ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Louna, Carbon Neutral Wooden Design Door with Glass Opening
Kaskipuu Oy

EPD HUB, HUB-0041
Publishing date 23 May 2022, last updated date 23 May 2022, valid until 23 May 2027

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Kaskipuu Oy
Address	Ovitie 1, 91300 Ylikiiminki
Contact details	myynti@kaski.fi
Website	https://kaski.fi/

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 1.0, 1 Feb 2022 EN 17213 Windows and doors
Sector	Manufactured product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4 and D
EPD author	Jori Jokela, Macon Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	S.V, as an authorized verifier acting for EPD Hub Limited

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	Louna, Carbon Neutral Wooden Design Door with Glass Opening
Place of production	Ylikiiminki, Oulu
Period for data	2020
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m2
Declared unit mass	40.28 kg
GWP-fossil, A1-A3 (kgCO2e)	38,1
GWP-total, A1-A3 (kgCO2e)	-30,1
Secondary material, inputs (%)	5,13
Secondary material, outputs (%)	100
Total energy use, A1-A3 (kWh)	255
Total water use, A1-A3 (m3e)	3,19

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Kaskipuu Oy is the largest Finnish manufacturer of exterior and balcony doors and windows. We provide comprehensive range of doors and windows for the consumers and commercial construction (housing associations, house manufacturing and construction companies). We have two factories in Finland, which makes us one of the key players in the exterior/balcony doors and windows segment. Kaskipuu Oy's windows and doors have the key flag badge (Avainlippu-merkintä), and our wooden doors also have the Design from Finland badge in recognition of Finnish design work.

The company is founded by Eero Kaski in 1978. Kaskipuu Oy have about 300 employees.

PRODUCT DESCRIPTION

This EPD represents insulated, hinged, outward opening wooden entrance door with glass openings. The product contains a wooden frame, hinges and locking mechanism. The closed parts are panelled with panelling designed for each door model. Kaski products presented in this EPD are produced at Kaskipuu Oy facility in Ylikiiminki (City of Oulu), Finland.

Further information can be found at https://kaski.fi/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	6	Finland
Minerals	11,6	Finland
Fossil materials	3,6	Finland
Bio-based materials	78,9	Finland

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	14.6
Biogenic carbon content in packaging, kg C	1.43

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m2
Mass per declared unit	40.28 kg

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	Deconstr./demol.	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.

The environmental impacts of raw material supply (A1) include emissions generated when raw materials are taken from nature, transported to industrial units for processing and processed, along with waste handling from the various production processes. All major upstream processes are taken into consideration, including infrastructure. Loss of raw material and energy transmission losses are also taken into account. This stage includes all the aforementioned for the raw materials which end up in the final product (i.e. wood, steel, aluminium, adhesives, surface treatment and packaging) as well as the electricity and heat production which are consumed during the manufacturing at the plant.

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 transportation distance is defined according to standard EN 15804:2019 + A2. Manufacturing plant is taking place near Oulu region of Finland. The transportation distance from manufacturing site to construction site in Helsinki is assumed as 626 km and the transportation method is assumed to be lorry. 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.

