Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804

ARL Side - Hung Wooden Window (Two Sashes)

Registration number:	EPD-Kiwa-EE-202574-EN
Issue date:	28-04-2025
Valid until:	28-04-2030
Declaration owner:	UAB "ARLANGA wood"
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

ARL Side - Hung Wooden Window (Two Sashes)

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-202574-EN

1.3 VALIDITY

Issue date: 28-04-2025

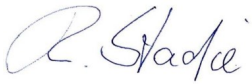
Valid until: 28-04-2030

1.4 PROGRAMME OPERATOR

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin
DE

Raoul Mancke

(Head of programme operations, Kiwa-Ecobility Experts)



Dr. Ronny Stadie

(Verification body, Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Manufacturer: UAB "ARLANGA wood"

Address: Jankiškiu str. 30, LT-02300 Vilnius

E-mail: wood@arlangawood.lt

Website: https://arlangawood.lt/

Production location: UAB ARLANGA wood

Address production location: Jankiškių g. 30, LT-02300 Vilnius

1.6 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804:2012+A2:2019 serves as the core PCR.

☐ Internal ☒ External

Niklas van Dijk, Kiwa GmbH

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The programme operator Kiwa-Ecobility Experts shall not be liable with respect to manufacturer data, life cycle assessment data and evidence.

1.8 PRODUCT CATEGORY RULES

Kiwa-Ecobility Experts (Kiwa-EE) – General Product Category Rules (2022-02-14)

EN 17213:2020 Windows and doors – Environmental Product Declarations – Product category rules for windows and pedestrian doorsets

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804+A2. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, the definition of

1 General information

the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPD program operators may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2 (5.3 Comparability of EPD for construction products) and ISO 14025 (6.7.2 Requirements for comparability).

1.10 CALCULATION BASIS

LCA method R<THINK: Ecobility Experts | EN15804+A2

LCA software*: Simapro 9.1

Characterization method: EN 15804 +A2 Method v1.0

LCA database profiles: EcoInvent version 3.6

Version database: v3.19 (20250306)

** Simapro is used for calculating the characterized results of the Environmental profiles within R<THINK.*

1.11 LCA BACKGROUND REPORT

This EPD is generated on the basis of the LCA background report 'ARL Side - Hung Wooden Window (Two Sashes)' with the calculation identifier ReTHiNK-102574.

2 Product

2.1 PRODUCT DESCRIPTION

This Environmental Product Declaration (EPD) covers Side hung wood windows, which are outward-opening, triple-glazed, customized building components. The dimensions (1000mm x 1000mm) are tailored to meet the customer's requirements. This is a manufacturer-specific EPD based on data from a single production site and does not represent an average or product group declaration.

Mass percentage of the main materials

Material	Weight kg	Precentage of material weight
Wood	33.7	56.7%
Primer	2.2	3.7%
Paint	2.8	4.6%
Metal	1.2	2.0%
Plastic	0.1	0.2%
Aluminium	0.2	0.3%
Rubber	0.6	1.0%
Silicone	0.2	0.3%
Total glass weight	18.2	30.6%
Aluminium profile for IGU	0.3	0.5%
Argon gas	0.0	0.1%
Weight	59.421	100.0%

Main Material Density and Thickness

Material	Thickness (mm)	Density (kg/m³)
Wood (Core Pine)	58mmx120 mm	500kg/m³ - 550kg/m³
	64mm x 68mm	
Metal	1mm-15mm	7850 kg/m³
Plastic	2mm-5mm	950 kg/m³
Aluminium	1mm-4mm	2700 kg/m³
Glass	4 mm (each pane)	2500 kg/m³

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

The products are used as enclosures for openings in facades of buildings. The intended uses are in domestic and commercial locations.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

According to the standard EN 17213, a reference service life of 30 years is assumed without IGU replacement. This is on the basis that the installation, maintenance and servicing of the product follows the relevant instructions of the manufacturer which are submitted to every customer and also available on the web page of UAB ARLANGA Wood. It should be noted that the Use stage with modules B1-B7 is not declared.

