ENVIRONMENTAL PRODUCT DECLARATION

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

HSAL sliding door
AS Viljandi Aken ja Uks

EPD HUB, HUB-3028
Publishing date 09 March 2025, last updated on 09 March 2025, valid until 08 March 2030.

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

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	AS Viljandi Aken ja Uks
Address	Puidu 6, 71020, Viljandi, Estonia
Contact details	vau@vau.ee
Website	www.vau.ee

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 1.1, 5 Dec 2023
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	Pirjo Kespre-Betzer, AS Viljandi Aken ja Uks
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

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	HSAL sliding door
Additional labels	HSAL 2-opening, HSAL 2-opening low threshold, HSAL 4-opening, HSAL 4-opening low threshold
Product reference	-
Place of production	Puidu 6, Viljandi, Estonia 71020
Period for data	Calendar year of 2023
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	+6,2% / -2,76% %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 squaremetre of HSAL sliding door
Declared unit mass	41,34 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	1,22E+02
GWP-total, A1-A3 ($kgCO_2e$)	9,61E+01
Secondary material, inputs (%)	12,5
Secondary material, outputs (%)	92,9
Total energy use, A1-A3 (kWh)	528
Net freshwater use, A1-A3 (m^3)	1,55

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Viljandi Aken ja Uks has been one of the largest producers of windows and doors in the Baltic for thirty years, with the aim of producing high-quality windows and doors. The company has seen consistent growth over the years, which has resulted in us becoming one of the largest Scandinavian producers of windows and doors.
Currently, you can find our production units in Viljandi, Võru County and Latvia. Our sales offices are in Viljandi, Tallinn, Stockholm, Riga, Vilnius and Klaipeda.
Starting with 35 employees in 1990, we are now one of the largest employers in Viljandi County, providing employment for more than 600 people.
The range of products has been constantly expanding based on customer needs and market demand. The company has implemented a quality management system in accordance with the requirements of the ISO 9001 standard. Due to the growth of the company, we have constantly expanded our production areas, which today make up over 51,600m².
Over time, we have invested in modern equipment and production lines to provide our customers with faster delivery times and production that meets today's standards and quality requirements.

PRODUCT DESCRIPTION

This EPD is calculated as an average and uses a representative door to present the impacts in A1-A5, C1-C4 and D modules. The representative door for this average product EPD is a 2-opening low threshold door. This version represents approximately 70% of the sliding doors manufactured in 2023 and is highly typical in the material composition and GWP (fossil) content within the possible combination of components.

In order to create a representative average, the following product systems were considered:

* HSAL 2-opening
* HSAL 2-opening low threshold
* HSAL 4-opening
* HSAL 4-opening low threshold

HSAL is inward opening wooden-aluminum lift and slide door with triple-glazed.
Size: 2-opening 1580-3980 x 1780-2580 or 4-opening 2880-5980 x 1780-2580

Opening: parallel
Frame: pine, depth 198mm
Fittings: lock G.U.
Glass: triple-glazed, thickness 52mm

Further information can be found at www.vau.ee.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	18	EU
Minerals	56	EU
Fossil materials	2	EU
Bio-based materials	24	EU

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	6,218
Biogenic carbon content in packaging, kg C	0,786

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 squaremetre of HSAL sliding door
Mass per declared unit	41,34 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.

Co-product allocation has not been used.

The production process begins with unpacking raw materials. After processing raw materials, the sliding door frame will be assembled and glued together by pressing method. When the sliding door has been pressed it will get surface coating. After surface coating doors will dry and will be equipped with necessary ironmongery, glazing, aluminium cladding and seals. Final quality checks will be conducted before packing the sliding door to transportation pallets. After that, the products will be ready for transportation to the construction site.

Raw material transportation has been calculated based on the distance between the material supplier or manufacturer and the window factory in Viljandi. Production losses have been considered in ancillary and manufacturing wastes. The transportation for manufacturing waste has been calculated based on the distance between the factory and the waste processing facility.

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 EPD Hub Limited PCR. The typical installation place was assumed to be a weighted average. According to the manufacturer, transportation doesn't cause losses as products are packaged properly. The final product is transported 352 km by lorry and 256 km by ferry.
Environmental impacts from installation into the building (A5) include emissions of energy use in installation and generation of waste at the construction site.
No product waste is generated during installation. Packaging waste comes from the packaging used for the final products. No water is needed for the installation process. Installation foam has been included in the study. The fasteners have been excluded as the cut-off has been applied.

Packaging waste is presumed to be collected and transported to the waste facility, an average distance of 50 km has been presumed. The waste treatment scenario use OneClickLCA datapoints for an average scenario in Europe.

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.

