ENVIRONMENTAL PRODUCT DECLARATION

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

VHDSAL balcony door
AS Viljandi Aken ja Uks

EPD HUB, HUB-2262
Published on 22.11.2024, last updated on 22.11.2024, valid until 22.11.2029

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	AS Viljandi Aken ja Uks
Address	Puidu 6, Viljandi, Estonia 71020
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	Sister EPD
Parent EPD number	HUB-2139
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	Imane Uald lamkaddam, 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	VHDSAL balcony door
Additional labels	
Product reference	
Place of production	Puidu 6, Viljandi, Estonia 71020
Period for data	Calendar year of 2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 squaremetre of VHDSAL balcony door
Declared unit mass	35.46 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	1,39E+02
GWP-total, A1-A3 ($kgCO_2e$)	1,25E+02
Secondary material, inputs (%)	2.69
Secondary material, outputs (%)	100
Total energy use, A1-A3 (kWh)	548
Net freshwater use, A1-A3 (m^3)	1.02

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

VHDSAL is outward opening single frame wooden-aluminium balcony door.

The outside of the balcony door is covered with an aluminium profile, which is attached to the wooden part of the frame with clips. The door structure is thus protected, making it well fit for Nordic weather conditions.

Size: on sided 780-1780 x 1880- 2180mm, can be produced as a double-sided
Opening: side opening
Frame: pine, depth 106mm
Fittings: lock Assa, handle Hoppe
Glass: triple-glazed, thickness 42mm

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	13	EU
Minerals	63	EU
Fossil materials	4	EU
Bio-based materials	20	EU

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	2.9509
Biogenic carbon content in packaging, kg C	0.5918

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 squaremetre of VHDSAL balcony door
Mass per declared unit	35.46 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 raw materials have been processed the window frame will be assembled and glued together by pressing method. When the window has been pressed it will get surface coating. After surface coating windows will dry and will be equipped with necessary ironmongery, glazing, aluminium cladding and seals. Before packing windows to transportation pallets, final quality checks will be conducted. After that, the products will be ready for transportation to the construction site.

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 as a weighted average. According to the manufacturer, transportation doesn't cause losses as products are packaged properly. The final product is transported 752 km by lorry and 288 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.

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.
Air, soil, and water impacts during the use phase have not been studied.

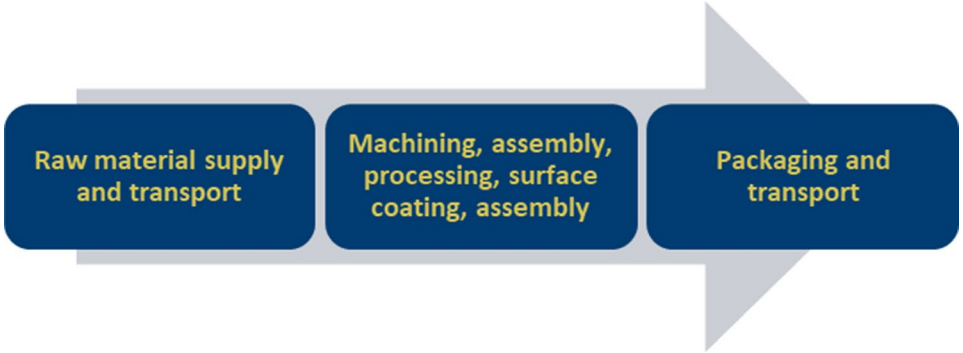
PRODUCT END OF LIFE (C1-C4, D)

EOL scenarios have been based on reasonable conclusions made by studying waste sorting regulations in Scandinavia. 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 sorting 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 windows are demounted using electric tools (module C1), materials are separated and sorted and then transported to a waste processing plant distant by 50 km, on >32 t lorry (Euro 5) (module C2). Materials recovered from dismantled products are collected, sorted or incinerated (module C3).

