



**RTS EPD -ENVIRONMENTAL PRODUCT  
DECLARATION**

**AS Viljandi Aken ja Uks**

The workgroup of the PT18 RT EPD Committee set up by the Building Information Foundation RTS sr has approved the RTS EPD - Environmental Product Declaration of the following product:

**ED62 STANDARD  
ED62 STANDARD WITH GLASS**

The Environmental Product Declaration is valid until 11.1.2028.

AS Viljandi Aken ja Uks has the right to equip its approved product with RTS EPD-mark and use this mark when marketing this product.

The decision is in line with the requirements laid down in the standard EN ISO 14044, EN 15804 + A2:2019 and *RTS PCR- protocol: EPDs published by the Building Information Foundation RTS sr.*

**BUILDING INFORMATION LTD**

Laura Apilo  
Managing Director

Jukka Seppänen  
RTS EPD -Committee Secretary



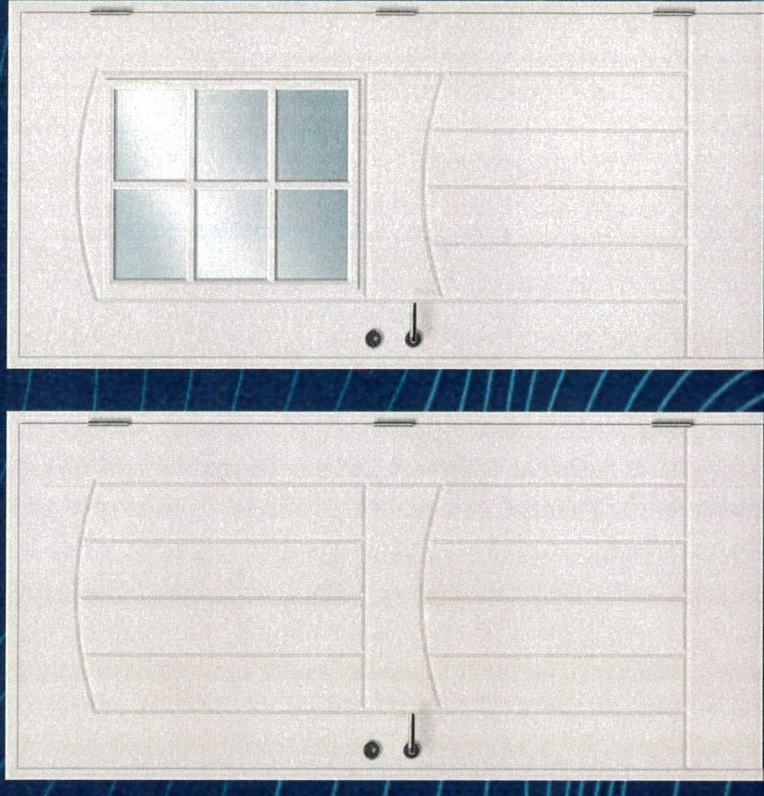
# ENVIRONMENTAL PRODUCT DECLARATION

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

ED62 STANDARD

ED62 STANDARD WITH GLASS

**AS VILJANDI AKEN JA UKS**



## GENERAL INFORMATION

### MANUFACTURER INFORMATION

<b>Manufacturer</b>	AS Viljandi Aken ja Uks
<b>Address</b>	Puidu 6, Viljandi, Estonia
<b>Contact details</b>	vau@vau.ee
<b>Website</b>	www.vau.ee
<b>Place(s) of production</b>	Estonia

### The Building Information Foundation RTS sr

EPDs within the same product category but from different programmes may not be comparable.