USED RSL (YR) IN THIS LCA CALCULATION:

30

2.4 TECHNICAL DATA

Characteristic	Value
Type	Side-hung wooden window
Glass type	Flat glass, Triple glazing
Total Weight*	59.42 kg
Size	1000mm x 1000mm
Glass surface*	0.61 m2
Heat permeability, window (Uw-value) (EN 10077) depends on the glass configuration.	1 W/(m²·K)
Safety equipment	n.a.
Sound insulation	n.a.
Air permeability (EN 1026)	Class 4

2 Product

Water tightness (EN12208)	AE1200
Resistance to wind load, test pressure (EN 12210)	Class 5
Resistance to wind load, frame deflection (EN 12210)	Class C
Dangerous substances	None

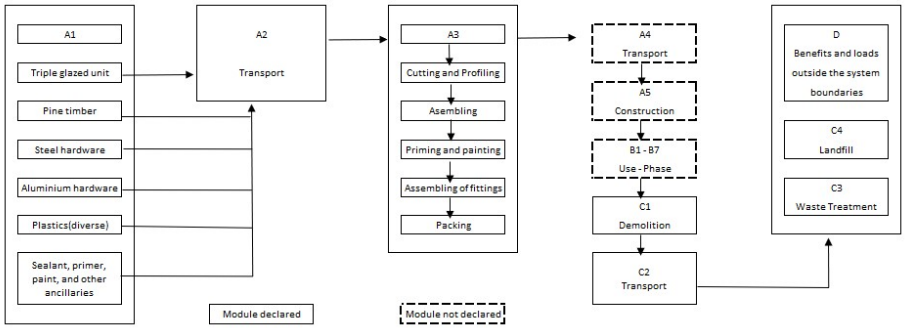
2.5 SUBSTANCES OF VERY HIGH CONCERN

The product does not contain any substances from the “Candidate List of Substances of Very High Concern” (SVHC) in amounts greater than 0.1% (1.000 ppm).

2.6 DESCRIPTION PRODUCTION PROCESS

The manufacturing contains the following processes:

- Extraction and delivery of raw materials;
- Cutting and profiling;
- Assembly of frame;
- Priming and painting of frame;
- Assembly of complete product;
- Packing and delivery.



3 Calculation rules

3.1 DECLARED UNIT

m²

The declared unit is 1 m² of a standard-sized Side-Hung Wooden Window (two sashes) with triple glazing and the following dimensions: 1000 x 1000 mm. Calculations are performed in accordance with EN 15804+A2 standards, considering the product life cycle stages from production to its use. This is a manufacturer-specific EPD based on data from a single production site and does not represent an average or product group declaration.

Reference unit: square meter (m2)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	m2
Weight per reference unit	59.421	kg
Conversion factor to 1 kg	0.016829	m2

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with modules C1-C4 and module D EPD. The life cycle stages included are as shown below:

(X = module included, ND = module not declared)

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN15804 contain the following:

Module A1 = Raw material supply	Module B5 = Refurbishment
Module A2 = Transport	Module B6 = Operational energy use
Module A3 = Manufacturing	Module B7 = Operational water use
Module A4 = Transport	Module C1 = De-construction / Demolition
Module A5 = Construction - Installation process	Module C2 = Transport
Module B1 = Use	Module C3 = Waste Processing
Module B2 = Maintenance	Module C4 = Disposal
Module B3 = Repair	Module D = Benefits and loads beyond the product system boundaries
Module B4 = Replacement	

3.4 REPRESENTATIVENESS

This EPD is representative for ARL Side - Hung Wooden Window (Two Sashes), a product of UAB "ARLANGA wood". The results of this EPD are representative for European Union.

3.5 CUT-OFF CRITERIA

Product stage (A1-A3)

All input flows (e.g., raw materials, transportation, energy use.) and output flows (e.g., production waste) are considered in this LCA. The neglected input flows do not exceed the limit of 5% of energy use and mass. Excluded processes are long-term emissions, the

3 Calculation rules

manufacture of equipment used in production, buildings or any other capital goods, the transport of personnel to the plant, the transportation of personnel within the plant, and research and development activities. The packaging materials represent 0.87% of the total product weight, which is below the 1% threshold specified in EN 15804+A2 for exclusion. Therefore, these materials were not included in the primary LCA calculation due to their negligible contribution to the overall environmental impact.

End of life stage (C1-C4)

All input flows (e.g. energy use for demolition or disassembly, transport to waste processing, etc.) and output flows (e.g. end-of-life waste processing of the product, etc.) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

Benefits and loads beyond the system boundary (Module D)

All benefits and loads beyond the system boundary resulting from reusable products, recyclable materials and/or useful energy carriers leaving the product system are considered in this LCA.