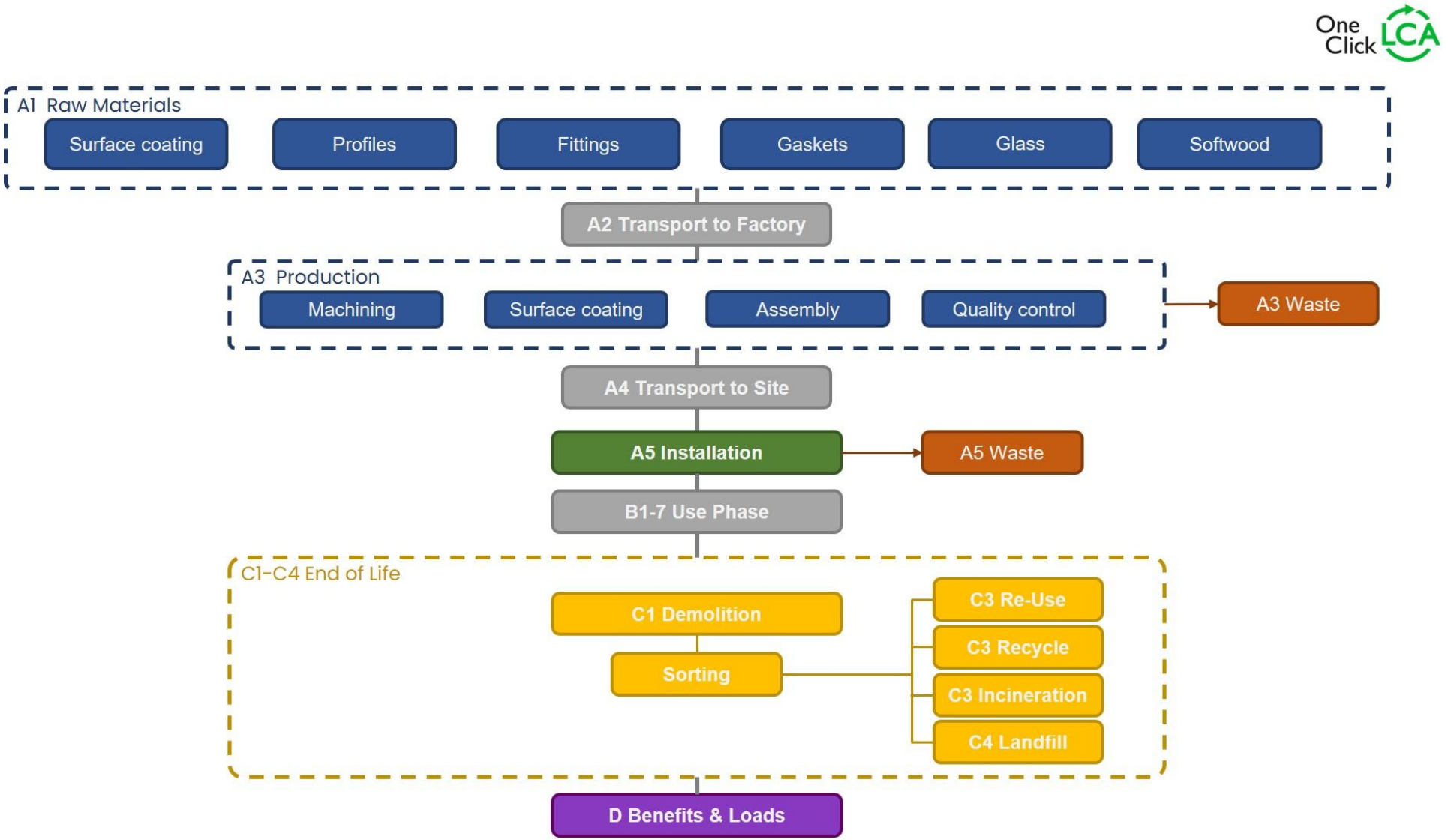
PRODUCT END OF LIFE (C1-C4, D)

EOL scenarios have been based on reasonable conclusions by studying Scandinavia waste sorting regulations where it is common that building products dismantled from the building will have to be separated by material type and sorted at the site. It is estimated that there is no mass loss during the use phase of the product. Therefore the end-of-life product is assumed to have the same weight as the declared product. Losses in the dismounting and material separation process are assumed to be very small and not considered in the assessment.

It is assumed that at the end-of-life, 100% of wood/aluminium sliding doors are demounted using electric tools (module C1), materials are separated on-site according to local waste ordinance rules, sorted and then transported to a waste processing plant with an average distance of 50 km by >32 t lorry (Euro 5) (module C2). Materials recovered from dismantled products are considered not to have any losses and are being collected, sorted or incinerated (module C3).

The benefits and energy recovery of recyclable waste generated in Module C3 are considered in Module D. It is assumed that glass is used as aggregates and metals are remelted. Plastics and timber are assumed to be incinerated for energy recovery.