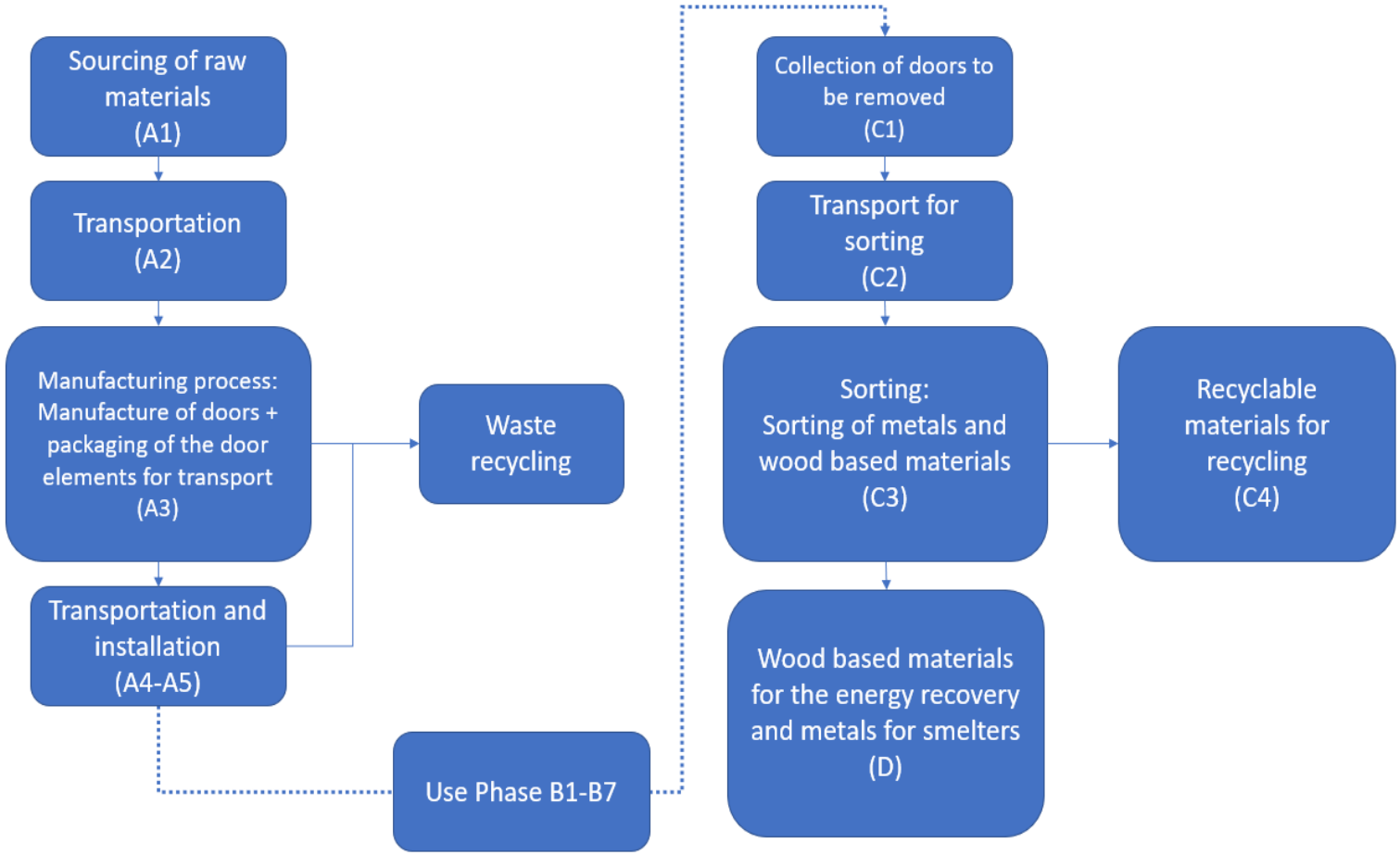
PRODUCT USE AND MAINTENANCE (B1-B7)

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)

Demolition is assumed to have negligible effects due to easy dismantling as door elements. It is assumed that 100% of the elements are collected (C1). Distance for transportation to treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2). 100 % of door element is assumed to be recycled (C3). Due to the recycling process the end-of-life product is converted into an energy and metals (D).

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 EN 15804:2012+A2:2019 and the applied EPD Hub 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.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per the reference standard, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs.

All estimations and assumptions are given below:

- Recycled metals are not used.
- Electricity and light fuel oil are used in the production of the products. Energy calculations can be allocated to 1 m2 of the door product, because whole factory production mass values are available product by product.
- The transport distance of the finished product to customers has been estimated to be 626 km (distance to Finnish capital area from factory).

In the end-of-life phase 100 % of the product is recyclable. Estimation is that all wooden based materials are converted into an energy and metal parts recycled into manufacturing of metals.

- Packaging waste goes to building material recycling by constructors via their waste management systems.

Allocation used in environmental data sources is aligned with the above.

AVERAGES AND VARIABILITY

This EPD is product and factory specific and does not contain average calculations.