3.6 ALLOCATION

Allocations were avoided as far as possible. There are no coproducts or by-product in the manufacturing of the examined product. Based on energy consumption measurements, the energy requirements of the production were allocated to the individual products. Specific information about allocations within the background data is included in the documentation of the Ecoinvent datasets.

3.7 DATA COLLECTION & REFERENCE PERIOD

All process-specific data was collected for the manufacturing year 2023, from January 1st to the 31st of December. The quantities of raw and ancillary materials as well as energy consumption have been recorded and averaged over the entire operating year 2023.

3.8 ESTIMATES AND ASSUMPTIONS

All installed raw materials of the product were analysed, and the masses were determined following the allocation and cut-off requirements. Production-specific energy consumption was measured and provided by UAB ARLANGA Wood.

Since the production process is quite similar for all products produced at the manufacturing site, the energy consumption, ancillary materials and production waste are allocated according to the annual production of the standard-sized elements and then declared per square meter of the product. The total annual production data is recorded to a high standard of accuracy and precision.

The production waste of wood, paint and other mixed production waste is collected separately. As the product is marketed internationally, no country-specific waste scenario can be considered. Therefore, the waste scenario of PCR B (EN 17213 Appendix B.3) was adopted. Removing the window does not result in any emissions to air or soil, so the value for module C1 is assumed to be zero.

Additionally, the 'Acrylic dispersion' and 'Acrylic binder' used in the product are ready-to-use materials that do not require additional water for their application or processing. These materials are delivered in their final state and used directly without modifications. Therefore, the inclusion of water in the calculations is not necessary, as it does not contribute to the product's life cycle impact.

The NMD is the Netherlands' national environmental database, providing standardised data for assessing the environmental impact of building materials. The waste scenarios used in this EPD are taken from the NMD and can be considered as representative for the respective materials.

3.9 DATA QUALITY

In the operating data survey, all relevant process-specific data has been collected. The data relating to the manufacturing phase of the window was determined by UAB ARLANGA Wood.

Secondary data was taken from the Ecoinvent 3.6 (2019) database. The database is regularly checked and thus complies with the requirements of ISO 14040/44 (background data is not older than 10 years). The background data meets the requirements of EN 15804.

The scenarios included in this report represent the current practices in the relevant processes and are based on real data collected from suppliers and operational observations. They are representative of one of the most likely scenario alternatives for the product's life cycle.

The general rule was followed that specific data from specific production processes or average data derived from specific processes must be given priority when calculating an EPD or Life Cycle Assessment. Data for processes that the manufacturer cannot influence or choose, were backed up with generic data.

The data quality assessment (DQR) for this EPD was conducted in accordance with the requirements of EN 15804 Annex E, taking into account geographical, technical, and

3 Calculation rules

temporal representativeness. The DQR value for each material was calculated as the average of these three criteria, ensuring high data accuracy and reliability.

Summary of DQR values for the main materials:

DQR of the main materials

Material	DQR	Material	DQR
Timber - Pine	2.3	Glass	1.7
Paint	1.7	Aluminium for IGU	2.0
Metal	2.0	Argon gas	2.0
Plastic	1.7	Electricity (LT)	1.0
Aluminium	2.0	Heat (Gas)	2.3
Rubber	2.0		

These values reflect a high level of data quality and ensure that the results of the life cycle analysis are reliable and compliant with the standards.

3.10 POWER MIX

The “location-based approach” was taken into account for this Environmental Product Declaration.

The electricity mix applied in this LCA is based on the residual mix dataset from Ecoinvent 3.9.1 (2022) 1 kWh Electricity, low voltage {LT}| electricity, low voltage, residual mix | Cut-off, U. The GWP value for this electricity residual mix is 0.750 kg CO_2 eq/kWh. The data set includes energy production sources, grid losses, and the national energy balance relevant to Lithuania, aligning with EN 15804+A2 requirements.

The gas consumption is based on the environmental profile “NIBE 1m³ (31,65MJ/Nm³) Heat, district or industrial, natural gas {Europe without Switzerland}| heat production, natural gas, at industrial furnace >100kW | Cut-off, U” from the Ecoinvent 3.6 (2019) database. The GWP value for this gas mix is 2.2283 kg CO_2-eq./m³.