Benefits 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	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	%

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. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases 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	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	1,09E+02	1,22E+00	1,53E+01	1,25E+02	2,87E+00	7,53E+00	MND	MND	MND	MND	MND	MND	MND	3,92E-03	1,82E-01	1,41E+01	0,00E+00	-4,79E+00
GWP – fossil	kg CO_2e	1,20E+02	1,22E+00	1,78E+01	1,39E+02	2,87E+00	4,99E+00	MND	MND	MND	MND	MND	MND	MND	3,91E-03	1,82E-01	3,29E+00	0,00E+00	-4,53E+00
GWP – biogenic	kg CO_2e	-1,08E+01	0,00E+00	-2,54E+00	-1,34E+01	0,00E+00	2,54E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,08E+01	0,00E+00	1,45E-01
GWP – LULUC	kg CO_2e	9,69E-02	4,60E-04	5,86E-03	1,03E-01	1,38E-03	6,24E-04	MND	MND	MND	MND	MND	MND	MND	9,12E-06	6,80E-05	5,68E-04	0,00E+00	-4,03E-01
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	9,39E-06	2,88E-07	1,89E-06	1,16E-05	6,39E-07	1,20E-07	MND	MND	MND	MND	MND	MND	MND	1,95E-10	4,32E-08	8,85E-08	0,00E+00	2,16E-07
Acidification potential	mol H^+e	7,15E-01	7,14E-03	1,36E-01	8,58E-01	4,52E-02	2,26E-02	MND	MND	MND	MND	MND	MND	MND	2,12E-05	7,56E-04	5,00E-03	0,00E+00	5,72E-02
EP-freshwater[2)]	kg Pe	6,52E-03	8,09E-06	1,31E-04	6,66E-03	1,55E-05	3,02E-04	MND	MND	MND	MND	MND	MND	MND	4,15E-07	1,27E-06	2,19E-05	0,00E+00	-1,01E-03
EP-marine	kg Ne	1,24E-01	2,04E-03	2,10E-02	1,47E-01	1,17E-02	7,36E-03	MND	MND	MND	MND	MND	MND	MND	2,89E-06	2,27E-04	1,37E-03	0,00E+00	1,64E-02
EP-terrestrial	mol Ne	1,14E+00	2,25E-02	2,21E-01	1,38E+00	1,29E-01	4,14E-02	MND	MND	MND	MND	MND	MND	MND	3,28E-05	2,51E-03	1,51E-02	0,00E+00	2,17E-01
POCP ("smog")[3)]	kg NMVOCe	5,79E-01	6,82E-03	5,32E-01	1,12E+00	3,49E-02	1,51E-02	MND	MND	MND	MND	MND	MND	MND	8,93E-06	8,00E-04	4,03E-03	0,00E+00	2,37E-02
ADP-minerals & metals[4)]	kg Sbe	5,02E-03	2,78E-06	3,90E-05	5,07E-03	5,45E-06	4,06E-05	MND	MND	MND	MND	MND	MND	MND	9,35E-09	4,88E-07	2,70E-05	0,00E+00	1,28E-04
ADP-fossil resources	MJ	1,49E+03	1,85E+01	2,79E+02	1,79E+03	4,07E+01	8,31E+01	MND	MND	MND	MND	MND	MND	MND	8,35E-02	2,77E+00	8,62E+00	0,00E+00	-1,22E+02
Water use[5)]	m^3e depr.	3,43E+02	8,35E-02	6,09E+00	3,49E+02	1,61E-01	4,69E+00	MND	MND	MND	MND	MND	MND	MND	2,22E-03	1,30E-02	8,34E-01	0,00E+00	-3,01E+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	4,85E-06	1,37E-07	7,92E-07	5,77E-06	2,36E-07	5,66E-07	MND	MND	MND	MND	MND	MND	MND	6,51E-11	2,02E-08	7,01E-08	0,00E+00	5,43E-07
Ionizing radiation[6)]	kBq U235e	3,06E+00	9,46E-02	2,09E+00	5,24E+00	2,02E-01	8,62E-02	MND	MND	MND	MND	MND	MND	MND	2,27E-03	1,44E-02	8,02E-02	0,00E+00	-4,40E+00
Ecotoxicity (freshwater)	CTUe	3,50E+03	1,52E+01	1,64E+02	3,68E+03	3,08E+01	2,79E+02	MND	MND	MND	MND	MND	MND	MND	4,61E-02	2,31E+00	5,56E+01	0,00E+00	-1,16E+02
