Fan & VILPE Sense Basic Kit Mob.
Additional labels	
Product reference	741982 & 735042
Place(s) of raw material origin	Finland, EU, China
Place of production	Mustasaari, Finland
Place(s) of installation and use	Finland, Poland, Lithuania, Netherlands, Estonia, Sweden
Period for data	01/01/2024-31/12/2024
Averaging in EPD	No grouping
A1-A3 Specific data (%)	3,37

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Product Entity; 1 Eco Sense Roof Fan & 1 VILPE Sense Basic Kit Mob.
Declared unit mass	3,546 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	1,92E+01
GWP-total, A1-A3 ($kgCO_2e$)	1,81E+01
Secondary material, inputs (%)	5,76
Secondary material, outputs (%)	95,9
Total energy use, A1-A3 (kWh)	90,5
Net freshwater use, A1-A3 (m^3)	0,2

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

VILPE Oy is a Finnish family-owned company that develops and manufactures ventilation and roofing solutions for the construction industry. The company's operations are based on customer-oriented and innovative product development. Our high quality VILPE® products bring better indoor air quality, energy efficiency and longevity of structures to all spaces and thus improve people's quality of life. VILPE represents safe construction and living, which reinforces the company's commitment to quality and reliability.

PRODUCT DESCRIPTION

VILPE Eco Sense Roof Fan: VILPE ECo Sense Roof Fan is installed on a roof's negative pressure ventilation pipe. The roof fan should be connected to a VILPE Sense Basic Kit Mob. and a VILPE Sense Mobile Base Station. The roof fan adjusts automatically, which allows for demand-controlled ventilation. Control voltage 0-10 V. EC motor.
Dimensions: Duct size ⌀ 110 mm, external ⌀ 257 mm. Height above roof 670 mm when installed on top of a negative pressure air vent.
Contents: Roof fan, screws, installation, operating and maintenance instructions.

VILPE Sense Basic Kit Mob.: Consists of two sensors and a control unit, which should be linked to an VILPE ECo Roof Fan and a VILPE Sense Mobile Base Station. This smart system detects and alerts you to potential leakages and other humidity problems in a roof or underfloor. The system also dries the insulation layer when necessary. Through the VILPE Sense application, the condition of one or several buildings can be checked at any time.
Contents: Control unit, two sensors, instructions.
This EPD consists of a product package that includes both the VILPE Eco Sense Roof Fan and the necessary VILPE Sense Basic Kit Mob.

For more information on the VILPE Sense system, please see: vilpe.com/sense

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	23,15 %	Finland, China
Minerals		
Fossil materials	76,82 %	Finland, EU
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	0,303

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Product Entity; 1 Eco Sense Roof Fan & 1 VILPE Sense Basic Kit Mob.
Mass per declared unit	3,546 kg
Functional unit	1 Product Entity / 200m2
Reference service life	10 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	x	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.

Eco Sense Roof Fans of VILPE Oy are manufactured at the Mustasaari site in Finland. The VILPE Sense Basic Kit, which, in conjunction with the Eco Sense Roof Fan, constitutes an intelligent solution, is procured and packaged by the supplier in Finland. The manufacturing process of the Roof Fan plastic parts consists of raw material delivery, injection molding, quality inspection, and packaging. During injection molding, the raw material is plasticized, injected into the mold, cooled, and removed from the mold. Some assembly is automated. Production requires electricity, heat, and water. Slightly less than 10% of the electricity comes from the production facility's own solar power plant, and the rest is from nuclear electricity. The waste heat from the machines is directed to a heat recovery center and used for building heating. The cooling water is in a closed loop. The material requirement and generated waste vary depending on the size of the product. Production waste is recycled in the process for other products.

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.

The average distribution distance is calculated as a weighted average of the significant sales volumes. Products are transported in full pallets. During installation, the disposal of packaging material is included in the estimate. Eco Sense Roof Fans and Sense Basic Kits are packed in cardboard boxes. After installation, the packaging material is transported by truck to a recycling facility. The average distance to a recycling facility in Finland has been used. Scenario estimates have employed average recycling methods and practices.

There is no material waste during installation. The energy consumption during installation, mainly consisting of the use of a drill, has been excluded from the calculations as it is assumed to be insignificant per examined product unit.