These values are derived from Lithuania’s national energy balance and comply with EN 15804+A2 requirements.

4 Scenarios and additional technical information

4.1 DE-CONSTRUCTION, DEMOLITION (C1)

No inputs are needed for the product at the de-construction / demolition phase

4.2 TRANSPORT END-OF-LIFE (C2)

The following distances and transport conveyance are assumed for transportation during end of life for the different types of waste processing.

Waste Scenario	Transport conveyance	Not removed (stays in work) [km]	Landfill [km]	Incineration [km]	Recycling [km]	Re-use [km]
EoL Wood contaminated (EN 17213) (Incineration Denmark)	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
Finishes (adhered to wood, plastic, metal) (NMD ID 2) (Incineration Lithuania)	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
EoL Steel (EN 17213)	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
EoL Plastics (EN 17213) (Incineration Denmark)	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
EoL Alu (EN 17213)	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57) (Incineration Denmark)	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
(ei3.6) glass (i.a. flat glass) (NMD ID 28)	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
(ei3.6) waste not applicable or evaporated (empty scenario) (NMD ID 26)	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)	0	0	0	0	0

The transport conveyance(s) used in the scenario(s) for transport during end of life has the following characteristics.

	Value and unit
Vehicle type used for transport	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)
Fuel type and consumption of vehicle	not available

4 Scenarios and additional technical information

Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.3 END OF LIFE (C3, C4)

The scenario(s) assumed for end of life of the product are given in the following tables.
First the assumed percentages per type of waste processing are displayed, followed by the assumed amounts.

Waste Scenario	Region	Not removed (stays in work) [%]	Landfill [%]	Incineration [%]	Recycling [%]	Re-use [%]
EoL Wood contaminated (EN 17213) (Incineration Denmark)	EU	0	5	95	0	0
Finishes (adhered to wood, plastic, metal) (NMD ID 2) (Incineration Lithuania)	EU	0	0	100	0	0
EoL Steel (EN 17213)	EU	0	5	0	95	0
EoL Plastics (EN 17213) (Incineration Denmark)	EU	0	5	95	0	0
EoL Alu (EN 17213)	EU	0	5	0	95	0
polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57) (Incineration Denmark)	EU	0	10	85	5	0
(ei3.6) glass (i.a. flat glass) (NMD ID 28)	NL	0	30	0	70	0
(ei3.6) waste not applicable or evaporated (empty scenario) (NMD ID 26)	NL	0	0	0	0	0

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
EoL Wood contaminated (EN 17213) (Incineration Denmark)	0.000	1.685	32.005	0.000	0.000
Finishes (adhered to wood, plastic, metal) (NMD ID 2) (Incineration Lithuania)	0.000	0.000	4.953	0.000	0.000
EoL Steel (EN 17213)	0.000	0.059	0.000	1.113	0.000
EoL Plastics (EN 17213) (Incineration Denmark)	0.000	0.005	0.087	0.000	0.000
EoL Alu (EN 17213)	0.000	0.024	0.000	0.456	0.000
polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57) (Incineration Denmark)	0.000	0.081	0.692	0.041	0.000
(ei3.6) glass (i.a. flat glass) (NMD ID 28)	0.000	5.457	0.000	12.733	0.000
Total	**0.000**	**7.310**	**37.738**	**14.343**	**0.000**

4 Scenarios and additional technical information

4.4 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

The presented Benefits and loads beyond the system boundary in this EPD are based on the following calculated Net output flows in kilograms and Energy recovery displayed in MJ Lower Heating Value.

Waste Scenario	Net output flow [kg]	Energy recovery [MJ]
EoL Wood contaminated (EN 17213) (Incineration Denmark)	0.000	451.918
Finishes (adhered to wood, plastic, metal) (NMD ID 2) (Incineration Lithuania)	0.000	22.318
EoL Steel (EN 17213)	0.536	0.000
EoL Plastics (EN 17213) (Incineration Denmark)	0.000	2.865
EoL Alu (EN 17213)	0.101	0.000
polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57) (Incineration Denmark)	0.041	18.813
(ei3.6) glass (i.a. flat glass) (NMD ID 28)	12.733	0.000
(ei3.6) waste not applicable or evaporated (empty scenario) (NMD ID 26)	0.000	0.000
Total	**13.411**	**495.914**

5 Results

For the impact assessment, the characterization factors of the LCIA method EN 15804 +A2 Method v1.0 are used. Long-term emissions (>100 years) are not considered in the impact assessment. The results of the impact assessment are only relative statements that do not make any statements about end-points of the impact categories, exceedance of threshold values, safety margins or risks. The following tables show the results of the indicators of the impact assessment, of the use of resources as well as of waste and other output flows.