Jukka Seppänen  
RTS EPD Committee Secretary



Laura Apilo  
Managing Director

## EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

<b>EPD program operator</b>	The Building Information Foundation RTS sr
<b>EPD standards</b>	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
<b>Product category rules</b>	The CEN standard EN 15804 serves as the core PCR. In addition, the RTS PCR (English version, 26.8.2020) and EN 17213 is used.
<b>EPD author</b>	Mari Kirss Rangi Maja OÜ www.leasupport.com
<b>EPD verification</b>	Independent verification of this EPD and data, according to ISO 14025:2010: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
<b>Verification date</b>	21 December 2022
<b>EPD verifier</b>	Sigita Židonienė Vesta Consulting UAB www.vestaconsulting.lt
<b>EPD number</b>	RTS_203_23
<b>Publishing date</b>	11.01.2023
<b>EPD valid until</b>	11.01.2028

## PRODUCT INFORMATION

### PRODUCT IDENTIFICATION

- ED62 Standard external door
- ED62 Standard with glass external door

### PRODUCT DESCRIPTION AND APPLICATION

Wooden external door

### TECHNICAL SPECIFICATIONS

Size: one sided M9-10 x 20-21, can be produced as a double-sided.  
The declared unit has been based on one sided M 10 x 21 door.

Door leaf: thickness 62mm

Frame: pine, depth 105mm

Threshold: oak-aluminum, height 25mm

Fittings: lock case ASSA 565 + striking plate 0094; plate hinges 3248

Glass: clear, diamante, cotzwold or satinovo

Extras: locks from different manufacturers, stainless steel kick plate, door closer, door eye, doorbell

The declared unit includes fittings but no frames or extras.

### PRODUCT STANDARDS

EVS-EN 14351-2:2019

## PHYSICAL PROPERTIES OF THE PRODUCT AND ADDITIONAL TECHNICAL INFORMATION

Product properties and further information can be found on the manufacturer website [www.vau.ee](http://www.vau.ee)

### PRODUCT RAW MATERIAL MAIN COMPOSITION

	ED62	ED62 with glass
MDF, HDF, particleboard and other wood-based materials (kg)	36.9	30.0
Glass (kg)	0.0	5.0
Polystyrene (kg)	2.4	2.4
Adhesives and coatings (kg)	3.1	3.1
Metals (kg)	5.3	6.0
Plastic (kg)	0.0	0.6
Other materials (kg)	0.0	0.0
Packaging (kg)	4.9	4.9
Total (kg)	47.7	47.2
Total with packaging (kg)	52.7	52.1

Raw material category	Amount, mass- %	Material origin
Metals	11-13%	Europe
Minerals	0-11%	Europe
Fossil materials	12-13%	Europe
Bio-based materials	64-77%	Global

### SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

## 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 Klaipėda.

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 51,600m<sup>2</sup>.

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 LIFE-CYCLE

### 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 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 door leaf will be assembled and glued together using hot pressing method. When the door leaf has been pressed it will get an opening for the glazing if necessary and then surface coating. After surface coating door leaves will dry and will be equipped with necessary ironmongery, glazing and seals. Depending on the door type and order the door will be equipped with a frame and assembled as a set. Before packing and stacking door panels 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 RTS PCR. The typical installation place was assumed as an weighted average. According to the manufacturer, transportation doesn't cause losses as products are packaged properly. The final product is transported 1000 km by lorry. Vehicle capacity utilization volume factor is assumed to be 1.

Environmental impacts from installation into the building (A5) include the product installation losses, 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. The fasteners have been excluded as 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.

## PRODUCT END OF LIFE (C1-C4, D)

EOL scenarios have been based on default scenarios given in standard EN 17213:2020. 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 with the declared product. Losses in the sorting process are assumed to be very small and not considered in the assessment.

In the demolition phase, 100% of the waste is assumed to be collected as separate waste (C1). No fuels are assumed to be needed for demolition. 95% of non-glass and 30% of glass is assumed to be sent to the closest facilities (C2) for recycling. Vehicle capacity utilization volume factor is assumed to be 1. 30% of total glass and 95% of total metals is recycled; 95% of total plastics and 95% of total timber is incinerated with energy recovery (C3). 5% of total non-glass and 70% of total glass is landfilled (C4). Cut-off has been applied to exclude fasteners and extras.

Benefits of recyclable waste generated in the 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.

## LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2021
Declared unit	1 m <sup>2</sup>
Mass per declared unit	ED62 Standard - 47.7 kg ED62 Standard with glass - 47.2 kg

## BIOGENIC CARBON CONTENT AT FACTORY GATE

Biogenic carbon content in product	ED62 Standard - 17.8 kg ED62 Standard with glass - 14.7 kg
Biogenic carbon content in packaging	1.25 kg

Note. 1 kg biogenic carbon is equivalent to 44/12 kg of biogenic CO<sub>2</sub>.

## SYSTEM BOUNDARY

The scope of the EPD is cradle to gate with options (A4 and A5), modules C1–C4 and module D.

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	D	D	D	
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x	x	x
			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.

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.

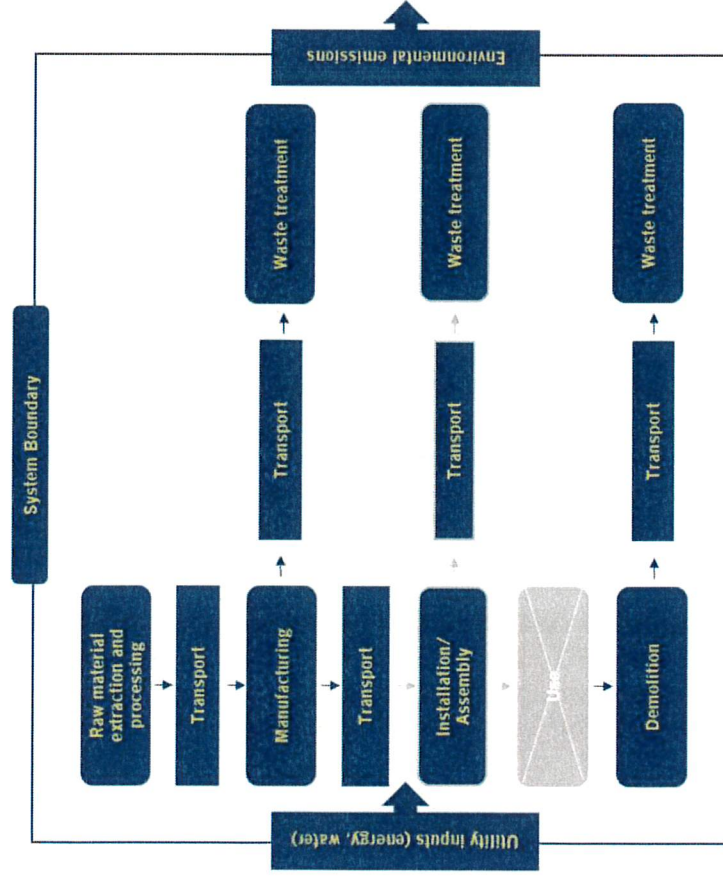
Cut-off has only been applied in A5 and EOL to exclude fasteners.

### BIOGENIC CARBON AND GWP-BIOGENIC

Biogenic carbon content in Products and packaging has been calculated according to EN 16449. Irrespective of the chosen allocation for co-products, biogenic carbon content reflects physical flows.

In the ecoinvent database, datasets with multiple products are allocated in the attributional system models, most frequently using price. When products have large difference in value, this leads to an allocation of most of the impacts to the more valuable product and can lead to a discrepancy between the biogenic carbon content of a product and the amount allocated to it based on the life cycle inventory (Ruiz et al, 2021). Therefore, GWP-biogenic values have been recalculated based on EN 16449 and EN 16485:2014. Carbon sequestration and carbon neutrality has only been assumed for sustainable wood (FSC-certified).