PRODUCT USE AND MAINTENANCE (B1-B7)

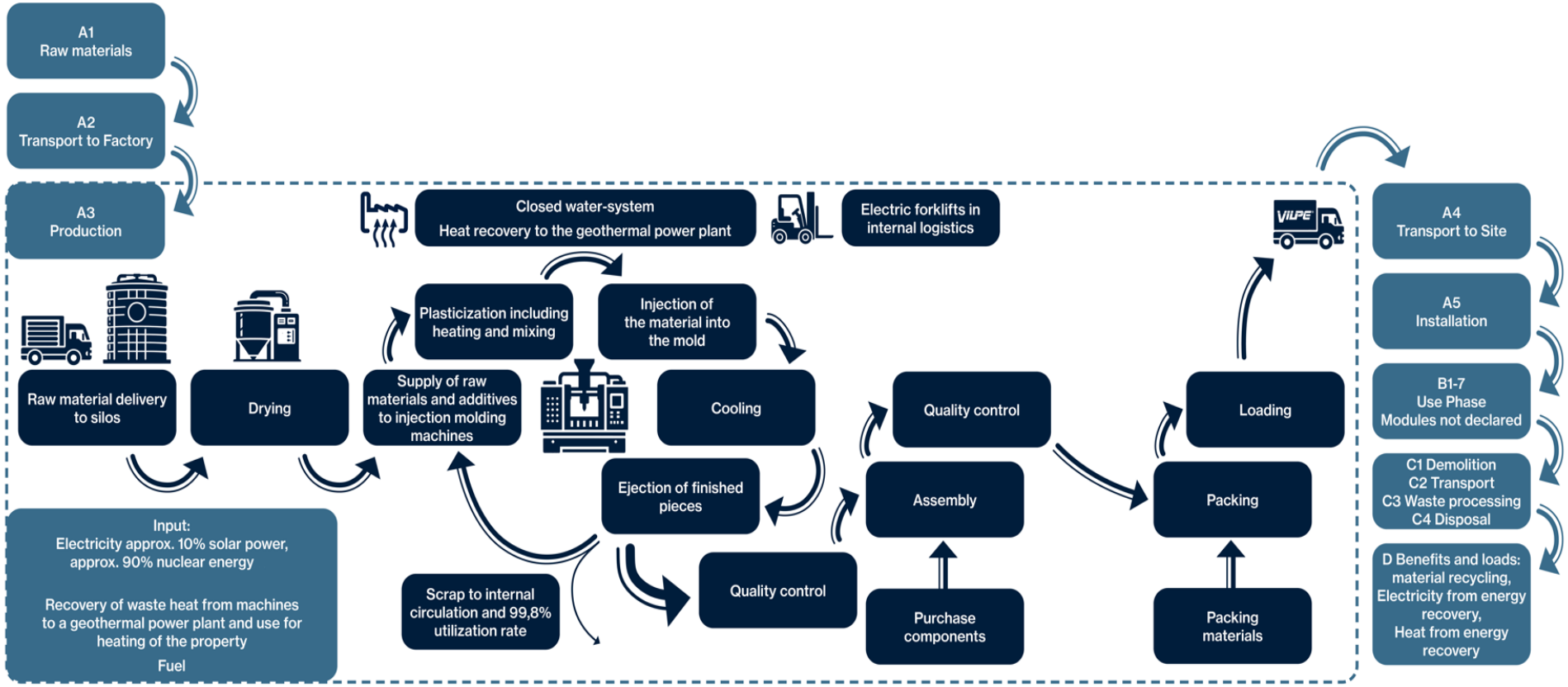
The power input of the VILPE Eco Sense Roof Fan is 83 W. The rotation speed of the roof fan adjusts automatically according to demand. Based on the data, the actual average daily power consumption is 7 W, corresponding to 168 Wh per day. The VILPE Sense Basic Kit Mob. comprises two battery-operated sensors and one control unit powered by the roof fan. The expected service life of the VILPE Sense Sensors is approximately 10 years, corresponding to the estimated battery lifespan. Upon reaching the end of this period, the entire sensor unit is to be replaced. As the calculation pertains to the complete product system, this lifespan has been adopted as the reference service lif time in accordance with the precautionary principle. In reality, the Eco Sense Roof Fan itself has a significantly longer service life. VILPE products generally have a 20-year warranty of technical parts and 10-year colour warranty.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The end-of-life stage consists of the following modules:
C1: Deconstruction of the product
C2: Transportation of the discarded product
C3: Waste processing
C4: Disposal

The end-of-life scenario represents the most likely option in Finland. The average distance to waste treatment facilities in Finland has been used for waste transportation distance. The end-of-life scenario is based on the recycling practices available in Finland. After disposal, it is assumed that plastic and rubber parts (PP, PU, ASA, PA, EPDM, rubber, and silicone rubbers) will be incinerated (100%). For components made of steel, a treatment method of 95% recycling and 5% landfill is assumed (source: World Stainless 2024). For the ferrous components of electronics, it is assumed that 80% are recycled and 20% end up in landfill (Recycling rates are considered according to EN 50693). For aluminum components in electronics, it is assumed that 70% are recycled and 30% go to landfill (Recycling rates are considered according to EN 50693). For copper components in electronics, it is assumed that 60% are recycled and 40% end up in landfill (Recycling rates are considered according to EN 50693). It is also assumed that batteries and electronic scrap will be treated according to recommended recycling practices, including collection and separation (100%).
Due to the energy usage possibilities of the product and packaging, recycled raw material leads to the avoidance of virgin material while energy recovery at the incineration plant displaces electricity and heat production.