5.1 ENVIRONMENTAL IMPACT INDICATORS PER SQUARE METER

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	-2.03E+1	3.88E+0	6.26E+1	4.62E+1	0.00E+0	9.60E-1	6.69E+1	2.95E+0	-2.52E+1
GWP-f	kg CO_2 eq.	3.85E+1	3.87E+0	6.39E+1	1.06E+2	0.00E+0	9.59E-1	1.46E+1	5.78E-2	-2.48E+1
GWP-b	kg CO_2 eq.	-5.88E+1	1.56E-3	-1.30E+0	-6.01E+1	0.00E+0	3.87E-4	5.23E+1	2.89E+0	-4.11E-1
GWP-luluc	kg CO_2 eq.	8.49E-2	1.42E-3	3.40E-2	1.20E-1	0.00E+0	3.52E-4	4.52E-4	1.58E-5	-3.63E-2
ODP	kg CFC 11 eq.	4.69E-6	8.55E-7	6.70E-6	1.23E-5	0.00E+0	2.12E-7	1.42E-7	1.76E-8	-2.11E-6
AP	mol H+ eq.	3.60E-1	2.25E-2	8.45E-2	4.67E-1	0.00E+0	5.57E-3	1.36E-2	4.05E-4	-6.96E-2
EP-fw	kg P eq.	1.50E-3	3.90E-5	4.81E-4	2.02E-3	0.00E+0	9.67E-6	2.26E-5	7.45E-7	-8.95E-4
EP-m	kg N eq.	5.41E-2	7.92E-3	2.48E-2	8.69E-2	0.00E+0	1.96E-3	5.78E-3	1.92E-4	-1.21E-2
EP-T	mol N eq.	6.35E-1	8.73E-2	2.71E-1	9.93E-1	0.00E+0	2.16E-2	6.56E-2	1.57E-3	-1.69E-1
POCP	kg NMVOC eq.	1.71E+1	2.49E-2	6.86E+0	2.40E+1	0.00E+0	6.17E-3	1.72E-2	4.92E-4	-4.16E-2
ADP-mm	kg Sb-eq.	1.29E-2	9.81E-5	4.09E-3	1.71E-2	0.00E+0	2.43E-5	1.43E-5	2.52E-7	1.23E-3
ADP-f	MJ	7.54E+2	5.84E+1	1.09E+3	1.90E+3	0.00E+0	1.45E+1	8.47E+0	1.23E+0	-3.36E+2
WDP	m3 world eq.	1.95E+1	2.09E-1	4.29E+0	2.40E+1	0.00E+0	5.18E-2	2.42E-1	2.34E-2	-2.69E+0

GWP-total=Global Warming Potential total (GWP-total) | **GWP-f**=Global Warming Potential fossil fuels (GWP-fossil) | **GWP-b**=Global Warming Potential biogenic (GWP-biogenic) | **GWP-luluc**=Global Warming Potential land use and land use change (GWP-luluc) | **ODP**=Depletion potential of the stratosperic ozon layer (ODP) | **AP**=Acidification potential, Accumulated Exceedance (AP) | **EP-fw**=Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater) | **EP-m**=Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine) | **EP-T**=Eutrophication potential, Accumulated Exceedance (EP-terrestrial) | **POCP**=Formation potential of tropospheric ozone (POCP) | **ADP-mm**=Abiotic depletion potential for non fossil resources (ADP mm) | **ADP-f**=Abiotic depletion for fossil resources potential (ADP fossil) | **WDP**=Water (user) deprication potential, deprivation-weighted water consumption (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PM	disease incidence	2.88E-6	3.47E-7	4.18E-7	3.64E-6	0.00E+0	8.60E-8	1.18E-7	8.09E-9	-4.82E-7
IR	kBq U235 eq.	1.56E+0	2.45E-1	8.10E-1	2.62E+0	0.00E+0	6.06E-2	3.06E-2	5.14E-3	-8.57E-1
ETP-fw	CTUe	8.23E+2	5.21E+1	6.12E+1	9.36E+2	0.00E+0	1.29E+1	8.86E+1	1.56E+1	-3.51E+2
HTP-c	CTUh	4.11E-8	1.69E-9	1.19E-8	5.47E-8	0.00E+0	4.19E-10	1.40E-7	2.10E-11	-6.50E-9
HTP-nc	CTUh	6.82E-7	5.71E-8	2.56E-7	9.95E-7	0.00E+0	1.41E-8	9.29E-8	7.12E-10	-2.11E-9
SQP	Pt	1.78E+2	5.07E+1	6.38E+1	2.92E+2	0.00E+0	1.25E+1	5.13E+0	2.77E+0	-2.07E+2