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. Ecoinvent and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total	kg CO_2e	-7,09E1	1,17E0	3,96E1	-3,01E1	2,47E0	1,05E1	MND	0E0	1,65E0	5,94E1	0E0	1,54E1
GWP – fossil	kg CO_2e	2,59E1	1,17E0	1,1E1	3,81E1	2,49E0	3,86E-1	MND	0E0	1,64E0	2,76E0	0E0	-3,47E1
GWP – biogenic	kg CO_2e	-9,9E1	8,49E-4	2,85E1	-7,06E1	1,81E-3	1,02E1	MND	0E0	1,19E-3	5,66E1	0E0	5,01E1
GWP – LULUC	kg CO_2e	2,26E0	3,52E-4	1,13E-1	2,37E0	7,5E-4	1,72E-5	MND	0E0	4,95E-4	7,84E-4	0E0	-1,1E-1
Ozone depletion pot.	kg CFC_{-11}e	2,93E-6	2,75E-7	1,26E-6	4,46E-6	5,86E-7	9,12E-9	MND	0E0	3,86E-7	6,26E-8	0E0	-2,8E-6
Acidification potential	mol H^+e	2,3E-1	4,91E-3	4,01E-2	2,75E-1	1,05E-2	7,23E-4	MND	0E0	6,9E-3	2,97E-3	0E0	-2,94E-1
EP-freshwater	kg Pe	1,72E-3	9,51E-6	2,74E-4	2,01E-3	2,03E-5	8,86E-7	MND	0E0	1,34E-5	3,68E-5	0E0	-1,65E-3
EP-marine	kg Ne	4,21E-2	1,48E-3	8E-3	5,15E-2	3,15E-3	3,37E-4	MND	0E0	2,08E-3	5,79E-4	0E0	-3,41E-2
EP-terrestrial	mol Ne	4,07E-1	1,63E-2	8,6E-2	5,09E-1	3,48E-2	3,49E-3	MND	0E0	2,3E-2	6,71E-3	0E0	-4,08E-1
POCP (“smog”)	kg NMVOCe	1,31E-1	5,25E-3	2,67E-2	1,63E-1	1,12E-2	8,91E-4	MND	0E0	7,39E-3	1,79E-3	0E0	-1,12E-1
ADP-minerals & metals	kg Sbe	1E-2	1,78E-5	3,97E-5	1,01E-2	4,25E-5	1,08E-6	MND	0E0	2,8E-5	5,75E-6	0E0	-1,99E-4
ADP-fossil resources	MJ	3,32E2	1,62E1	1,91E2	5,39E2	3,88E1	7,8E-1	MND	0E0	2,56E1	8,46E0	0E0	-4,72E2
Water use	m^3e depr.	1,11E1	6,76E-2	4,76E2	4,87E2	1,44E-1	-2,17E-2	MND	0E0	9,51E-2	3,95E-1	0E0	-4,6E0

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Incidence	2,56E-6	1,06E-7	2,2E-7	2,89E-6	2,25E-7	1,51E-8	MND	0E0	1,49E-7	1,93E-8	0E0	-2,65E-6
Ionizing radiation	kBq U235e	1,42E0	7,95E-2	1,59E0	3,09E0	1,69E-1	2,12E-3	MND	0E0	1,12E-1	6,13E-2	0E0	-4,32E0
Ecotoxicity (freshwater)	CTUe	6,95E2	1,39E1	1,31E2	8,4E2	2,96E1	1,89E0	MND	0E0	1,95E1	3,75E1	0E0	-7,89E2
Human toxicity, cancer	CTUh	5,68E-8	3,55E-10	5,59E-9	6,27E-8	7,58E-10	2,9E-10	MND	0E0	5E-10	3,48E-10	0E0	-3,3E-8
Human tox. non-cancer	CTUh	8,97E-7	1,65E-8	1,57E-7	1,07E-6	3,51E-8	9,04E-9	MND	0E0	2,32E-8	1,6E-8	0E0	-9,72E-7
SQP	-	1,39E2	2,74E1	1,12E1	1,78E2	5,85E1	6,13E-1	MND	0E0	3,86E1	2,6E0	0E0	-3,45E1