Share of biogenic carbon originating from sustainable (FSC-certified) sources	
ED62 Standard	80%
ED62 Standard with glass	76%



### CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 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



## SCENARIO DOCUMENTATION

### Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Modelled electricity based on Estonian residual mix for 2020-2021
Electricity CO <sub>2e</sub> / kWh	0.6

### Transport scenario documentation (A4)

Scenario parameter	Value
Specific transport CO <sub>2e</sub> emissions, kg CO <sub>2e</sub> / tkm	0.094
Average transport distance, km	1000 km by lorry
Capacity utilization (including empty return) %	100
Volume capacity utilization factor	= 1
Bulk density of transported products (including packaging), kg/m <sup>3</sup> : ED62 Standard - 52.7 kg ED62 Standard with glass - 52.1 kg	

### End of life scenario documentation

Scenario parameter	ED62 Standard	ED62 Standard with glass
Collection process – kg collected separately	47.75	47.19
Collection process – kg collected with mixed waste	0.00	0.00
Recovery process – kg for re-use	0.00	0.00
Recovery process – kg for recycling	5.02	7.20
Recovery process – kg for energy recovery	42.73	39.99
Disposal (total) – kg for final deposition	2.39	5.95
Scenario assumptions e.g. transportation	End-of-life product is transported 250 km with an average lorry	

# ENVIRONMENTAL IMPACT DATA

## ED62 STANDARD

### CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP – total	kg CO <sub>2</sub> e	1.47E+01	3.86E+01	5.33E+01	4.95E+00	6.23E+00	0.00E+00	2.03E+00	1.29E+02	2.63E-02	-7.43E+01
GWP – fossil	kg CO <sub>2</sub> e	7.07E+01	1.50E+01	8.57E+01	4.95E+00	2.55E+00	0.00E+00	2.03E+00	6.90E+00	2.63E-02	-8.70E+01
GWP – biogenic	kg CO <sub>2</sub> e	-5.73E+01	9.06E+00	-4.82E+01	2.74E-03	3.68E+00	0.00E+00	8.00E-04	1.09E+02	2.03E-04	7.59E-03
GWP – LULUC	kg CO <sub>2</sub> e	1.26E+00	1.46E+01	1.58E+01	1.53E-03	5.40E-05	0.00E+00	7.64E-04	1.30E+01	1.22E-05	1.24E+01
Ozone depletion pot.	kg CFC <sub>11</sub> e	4.45E-06	1.13E-06	5.58E-06	1.11E-06	1.77E-08	0.00E+00	4.54E-07	2.60E-07	7.88E-09	-6.83E-06
Acidification potential	mol H <sup>+</sup> e	4.78E-01	8.24E-02	5.60E-01	2.11E-02	1.57E-03	0.00E+00	8.59E-03	4.17E-02	2.15E-04	-2.98E-01
EP-freshwater	kg Pe	4.79E-03	6.09E-04	5.40E-03	4.69E-05	3.09E-06	0.00E+00	2.03E-05	2.66E-04	4.30E-07	-8.08E-04
EP-marine	kg Ne	8.14E-02	1.49E-02	9.62E-02	6.32E-03	6.87E-04	0.00E+00	2.51E-03	6.38E-03	7.16E-05	-4.71E-02
EP-terrestrial	mol Ne	8.88E-01	1.63E-01	1.05E+00	6.84E-02	6.87E-03	0.00E+00	2.75E-02	7.31E-02	8.12E-04	-5.15E-01
POCP (“smog”)	kg NMVOCe	3.01E-01	4.59E-02	3.47E-01	2.21E-02	1.72E-03	0.00E+00	8.48E-03	1.94E-02	2.32E-04	-1.83E-01
ADP-minerals & metals	kg Sbe	2.15E-02	7.84E-05	2.16E-02	8.42E-05	3.09E-06	0.00E+00	5.49E-05	1.66E-04	2.63E-07	-1.26E-05
ADP-fossil resources	MJ	9.59E+02	2.76E+02	1.23E+03	7.53E+01	1.47E+00	0.00E+00	3.06E+01	3.32E+01	5.97E-01	-1.16E+03
Water use	m <sup>3</sup> e depr.	2.82E+01	4.57E+00	3.28E+01	3.21E-01	1.86E-01	0.00E+00	1.17E-01	1.60E+00	2.63E-02	-9.87E+00

GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential.  
 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 experienced with the indicator.