PM=Potential incidence of disease due to PM emissions (PM) | **IR**=Potential Human exposure efficiency relative to U235 (IRP) | **ETP-fw**=Potential Comparative Toxic Unit for ecosystems (ETP-fw) | **HTP-c**=Potential Comparative Toxic Unit for humans (HTP-c) | **HTP-nc**=Potential Comparative Toxic Unit for humans (HTP-nc) | **SQP**=Potential soil quality idex (SQP)

CLASSIFICATION OF DISCLAIMERS TO THE DECLARATION OF CORE AND ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2

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ILCD classification	Indicator	Disclaimer
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2

Disclaimer 1 – 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.

Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

5.2 INDICATORS DESCRIBING RESOURCE USE AND ENVIRONMENTAL INFORMATION BASED ON LIFE CYCLE INVENTORY (LCI)

PARAMETERS DESCRIBING RESOURCE USE

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	4.29E+2	7.31E-1	1.85E+2	6.15E+2	0.00E+0	1.81E-1	5.98E-1	2.65E-2	-9.74E+1
PERM	MJ	3.11E+2	0.00E+0	1.25E+2	4.36E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	7.37E+2	7.31E-1	3.09E+2	1.05E+3	0.00E+0	1.81E-1	5.98E-1	2.65E-2	-9.74E+1
PENRE	MJ	7.13E+2	6.20E+1	1.15E+3	1.93E+3	0.00E+0	1.54E+1	9.07E+0	1.31E+0	-3.64E+2
PENRM	MJ	5.85E+1	0.00E+0	4.98E+0	6.35E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	MJ	7.71E+2	6.20E+1	1.16E+3	1.99E+3	0.00E+0	1.54E+1	9.07E+0	1.31E+0	-3.64E+2
SM	Kg	9.60E-1	0.00E+0	1.19E-2	9.72E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.39E-3
RSF	MJ	1.41E-3	0.00E+0	5.66E-4	1.98E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	m^3	5.35E-1	7.12E-3	2.21E-1	7.62E-1	0.00E+0	1.76E-3	2.23E-2	1.41E-3	-4.06E-1

PERE=Use of renewable primary energy excluding renewable primary energy resources used as raw materials | **PERM**=Use of renewable primary energy resources used as raw materials | **PERT**=Total use of renewable primary energy resources | **PENRE**=Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials | **PENRM**=Use of non-renewable primary energy resources used as raw materials | **PENRT**=Total use of non-renewable primary energy resources | **SM**=Use of secondary material | **RSF**=Use of renewable secondary fuels | **NRSF**=Use of non-renewable secondary fuels | **FW**=Net use of fresh water

5 Results

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	Kg	2.02E-1	1.48E-4	8.18E-2	2.84E-1	0.00E+0	3.67E-5	3.05E-3	1.26E-6	3.33E-3
NHWD	Kg	8.92E+0	3.71E+0	1.77E+1	3.03E+1	0.00E+0	9.18E-1	3.87E+1	7.31E+0	-1.42E+0
RWD	Kg	5.02E-3	3.85E-4	1.94E-3	7.35E-3	0.00E+0	9.53E-5	3.42E-5	7.97E-6	-6.52E-4

HWD=Hazardous waste disposed | **NHWD**=Non-hazardous waste disposed | **RWD**=Radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
CRU	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	Kg	0.00E+0	0.00E+0	9.70E-4	9.70E-4	0.00E+0	0.00E+0	1.43E+1	0.00E+0	0.00E+0
MER	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	MJ	0.00E+0	0.00E+0	-5.90E+1	-5.90E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.54E+2
EEE	MJ	0.00E+0	0.00E+0	-3.43E+1	-3.43E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-8.93E+1