Human toxicity, cancer	CTUh	1,40E-07	4,25E-10	7,58E-09	1,48E-07	1,22E-09	7,55E-09	MND	MND	MND	MND	MND	MND	MND	1,34E-12	6,39E-11	2,21E-08	0,00E+00	4,04E-08
Human tox. non-cancer	CTUh	2,68E-06	1,58E-08	9,50E-08	2,79E-06	2,87E-08	1,64E-07	MND	MND	MND	MND	MND	MND	MND	4,59E-11	2,42E-09	4,68E-08	0,00E+00	-7,28E-07
SQP[7)]	-	2,39E+02	2,06E+01	2,43E+02	5,02E+02	3,24E+01	4,76E+00	MND	MND	MND	MND	MND	MND	MND	1,22E-02	2,98E+00	8,64E+00	0,00E+00	1,78E+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	1,26E+02	2,33E-01	3,03E+01	1,57E+02	4,32E-01	3,99E+00	MND	MND	MND	MND	MND	MND	MND	1,47E-02	3,73E-02	8,04E-01	0,00E+00	-1,13E+02
Renew. PER as material	MJ	1,06E+02	0,00E+00	1,97E+01	1,26E+02	0,00E+00	-1,97E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,06E+02	0,00E+00	1,64E+00
Total use of renew. PER	MJ	2,33E+02	2,33E-01	5,00E+01	2,83E+02	4,32E-01	-1,57E+01	MND	MND	MND	MND	MND	MND	MND	1,47E-02	3,73E-02	-1,05E+02	0,00E+00	-1,11E+02
Non-re. PER as energy	MJ	1,56E+03	1,85E+01	2,43E+02	1,82E+03	4,07E+01	5,61E+01	MND	MND	MND	MND	MND	MND	MND	8,34E-02	2,77E+00	8,62E+00	0,00E+00	-1,22E+02
Non-re. PER as material	MJ	1,62E+01	0,00E+00	1,23E+01	2,85E+01	0,00E+00	1,47E+01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-4,32E+01	0,00E+00	4,35E+00
Total use of non-re. PER	MJ	1,57E+03	1,85E+01	2,55E+02	1,85E+03	4,07E+01	7,08E+01	MND	MND	MND	MND	MND	MND	MND	8,34E-02	2,77E+00	-3,46E+01	0,00E+00	-1,18E+02
Secondary materials	kg	9,55E-01	5,32E-03	1,49E-01	1,11E+00	1,34E-02	4,39E-03	MND	MND	MND	MND	MND	MND	MND	6,42E-06	8,27E-04	8,40E-03	0,00E+00	4,60E+00
Renew. secondary fuels	MJ	5,90E-03	4,47E-05	6,38E-02	6,98E-02	8,17E-05	1,41E-04	MND	MND	MND	MND	MND	MND	MND	3,30E-08	7,76E-06	2,30E-04	0,00E+00	1,28E-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	8,94E-01	2,38E-03	1,20E-01	1,02E+00	4,34E-03	1,09E-01	MND	MND	MND	MND	MND	MND	MND	7,04E-05	3,68E-04	3,26E-02	0,00E+00	-6,70E-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	1,36E+01	2,00E-02	6,48E-01	1,42E+01	4,64E-02	1,56E-01	MND	MND	MND	MND	MND	MND	MND	2,92E-04	3,04E-03	3,20E-01	0,00E+00	-4,76E+00
Non-hazardous waste	kg	9,05E+01	3,37E-01	1,61E+01	1,07E+02	6,38E-01	2,12E+00	MND	MND	MND	MND	MND	MND	MND	1,89E-02	5,33E-02	1,62E+01	0,00E+00	-5,91E+01
Radioactive waste	kg	5,82E-03	1,27E-04	1,31E-03	7,25E-03	2,84E-04	3,64E-05	MND	MND	MND	MND	MND	MND	MND	6,10E-07	1,91E-05	3,16E-05	0,00E+00	-1,10E-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	1,20E+00	0,00E+00	2,95E-01	1,49E+00	0,00E+00	4,71E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,71E+01	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	4,11E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,28E+00	0,00E+00	0,00E+00
Exported energy	MJ	8,65E-02	0,00E+00	0,00E+00	8,65E-02	0,00E+00	3,48E+00	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.

Imane Uald lamkaddam, as an authorized verifier acting for EPD Hub Limited
22.11.2024