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.

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	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Representative product
Variation in GWP-fossil for A1-A3	+6,2% / -2,76% %

In order to create a representative average, the following product systems were considered:
* HSAL 2-opening
* HSAL 2-opening low threshold
* HSAL 4-opening
* HSAL 4-opening low threshold

The representative door for this average product EPD is a 2-opening low threshold door.

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

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

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	7,89E+01	1,54E+00	1,57E+01	9,61E+01	2,94E+00	1,21E+01	MND	MND	MND	MND	MND	MND	MND	3,25E-03	2,19E-01	2,51E+01	0,00E+00	-5,53E+01
GWP – fossil	kg CO_2e	1,02E+02	1,54E+00	1,85E+01	1,22E+02	2,94E+00	9,17E+00	MND	MND	MND	MND	MND	MND	MND	3,24E-03	2,19E-01	2,27E+00	0,00E+00	-5,47E+01
GWP – biogenic	kg CO_2e	-2,28E+01	0,00E+00	-2,88E+00	-2,57E+01	0,00E+00	2,88E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,28E+01	0,00E+00	-1,76E-01
GWP – LULUC	kg CO_2e	1,28E-01	5,82E-04	6,85E-03	1,35E-01	1,25E-03	1,01E-02	MND	MND	MND	MND	MND	MND	MND	1,00E-05	8,22E-05	4,92E-04	0,00E+00	-3,86E-01
Ozone depletion pot.	kg CFC_{-11}e	7,61E-06	3,04E-08	6,86E-07	8,33E-06	5,16E-08	3,49E-07	MND	MND	MND	MND	MND	MND	MND	5,61E-11	4,40E-09	1,31E-08	0,00E+00	-8,39E-07
Acidification potential	mol H^+e	2,29E+00	7,56E-03	9,93E-02	2,40E+00	4,42E-02	3,98E-02	MND	MND	MND	MND	MND	MND	MND	1,65E-05	7,06E-04	5,31E-03	0,00E+00	-4,15E-01
EP-freshwater[2)]	kg Pe	1,35E-02	9,95E-05	6,29E-02	7,65E-02	1,47E-04	3,25E-03	MND	MND	MND	MND	MND	MND	MND	2,89E-06	1,47E-05	3,74E-04	0,00E+00	-1,87E-02
EP-marine	kg Ne	1,89E-01	2,31E-03	1,46E-02	2,06E-01	1,16E-02	7,45E-03	MND	MND	MND	MND	MND	MND	MND	2,86E-06	2,40E-04	1,79E-03	0,00E+00	-6,49E-02
EP-terrestrial	mol Ne	2,76E+00	2,53E-02	1,46E-01	2,93E+00	1,29E-01	8,01E-02	MND	MND	MND	MND	MND	MND	MND	2,49E-05	2,61E-03	1,81E-02	0,00E+00	-7,25E-01
POCP ("smog")[3)]	kg NMVOCe	5,69E-01	9,71E-03	1,38E-01	7,16E-01	3,80E-02	3,52E-02	MND	MND	MND	MND	MND	MND	MND	8,24E-06	1,15E-03	5,38E-03	0,00E+00	-2,30E-01
ADP-minerals & metals[4)]	kg Sbe	4,41E-02	4,17E-06	3,04E-05	4,41E-02	5,64E-06	1,61E-04	MND	MND	MND	MND	MND	MND	MND	7,22E-09	6,04E-07	1,38E-05	0,00E+00	-2,90E-04
ADP-fossil resources	MJ	1,27E+03	2,20E+01	2,77E+02	1,57E+03	3,96E+01	1,79E+02	MND	MND	MND	MND	MND	MND	MND	7,65E-02	3,17E+00	9,68E+00	0,00E+00	-6,68E+02
Water use[5)]	m^3e depr.	3,77E+02	1,09E-01	1,21E+02	4,98E+02	1,62E-01	3,32E+00	MND	MND	MND	MND	MND	MND	MND	1,98E-03	1,62E-02	7,15E-01	0,00E+00	-3,87E+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, PEF