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EET**=Exported Energy, Thermic | **EEE**=Exported Energy, Electric

5 Results

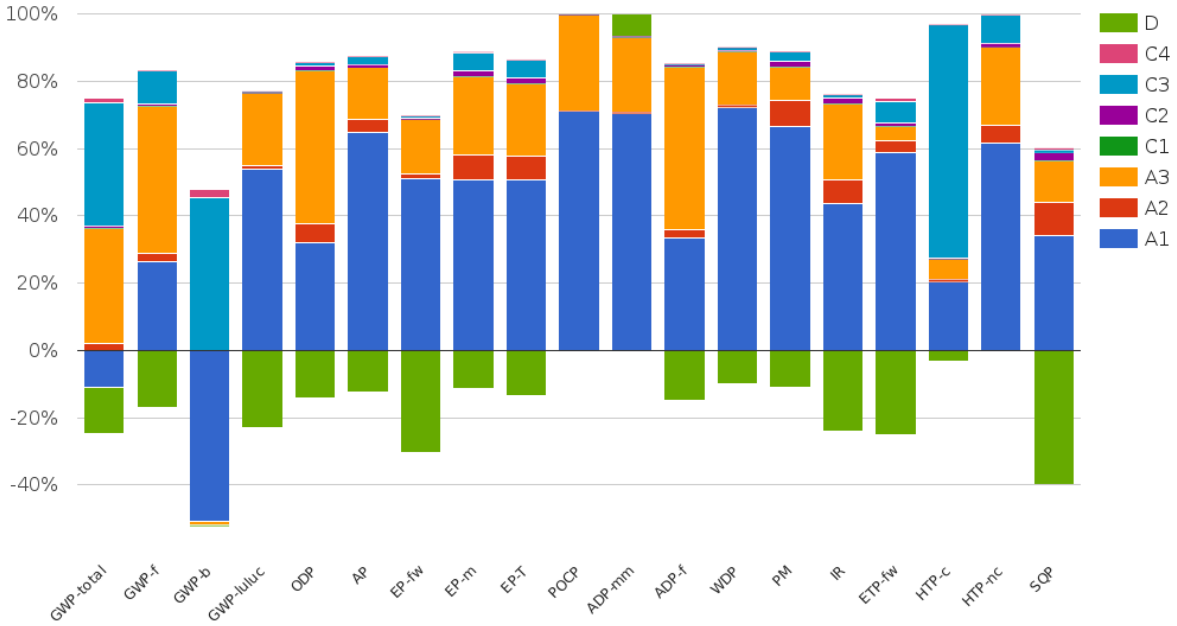
5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER SQUARE METER

BIOGENIC CARBON CONTENT

The following Information describes the biogenic carbon content in (the main parts of) the product at the factory gate per square meter:

Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	15.16	kg C
Biogenic carbon content in accompanying packaging	0	kg C

6 Interpretation of results



An analysis of the environmental impact of the modules shows that the main contributors are A1 (raw material supply) and A3 (manufacturing). In the A1 phase, the largest contribution to Global Warming Potential (GWP) comes from the production of wood, glass, and aluminum, while in A3, energy consumption in the manufacturing process has a significant impact. Together, these modules account for the majority of the total environmental load. Module D provides notable credits due to material recycling, especially for glass and aluminum.

7 References

ISO 14040
ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework; EN ISO 14040:2006

ISO 14044
ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines; EN ISO 14044:2006

ISO 14025
ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804+A2
EN 15804+A2: 2019: Sustainability of 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.

General PCR Ecobility Experts
Kiwa-Ecobility Experts (Kiwa-EE) – General Product Category Rules (2022-02-14)

CML-IA
Characterisation factors developed by the Institute of Environmental Sciences (CML): University Leiden (NL) – http://www.cml.leiden.edu/software/data-cmlia.html

Ecoinvent Database
Version 3.6 (2019)

REACH
REACH Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) https://echa.europa.eu/candidate-list-table

Stichting National Environmental Database (NMD), Rijswijk 2022
Verification protocol –inclusion of data in the Dutch environmental database, Version 1.1

EN 16449
EN 16449:2014, Wood and wood-based products – Calculation of the biogenic carbon content of wood and conversion to carbon dioxide

ISO 21930
ISO 21930:2007, Sustainability in building construction – Environmental declaration of building products

8 Contact information

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