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	Allocated by mass or volume
Packaging material	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

Additional information about distances and energy consumptions are shown in Excel attachments.

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. 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‘.

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	1,81E+01	5,59E-01	-5,61E-01	1,81E+01	4,65E-01	2,15E+00	MND	MND	MND	MND	MND	4,43E+02	MND	0,00E+00	2,30E-02	6,28E+00	0,00E+00	4,24E+00
GWP – fossil	kg CO_2e	1,80E+01	5,58E-01	5,88E-01	1,92E+01	4,65E-01	1,95E-02	MND	MND	MND	MND	MND	4,43E+02	MND	0,00E+00	2,30E-02	6,27E+00	0,00E+00	4,01E+00
GWP – biogenic	kg CO_2e	2,96E-02	1,11E-04	-1,17E+00	-1,14E+00	1,05E-04	2,13E+00	MND	MND	MND	MND	MND	6,41E-02	MND	0,00E+00	5,13E-06	2,68E-03	0,00E+00	2,39E-01
GWP – LULUC	kg CO_2e	2,00E-02	2,55E-04	2,21E-02	4,24E-02	2,08E-04	1,47E-05	MND	MND	MND	MND	MND	7,78E-03	MND	0,00E+00	1,02E-05	7,63E-05	0,00E+00	-7,98E-03
Ozone depletion pot.	kg CFC_{-11}e	4,31E-07	8,22E-09	1,69E-08	4,57E-07	6,86E-09	1,99E-10	MND	MND	MND	MND	MND	1,64E-05	MND	0,00E+00	3,32E-10	1,54E-09	0,00E+00	-1,55E-08
Acidification potential	mol H^+e	1,58E-01	3,48E-03	2,78E-03	1,64E-01	1,65E-03	1,11E-04	MND	MND	MND	MND	MND	2,40E+00	MND	0,00E+00	7,76E-05	1,29E-03	0,00E+00	-1,09E-02
EP-freshwater[2)]	kg Pe	1,91E+00	4,06E-05	3,06E-04	1,91E+00	3,61E-05	5,43E-06	MND	MND	MND	MND	MND	7,08E-02	MND	0,00E+00	1,79E-06	-6,88E-02	0,00E+00	-6,96E-02
EP-marine	kg Ne	1,88E-02	1,00E-03	1,40E-03	2,12E-02	5,36E-04	1,43E-04	MND	MND	MND	MND	MND	3,38E-01	MND	0,00E+00	2,54E-05	7,02E-04	0,00E+00	-1,32E-03
EP-terrestrial	mol Ne	2,12E-01	1,10E-02	9,41E-03	2,33E-01	5,84E-03	3,69E-04	MND	MND	MND	MND	MND	3,47E+00	MND	0,00E+00	2,76E-04	6,45E-03	0,00E+00	-1,52E-02
POCP ("smog")[3)]	kg NMVOCe	8,95E-02	3,84E-03	2,66E-03	9,59E-02	2,38E-03	1,38E-04	MND	MND	MND	MND	MND	9,83E-01	MND	0,00E+00	1,12E-04	1,61E-03	0,00E+00	-5,36E-03
ADP-minerals & metals[4)]	kg Sbe	3,46E-03	1,45E-06	3,97E-06	3,46E-03	1,29E-06	1,23E-07	MND	MND	MND	MND	MND	4,90E-05	MND	0,00E+00	6,83E-08	1,64E-06	0,00E+00	-8,78E-06
ADP-fossil resources	MJ	3,15E+02	7,96E+00	2,65E+01	3,50E+02	6,74E+00	2,16E-01	MND	MND	MND	MND	MND	5,40E+03	MND	0,00E+00	3,29E-01	-3,40E+00	0,00E+00	-3,73E+01
Water use[5)]	m^3e depr.	5,07E+00	3,77E-02	5,29E-01	5,64E+00	3,32E-02	8,89E-03	MND	MND	MND	MND	MND	4,08E+03	MND	0,00E+00	1,59E-03	1,99E-01	0,00E+00	-5,17E-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	9,85E-07	5,16E-08	3,30E-08	1,07E-06	4,64E-08	3,90E-09	MND	MND	MND	MND	MND	4,46E-06	MND	0,00E+00	2,12E-09	6,26E-09	0,00E+00	-1,65E-07
Ionizing radiation[6]	kBq U235e	1,44E+00	6,62E-03	1,03E+00	2,48E+00	5,86E-03	9,19E-04	MND	MND	MND	MND	MND	8,01E+01	MND	0,00E+00	2,79E-04	2,24E-03	0,00E+00	-9,29E-01
Ecotoxicity (freshwater)	CTUe	2,84E+02	1,08E+00	5,27E+00	2,90E+02	9,52E-01	2,21E+00	MND	MND	MND	MND	MND	7,38E+02	MND	0,00E+00	4,86E-02	6,99E+00	0,00E+00	-1,97E+00
Human toxicity, cancer	CTUh	2,55E-08	9,50E-11	5,38E-10	2,62E-08	7,69E-11	2,77E-11	MND	MND	MND	MND	MND	2,04E-08	MND	0,00E+00	3,83E-12	4,42E-10	0,00E+00	-1,25E-09