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	9,75E-06	1,40E-07	6,20E-07	1,05E-05	2,00E-07	2,96E-07	MND	MND	MND	MND	MND	MND	MND	5,76E-11	2,18E-08	8,57E-08	0,00E+00	-4,57E-06
Ionizing radiation[6]	kBq U235e	7,58E+00	2,64E-02	2,61E+00	1,02E+01	3,49E-02	1,27E+00	MND	MND	MND	MND	MND	MND	MND	2,14E-03	3,82E-03	5,63E-02	0,00E+00	-5,70E+00
Ecotoxicity (freshwater)	CTUe	1,67E+04	2,60E+00	5,31E+01	1,67E+04	3,91E+00	4,43E+02	MND	MND	MND	MND	MND	MND	MND	8,07E-03	3,73E-01	1,89E+01	0,00E+00	-2,27E+02
Human toxicity, cancer	CTUh	4,18E-07	2,57E-10	2,90E-09	4,21E-07	5,38E-10	2,18E-08	MND	MND	MND	MND	MND	MND	MND	6,72E-13	3,60E-11	2,87E-08	0,00E+00	-3,24E-08
Human tox. non-cancer	CTUh	2,45E-05	1,36E-08	1,17E-07	2,46E-05	1,91E-08	1,17E-07	MND	MND	MND	MND	MND	MND	MND	2,89E-11	2,06E-09	3,68E-08	0,00E+00	-4,27E-07
SQP[7]	-	9,77E+02	1,96E+01	1,52E+02	1,15E+03	2,49E+01	3,63E+01	MND	MND	MND	MND	MND	MND	MND	1,30E-02	3,19E+00	9,27E+00	0,00E+00	-1,68E+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	2,68E+02	3,56E-01	1,49E+01	2,83E+02	4,94E-01	1,47E+01	MND	MND	MND	MND	MND	MND	MND	1,79E-02	5,16E-02	-1,68E+02	0,00E+00	-1,35E+02
Renew. PER as material	MJ	1,92E+02	0,00E+00	2,40E+01	2,16E+02	0,00E+00	-2,40E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,92E+02	0,00E+00	3,51E-01
Total use of renew. PER	MJ	4,60E+02	3,56E-01	3,88E+01	4,99E+02	4,94E-01	-9,29E+00	MND	MND	MND	MND	MND	MND	MND	1,79E-02	5,16E-02	-3,61E+02	0,00E+00	-1,35E+02
Non-re. PER as energy	MJ	1,35E+03	2,20E+01	2,48E+02	1,62E+03	3,96E+01	1,25E+02	MND	MND	MND	MND	MND	MND	MND	7,65E-02	3,17E+00	-8,54E+00	0,00E+00	-6,68E+02
Non-re. PER as material	MJ	2,09E+01	0,00E+00	1,39E+01	3,48E+01	0,00E+00	4,01E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-7,49E+01	0,00E+00	1,98E+00
Total use of non-re. PER	MJ	1,37E+03	2,20E+01	2,62E+02	1,65E+03	3,96E+01	1,65E+02	MND	MND	MND	MND	MND	MND	MND	7,65E-02	3,17E+00	-8,35E+01	0,00E+00	-6,66E+02
Secondary materials	kg	5,18E+00	9,53E-03	8,52E-02	5,28E+00	1,72E-02	5,01E-02	MND	MND	MND	MND	MND	MND	MND	8,22E-06	1,37E-03	9,45E-03	0,00E+00	7,26E+00
Renew. secondary fuels	MJ	4,82E-03	1,12E-04	6,99E-02	7,48E-02	1,44E-04	6,35E-04	MND	MND	MND	MND	MND	MND	MND	3,38E-08	1,73E-05	1,63E-04	0,00E+00	-1,38E-02
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,37E+00	3,11E-03	1,72E-01	1,55E+00	4,49E-03	9,48E-02	MND	MND	MND	MND	MND	MND	MND	6,36E-05	4,68E-04	8,51E-04	0,00E+00	-9,04E-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	5,28E+00	3,11E-02	4,53E-01	5,77E+00	5,36E-02	5,67E-01	MND	MND	MND	MND	MND	MND	MND	1,74E-04	4,59E-03	3,70E-01	0,00E+00	-7,26E+00
Non-hazardous waste	kg	8,59E+01	6,26E-01	3,62E+01	1,23E+02	9,44E-01	4,03E+01	MND	MND	MND	MND	MND	MND	MND	1,42E-02	9,18E-02	3,93E+01	0,00E+00	-1,01E+02
Radioactive waste	kg	2,42E-02	6,54E-06	3,58E-04	2,46E-02	8,59E-06	3,34E-04	MND	MND	MND	MND	MND	MND	MND	5,49E-07	9,45E-07	1,44E-05	0,00E+00	-1,50E-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	1,56E+00	0,00E+00	3,40E-01	1,90E+00	0,00E+00	5,53E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,00E+01	0,00E+00	0,00E+00
Materials for energy rec	kg	4,02E-03	0,00E+00	0,00E+00	4,02E-03	0,00E+00	5,53E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,99E+00	0,00E+00	0,00E+00
Exported energy	MJ	1,56E-02	0,00E+00	0,00E+00	1,56E-02	0,00E+00	4,39E+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	MND	MND	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

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

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

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

THIRD-PARTY VERIFICATION STATEMENT

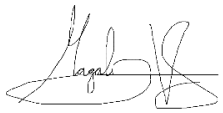
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried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

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

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

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

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
09.03.2025



VERIFIED ISO 14025