## USE OF NATURAL RESOURCES

Impact category	Unit	AI-A2	A3	AI-A3	A4	A5	C1	C2	C3	C4	D
Renew. PER as energy	MJ	5.31E+02	3.09E+01	5.62E+02	7.90E-01	4.81E-02	0.00E+00	3.46E-01	3.99E+00	9.79E-03	-1.93E+02
Renew. PER as material	MJ	8.21E+02	-6.10E+01	7.60E+02	0.00E+00	-2.35E+01	0.00E+00	0.00E+00	-6.79E+02	-3.57E+01	-6.79E+02
Total use of renew. PER	MJ	1.35E+03	-3.01E-01	1.32E+03	7.90E-01	-2.35E+01	0.00E+00	3.46E-01	-6.75E+02	-3.57E+01	-8.72E+02
Non-re. PER as energy	MJ	8.27E+02	2.60E+02	1.09E+03	7.53E+01	1.47E+00	0.00E+00	3.06E+01	3.32E+01	5.97E-01	-3.10E+02
Non-re. PER as material	MJ	1.31E+02	1.60E+01	1.47E+02	0.00E+00	-1.60E+01	0.00E+00	0.00E+00	-1.25E+02	-6.56E+00	-1.25E+02
Total use of non-re. PER	MJ	9.59E+02	2.76E+02	1.23E+03	7.53E+01	-1.45E+01	0.00E+00	3.06E+01	-9.14E+01	-5.96E+00	-1.25E+02
Secondary materials	kg	2.99E+00	9.63E-03	3.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.64E-01
Renew. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E+02
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m <sup>3</sup>	5.78E-01	1.13E-01	6.91E-01	1.58E-02	7.85E-03	0.00E+00	5.25E-03	3.66E-02	6.68E-04	-8.07E-02

PER = Primary energy resources

## END OF LIFE – WASTE

Impact category	Unit	AI-A2	A3	AI-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	8.18E+00	1.24E+00	9.42E+00	8.95E-02	1.77E-01	0.00E+00	3.94E-02	7.29E-01	1.03E-03	-9.83E+00
Non-hazardous waste	kg	1.23E+02	2.47E+01	1.48E+02	8.42E+00	4.71E+00	0.00E+00	2.27E+00	5.90E+01	2.39E+00	-2.79E+01
Radioactive waste	kg	2.06E-03	9.50E-04	3.01E-03	5.05E-04	4.86E-06	0.00E+00	2.03E-04	9.66E-05	3.58E-06	-1.14E-03

## END OF LIFE – OUTPUT FLOWS

Impact category	Unit	AI-A2	A3	AI-A3	A4	A5	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	1.22E-01	1.22E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.02E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	2.40E+00	2.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.27E+01	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	2.44E+01	2.44E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.23E+02	0.00E+00	0.00E+00

### Key information table (RTS) – key information per kg of product

Impact category	Unit	A1-A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP – total	kg CO <sub>2</sub> e	1.47E+01	3.86E+01	5.33E+01	4.95E+00	6.23E+00	0.00E+00	2.03E+00	1.29E+02	2.63E-02	-7.45E+01
ADP-minerals & metals	kg Sbe	2.15E-02	7.84E-05	2.16E-02	8.42E-05	3.09E-06	0.00E+00	5.49E-05	1.66E-04	2.63E-07	-1.26E-05
ADP-fossil	MJ	9.59E+02	2.76E+02	1.23E+03	7.53E+01	1.47E+00	0.00E+00	3.06E+01	3.32E+01	5.97E-01	-1.16E+03
Water use	m <sup>3</sup> e depr.	2.82E+01	4.57E+00	3.28E+01	3.21E-01	1.86E-01	0.00E+00	1.17E-01	1.60E+00	2.63E-02	-9.87E+00
Secondary materials	kg	2.99E+00	9.63E-03	3.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.02E+00
Biog. C in product	kg C	N/A	1.78E+01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	N/A	1.25E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