Human tox. non-cancer	CTUh	8,02E-07	4,86E-09	5,26E-09	8,12E-07	4,35E-09	1,41E-09	MND	MND	MND	MND	MND	1,94E-06	MND	0,00E+00	2,10E-10	1,16E-08	0,00E+00	-1,01E-08
SQP[7]	-	8,37E+01	7,33E+00	5,11E+01	1,42E+02	6,76E+00	2,14E-01	MND	MND	MND	MND	MND	1,92E+02	MND	0,00E+00	2,82E-01	8,42E-01	0,00E+00	-2,86E+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	2,53E+01	1,05E-01	4,78E-02	2,54E+01	9,22E-02	-1,16E+01	MND	MND	MND	MND	MND	2,10E+02	MND	0,00E+00	4,51E-03	7,09E-02	0,00E+00	-1,22E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,01E+01	1,01E+01	0,00E+00	-1,01E+01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,13E+00
Total use of renew. PER	MJ	2,53E+01	1,05E-01	1,01E+01	3,55E+01	9,22E-02	-2,17E+01	MND	MND	MND	MND	MND	2,10E+02	MND	0,00E+00	4,51E-03	7,09E-02	0,00E+00	-1,10E+01
Non-re. PER as energy	MJ	2,66E+02	7,96E+00	2,64E+01	3,00E+02	6,74E+00	2,16E-01	MND	MND	MND	MND	MND	5,94E+03	MND	0,00E+00	3,29E-01	-8,56E+01	0,00E+00	-1,19E+02
Non-re. PER as material	MJ	7,71E+01	0,00E+00	2,43E-01	7,73E+01	0,00E+00	-2,43E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	-7,71E+01	0,00E+00	8,20E+01
Total use of non-re. PER	MJ	3,43E+02	7,96E+00	2,67E+01	3,78E+02	6,74E+00	-2,76E-02	MND	MND	MND	MND	MND	5,94E+03	MND	0,00E+00	3,29E-01	-1,63E+02	0,00E+00	-3,73E+01
Secondary materials	kg	2,04E-01	3,43E-03	5,26E-01	7,33E-01	2,87E-03	3,18E-04	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	1,43E-04	1,40E-03	0,00E+00	-8,88E-02
Renew. secondary fuels	MJ	1,53E-02	3,98E-05	1,62E-01	1,77E-01	3,63E-05	1,86E-06	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	1,82E-06	5,65E-05	0,00E+00	-8,97E-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	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,84E-01	1,12E-03	1,23E-02	1,97E-01	9,94E-04	-4,17E-04	MND	MND	MND	MND	MND	5,42E+00	MND	0,00E+00	4,68E-05	2,35E-03	0,00E+00	-2,21E-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	2,33E+00	1,32E-02	3,90E-02	2,39E+00	1,14E-02	2,78E-03	MND	MND	MND	MND	MND	1,68E-03	MND	0,00E+00	5,63E-04	1,87E-01	0,00E+00	-4,04E-01
Non-hazardous waste	kg	8,96E+01	2,40E-01	9,98E-01	9,09E+01	2,11E-01	9,09E-01	MND	MND	MND	MND	MND	2,27E+01	MND	0,00E+00	1,05E-02	2,55E+00	0,00E+00	-1,58E+00
Radioactive waste	kg	5,85E-04	1,62E-06	2,47E-04	8,34E-04	1,43E-06	2,29E-07	MND	MND	MND	MND	MND	8,44E-03	MND	0,00E+00	6,83E-08	1,06E-06	0,00E+00	-2,00E-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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	5,14E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	1,15E+00	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	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	2,25E+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	1,25E+00	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	5,63E+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	1,88E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	8,48E+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	1,06E+00	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	4,78E+01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