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	3,41E2	2,04E-1	4,65E1	3,88E2	4,88E-1	1,57E-2	MND	0E0	3,22E-1	1,19E0	0E0	-1,37E2
Renew. PER as material	MJ	8,37E2	0E0	7,9E1	9,16E2	0E0	-7,89E1	MND	0E0	0E0	-8,37E2	0E0	0E0
Total use of renew. PER	MJ	1,18E3	2,04E-1	1,25E2	1,3E3	4,88E-1	-7,89E1	MND	0E0	3,22E-1	-8,36E2	0E0	-1,37E2
Non-re. PER as energy	MJ	3,32E2	1,62E1	1,8E2	5,28E2	3,88E1	7,8E-1	MND	0E0	2,56E1	8,46E0	0E0	-4,72E2
Non-re. PER as material	MJ	2,02E1	0E0	1,1E1	3,12E1	0E0	-1,1E1	MND	0E0	0E0	-2,02E1	0E0	0E0
Total use of non-re. PER	MJ	3,52E2	1,62E1	1,91E2	5,59E2	3,88E1	-1,02E1	MND	0E0	2,56E1	-1,17E1	0E0	-4,72E2
Secondary materials	kg	2,06E0	0E0	4,09E-3	2,07E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	-1,89E0
Renew. secondary fuels	MJ	2,74E-3	0E0	0E0	2,74E-3	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	2,24E-4	0E0	0E0	2,24E-4	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	3,12E0	3,38E-3	5,72E-2	3,19E0	8,07E-3	1,42E-3	MND	0E0	5,32E-3	2,9E-2	0E0	-8,45E-2

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,7E0	1,58E-2	7,26E-1	3,44E0	3,77E-2	2,26E-2	MND	0E0	2,48E-2	0E0	0E0	-2,87E0
Non-hazardous waste	kg	3,6E1	1,75E0	3,5E1	7,28E1	4,17E0	3,55E0	MND	0E0	2,75E0	0E0	0E0	-2,13E1
Radioactive waste	kg	2,35E-3	1,11E-4	1,39E-3	3,85E-3	2,66E-4	3,13E-6	MND	0E0	1,76E-4	0E0	0E0	-2,54E-3

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	9,03E-5	0E0	0E0	9,03E-5	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	5,32E-2	0E0	0E0	5,32E-2	0E0	4,6E-1	MND	0E0	0E0	6,31E0	0E0	0E0
Materials for energy rec	kg	7,85E-2	0E0	2,6E1	2,61E1	0E0	6,64E0	MND	0E0	0E0	3,4E1	0E0	0E0
Exported energy	MJ	1,47E-3	0E0	0E0	1,47E-3	0E0	0E0	MND	0E0	0E0	1,42E1	0E0	0E0

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	2,4E1	1,03E0	1,09E1	3,6E1	2,47E0	3,8E-1	MND	0E0	1,63E0	2,75E0	0E0	-3,39E1
Ozone depletion Pot.	kg CFC_{-11}e	2,32E-6	1,95E-7	1,32E-6	3,83E-6	4,66E-7	7,63E-9	MND	0E0	3,07E-7	6,98E-8	0E0	-2,66E-6
Acidification	kg SO_2e	1,42E-1	2,12E-3	3,29E-2	1,77E-1	5,07E-3	5,4E-4	MND	0E0	3,34E-3	2,88E-3	0E0	-2,3E-1
Eutrophication	kg PO_4^3e	4,13E-2	4,29E-4	1,21E-2	5,38E-2	1,02E-3	1,39E-3	MND	0E0	6,76E-4	1,44E-3	0E0	-4,86E-2
POCP (“smog”)	kg C_2H_4e	1,07E-2	1,35E-4	2,42E-3	1,33E-2	3,21E-4	2,13E-5	MND	0E0	2,12E-4	1,07E-4	0E0	-1,03E-2
ADP-elements	kg Sbe	1E-2	1,78E-5	3,97E-5	1,01E-2	4,25E-5	1,08E-6	MND	0E0	2,8E-5	5,75E-6	0E0	-1,99E-4
ADP-fossil	MJ	3,32E2	1,62E1	1,91E2	5,39E2	3,88E1	7,8E-1	MND	0E0	2,56E1	8,46E0	0E0	-4,72E2

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.

Silvia Vilčeková, as an authorized verifier acting for EPD Hub Limited
23.05.2022

VERIFIED ISO 14025