### Environmental impacts – EN 15804+A1, CML/ISO 21930

Impact category	Unit	A1-A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Global Warming Pot.	kg CO <sub>2</sub> e	6.89E+01	1.46E+01	8.35E+01	4.90E+00	2.55E+00	0.00E+00	2.03E+00	6.84E+00	2.39E-02	-8.25E+01
Ozone depletion Pot.	kg CFC <sub>11</sub> e	4.07E-06	1.10E-06	5.17E-06	8.95E-07	1.77E-08	0.00E+00	3.58E-07	2.23E-07	6.21E-09	-5.70E-06
Acidification	kg SO <sub>2</sub> e	4.08E-01	6.63E-02	4.75E-01	1.47E-02	1.08E-03	0.00E+00	6.33E-03	3.49E-02	1.72E-03	-2.51E-01
Eutrophication	kg PO <sub>4</sub> <sup>3-</sup> e	1.18E-01	2.16E-02	1.39E-01	3.32E-03	1.42E-03	0.00E+00	1.43E-03	1.83E-02	3.58E-05	-4.63E-02
POCP ("smog")	kg C <sub>3</sub> H <sub>6</sub> e	2.47E-02	4.44E-03	2.91E-02	6.32E-04	2.99E-05	0.00E+00	2.75E-04	1.31E-03	6.45E-06	-2.29E-02
ADP-elements	kg Sbe	2.15E-02	7.84E-05	2.16E-02	8.42E-05	3.09E-06	0.00E+00	5.49E-05	1.66E-04	2.63E-07	-1.26E-05
ADP-fossil	MJ	9.59E+02	2.76E+02	1.23E+03	7.53E+01	1.47E+00	0.00E+00	3.06E+01	3.32E+01	5.97E-01	-1.16E+03

## ED62 STANDARD WITH GLASS CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	AI-A2	A3	AI-A3	A4	A5	C1	C2	C3	C4	D
GWP – total	kg CO <sub>2</sub> e	2.89E+01	6.04E+01	8.93E+01	4.90E+00	6.23E+00	0.00E+00	2.01E+00	1.14E+02	5.64E-02	-7.08E+01
GWP – fossil	kg CO <sub>2</sub> e	8.48E+01	1.54E+01	1.00E+02	4.90E+00	2.55E+00	0.00E+00	2.01E+00	9.82E+00	5.64E-02	-8.33E+01
GWP – biogenic	kg CO <sub>2</sub> e	-5.70E+01	3.05E+01	-2.66E+01	2.71E-03	3.68E+00	0.00E+00	7.90E-04	9.08E+01	2.54E-04	1.37E-02
GWP – LULUC	kg CO <sub>2</sub> e	1.26E+00	1.46E+01	1.58E+01	1.51E-03	5.40E-05	0.00E+00	7.55E-04	1.30E+01	2.44E-05	1.24E+01
Ozone depletion pot.	kg CFC <sub>11e</sub>	6.31E-06	1.17E-06	7.48E-06	1.09E-06	1.77E-08	0.00E+00	4.48E-07	2.69E-07	1.79E-08	-6.47E-06
Acidification potential	molH <sup>+</sup> e	5.99E-01	8.46E-02	6.84E-01	2.08E-02	1.57E-03	0.00E+00	8.49E-03	4.19E-02	4.65E-04	-2.94E-01
EP-freshwater	kg Pe	5.17E-03	6.18E-04	5.79E-03	4.64E-05	3.09E-06	0.00E+00	2.01E-05	2.67E-04	8.26E-07	-8.45E-04
EP-marine	kg Ne	1.02E-01	1.56E-02	1.18E-01	6.25E-03	6.87E-04	0.00E+00	2.48E-03	6.49E-03	1.57E-04	-4.61E-02
EP-terrestrial	molNe	1.13E+00	1.70E-01	1.30E+00	6.77E-02	6.87E-03	0.00E+00	2.71E-02	7.39E-02	1.78E-03	-5.04E-01
POCP ("smog")	kg NMVOCe	3.64E-01	4.82E-02	4.12E-01	2.19E-02	1.72E-03	0.00E+00	8.38E-03	1.96E-02	5.11E-04	-1.82E-01
ADP-minerals & metals	kg Sbe	2.56E-02	8.25E-05	2.57E-02	8.34E-05	3.09E-06	0.00E+00	5.43E-05	1.67E-04	6.89E-07	-1.26E-05
ADP-fossil resources	MJ	1.16E+03	2.85E+02	1.44E+03	7.45E+01	1.47E+00	0.00E+00	3.02E+01	3.37E+01	1.28E+00	-1.09E+03
Water use	m <sup>3</sup> e depr.	3.21E+01	4.89E+00	3.70E+01	3.18E-01	1.86E-01	0.00E+00	1.16E-01	1.87E+00	5.18E-02	-9.85E+00

GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential.  
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.

## USE OF NATURAL RESOURCES

Impact category	Unit	A1-A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Renew. PER as energy	MJ	5.41E+02	3.12E+01	5.72E+02	7.81E-01	4.81E-02	0.00E+00	3.42E-01	4.03E+00	1.74E-02	-1.93E+02
Renew. PER as material	MJ	8.21E+02	-1.41E+02	6.80E+02	0.00E+00	-2.35E+01	0.00E+00	0.00E+00	-6.03E+02	-3.17E+01	-6.03E+02
Total use of renew. PER	MJ	1.36E+03	-1.10E+02	1.25E+03	7.81E-01	-2.35E+01	0.00E+00	3.42E-01	-5.98E+02	-3.17E+01	-7.96E+02
Non-re. PER as energy	MJ	9.98E+02	2.69E+02	1.27E+03	7.45E+01	1.47E+00	0.00E+00	3.02E+01	3.37E+01	1.28E+00	-3.10E+02
Non-re. PER as material	MJ	1.59E+02	1.60E+01	1.75E+02	0.00E+00	-1.60E+01	0.00E+00	0.00E+00	-1.51E+02	-7.95E+00	-1.51E+02
Total use of non-re. PER	MJ	1.16E+03	2.85E+02	1.44E+03	7.45E+01	-1.45E+01	0.00E+00	3.02E+01	-1.17E+02	-6.68E+00	-1.51E+02
Secondary materials	kg	3.11E+00	1.06E-02	3.12E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.64E-01
Renew. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E+02
Non-re. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m <sup>3</sup>	1.98E+01	1.15E-01	1.99E+01	1.56E-02	7.85E-03	0.00E+00	5.19E-03	4.24E-02	1.28E-03	-8.07E-02

PER = Primary energy resources

## END OF LIFE – WASTE

Impact category	Unit	A1-A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	8.62E+00	1.30E+00	9.92E+00	8.86E-02	1.77E-01	0.00E+00	3.89E-02	8.17E-01	1.82E-03	-9.92E+00
Non-hazardous waste	kg	1.37E+02	3.18E+01	1.69E+02	8.34E+00	4.71E+00	0.00E+00	2.24E+00	5.65E+01	5.95E+00	-2.91E+01
Radioactive waste	kg	2.63E-03	9.69E-04	3.60E-03	5.00E-04	4.86E-06	0.00E+00	2.01E-04	9.95E-05	8.22E-06	-1.13E-03

## END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A2	A3	A1-A3	A4	A5	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	1.22E-01	1.22E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.20E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	9.24E+00	9.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.00E+01	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	9.43E+01	9.43E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.89E+02	0.00E+00	0.00E+00

### Key information table (RTS) – key information per kg of product

Impact category	Unit	A1-A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP – total	kg CO <sub>2</sub> e	2.89E+01	6.04E+01	8.93E+01	4.90E+00	6.23E+00	0.00E+00	2.01E+00	1.14E+02	5.64E-02	-7.08E+01
ADP-minerals & metals	kg Sbe	2.56E-02	8.25E-05	2.57E-02	8.34E-05	3.09E-06	0.00E+00	5.43E-05	1.67E-04	6.89E-07	-1.26E-05
ADP-fossil	MJ	1.16E+03	2.85E+02	1.44E+03	7.45E+01	1.47E+00	0.00E+00	3.02E+01	3.37E+01	1.28E+00	-1.09E+03
Water use	m <sup>3</sup> e depr.	3.21E+01	4.89E+00	3.70E+01	3.18E-01	1.86E-01	0.00E+00	1.16E-01	1.87E+00	5.18E-02	-9.85E+00
Secondary materials	kg	3.11E+00	1.06E-02	3.12E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.20E+00
Biog. C in product	kg C	N/A	1.47E+01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	N/A	1.25E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