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	1,83E+01	5,55E-01	6,18E-01	1,95E+01	4,62E-01	9,95E-02	MND	MND	MND	MND	MND	4,41E+02	MND	0,00E+00	2,28E-02	6,28E+00	0,00E+00	4,01E+00
Ozone depletion Pot.	kg CFC_{-11}e	3,91E-07	6,55E-09	1,41E-08	4,12E-07	5,48E-09	1,65E-10	MND	MND	MND	MND	MND	1,67E-05	MND	0,00E+00	2,65E-10	9,18E-10	0,00E+00	-1,40E-08
Acidification	kg SO_2e	1,37E-01	2,72E-03	2,01E-03	1,42E-01	1,26E-03	8,50E-05	MND	MND	MND	MND	MND	2,05E+00	MND	0,00E+00	5,93E-05	9,10E-04	0,00E+00	-9,22E-03
Eutrophication	kg PO_4^3e	3,17E-02	4,72E-04	3,87E-03	3,61E-02	3,00E-04	8,48E-05	MND	MND	MND	MND	MND	3,33E-01	MND	0,00E+00	1,45E-05	2,92E-04	0,00E+00	-8,84E-04
POCP (“smog”)	kg C_2H_4e	1,22E-02	1,86E-04	2,04E-04	1,26E-02	1,10E-04	2,68E-05	MND	MND	MND	MND	MND	8,24E-02	MND	0,00E+00	5,30E-06	4,14E-05	0,00E+00	-7,82E-04
ADP-elements	kg Sbe	3,45E-03	1,41E-06	4,03E-06	3,46E-03	1,26E-06	1,20E-07	MND	MND	MND	MND	MND	4,90E-05	MND	0,00E+00	6,67E-08	1,58E-06	0,00E+00	-8,79E-06
ADP-fossil	MJ	3,17E+02	7,86E+00	7,66E+00	3,32E+02	6,65E+00	2,01E-01	MND	MND	MND	MND	MND	5,40E+03	MND	0,00E+00	3,25E-01	-3,41E+00	0,00E+00	-2,41E+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	1,80E+01	5,59E-01	6,10E-01	1,92E+01	4,65E-01	1,95E-02	MND	MND	MND	MND	MND	4,43E+02	MND	0,00E+00	2,30E-02	6,27E+00	0,00E+00	4,00E+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

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, nuclear, pressure water reactor (Reference product: electricity, high voltage)
Electricity CO2e / kWh	0,0071
District heating data source and quality	Heat production, light fuel oil, at boiler 100kW condensing, non-modulating (Reference product: heat, central or small-scale, other than natural gas)
District heating CO2e / kWh	0,0969

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 and Transport, freight, sea, container ship
Average transport distance, km	933
Capacity utilization (including empty return) %	50
Bulk density of transported products	-
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	0,018
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	0,79184
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	0,79184
Direct emissions to ambient air, soil and water / kg	-

Use stages scenario documentation - B6-B7 Use of energy and use of water

Scenario information	Value
Ancillary materials specified by material / kg or units as appropriate	-
Net fresh water consumption / m^3	-
Type of energy carrier, e.g., electricity, natural gas, district heating / kWh	Electricity, Finland, residual mix, 2023 (One Click LCA) 258kWh / Electricity, Poland, residual mix, 2023 (One Click LCA) 174,29 kWh, Electricity, Lithuania, residual mix, 2023 (One Click LCA) 103,74kWh ,
Power output of equipment / kW	83
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc.	The rotation speed of the roof fan adjusts automatically according to demand. Based on the data, the actual average daily power consumption is 7 W.
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants	Finland 42,3%, 7W*24h*7days*52 weeks*10years, Poland 28,5%, 7W*24h*7days*52 weeks*10years, Lithuania 17%, 7W*24h*7days*52 weeks*10years

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	-
Collection process – kg collected with mixed waste	3,91
Recovery process – kg for re-use	-
Recovery process – kg for recycling	1,66
Recovery process – kg for energy recovery	2,25
Disposal (total) – kg for final deposition	-
Scenario assumptions e.g. transportation	Transported 50km by 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

Imane Uald Lamkaddam as an authorized verifier for EPD Hub Limited
29.07.2025