### Environmental impacts – EN 15804+A1, CML /ISO 21930

Impact category	Unit	A1-A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Global Warming Pot.	kg CO <sub>2</sub> e	8.29E+01	1.49E+01	9.78E+01	4.85E+00	2.55E+00	0.00E+00	2.01E+00	9.76E+00	5.35E-02	-7.90E+01
Ozone depletion Pot.	kg CFC-11e	5.67E-06	1.13E-06	6.80E-06	8.86E-07	1.77E-08	0.00E+00	3.54E-07	2.33E-07	1.41E-08	-5.43E-06
Acidification	kg SO <sub>2</sub> e	4.45E-01	6.81E-02	5.13E-01	1.46E-02	1.08E-03	0.00E+00	6.25E-03	3.53E-02	1.89E-03	-2.47E-01
Eutrophication	kg PO <sub>4</sub> <sup>3-</sup> e	1.31E-01	2.28E-02	1.54E-01	3.28E-03	1.42E-03	0.00E+00	1.42E-03	1.85E-02	6.37E-05	-4.73E-02
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	2.66E-02	4.66E-03	3.13E-02	6.25E-04	2.99E-05	0.00E+00	2.71E-04	1.32E-03	1.36E-05	-2.32E-02
ADP-elements	kg Sbe	2.56E-02	8.25E-05	2.57E-02	8.34E-05	3.09E-06	0.00E+00	5.43E-05	1.67E-04	6.89E-07	-1.26E-05
ADP-fossil	MJ	1.16E+03	2.85E+02	1.44E+03	7.45E+01	1.47E+00	0.00E+00	3.02E+01	3.37E+01	1.28E+00	-1.09E+03

## BIBLIOGRAPHY

- ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.
- ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.
- ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.
- ISO 21930:2017 Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services
- Ecoinvent database v3.6 (2019) and One Click LCA database.
- EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.
- EN 17213:2020 Windows and doors - Environmental Product Declarations - Product category rules for windows and pedestrian doorsets
- EN 16449 Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide.
- EN 16485:2014 - Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction.
- RTS PCR in line with EN 15804+A2. Published by the Building Information Foundation RTS 26.8.2020.

- Elering. Residual mix. 2022 [<https://elering.ee/en/residual-mix>]
- Association of Issuing Bodies. 2020. 2021 [<https://www.aib-net.org/facts/european-residual-mix/2020>]
- Association of Issuing Bodies. European Residual Mix. 2022 [<https://www.aib-net.org/facts/european-residual-mix>]
- Wind Europe. Wind energy in Europe. 2021 Statistics and the outlook for 2022-2026. February 2022 [<https://windeurope.org/intelligence-platform/product/wind-energy-in-europe-2021-statistics-and-the-outlook-for-2022-2026/>]
- Elering. Electricity consumption and production. [<https://elering.ee/en/electricity-consumption-and-production>]
- Moreno Ruiz E., FitzGerald D., Symeonidis A., Ioannidou D., Sonderegger T., Dellenbach D. (2021). Müller J., Valsasina L., Vadenbo C., Minas N., Documentation of changes implemented in ecoinvent database v3. Association, Zürich, Switzerland
- Borzecka M. (2018). Absorbing the Potential of Wood Waste in EU Regions and Industrial Bio-based Ecosystems — BioReg. European wood waste statistics report for recipient and model regions. IUNG-PIB
- Achenbach H, Diederichs S, Wenker J, Rüter S. (2016). Environmental product declarations in accordance with EN 15804 and EN 16485 — How to account for primary energy of secondary resources?