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

Insulating glass

(egistiation nambel)	
ssue date:	27-10-2023
Valid until:	27-10-2028
Declaration owner:	Tianjin North Glass
	Technical Co., Ltd.
Publisher:	Kiwa-Ecobility Exp
Program operator:	Kiwa-Ecobility Exp

Status:











1 General information

1.1 PRODUCT

Insulating glass

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-139966-EN

1.3 VALIDITY

Issue date: 27-10-2023

Valid until: 27-10-2028

1.4 PROGRAM OPERATOR

Kiwa-Ecobility Experts Voltastraße 5 13355 Berlin DE

Frank Huppertz (Head of Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Manufacturer: Tianjin North Glass Industrial Technical Co., Ltd. Address: No.20, Baozhong Lane, 10000 Tianjin

F. Herel

Prof. Dr. Frank Heimbecher

(Chairman of the independent expert committee - Kiwa-Ecobility Experts) E-mail: nancy@northglass.com Website: www.northglass.com Production location: NG-insulating Address production location: No.20, Baozhong Lane, Energy-saving environmental Industrial Zone, Baodi District, Tianjin, China, 301800 Tianjin

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.

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Elisabeth Amat Guasch, Greenize

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 17074:2019: Glass in building – Environmental product declaration – Product category rules for flat glass products



1 General information

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. 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 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 EPDs programs 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: v3.15 (2023-07-12)

 * 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 'Insulating glass ' with the calculation identifier ReTHiNK-39966.



2 Product

2.1 PRODUCT DESCRIPTION

The insulating glass unit (IGU) is an assembly consisting of at least two panes of glass that are separated by one or more spacers, hermetically sealed along the periphery, mechanically stable and durable. The total thickness of the insulating glass is 24mm, which is composed of two pieces of 6 mm glass and an 12mm aluminum strip in the middle. It can improve the thermal insulation effect of housing. The insulating glass can maintain the energy-saving function of glass for a long time. The weight of the product packaging is 2.4 kg/m², and it is made of wood.

Components	Insulating glass (6+12A+6)	Comments
	template weight (%)	
Glass	92.16	Glass, SiO2
Sealant for insulating glass	0.75	Organosilicon
Aluminum strip	0.35	Aluminum
Butyl	0.07	Polyisobutylene
Molecular sieve	0.37	Silicic acid, aluminum salt
Packaging	6.30	Wood board

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

According to EN 1279:2018 the main intended uses of insulating glass units are installations in windows, doors, curtain walling, bonded glazing for doors, windows and curtain walling, roofs and partitions.

The achieving of the requirements of this standard means that the insulating glass units meet the needs of the intended uses and ensures through the conformity assessment that the visual, energy acoustic and safety parameters do not change significantly over time.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

According to the manufacturer and EN 17074, the reference service life is 30 years.

USED RSL (YR) IN THIS LCA CALCULATION:



NorthGlass

2.4 TECHNICAL DATA

The technical data for insulating glass units varies mainly from the type of glass used and whether or not the insulating glass unit contains gas.

In this case the insulating glass unit does contain gas and the two glasses are laminated.

The technical data is as follows:

- Fire resistance: NPD
- Reaction to fire: NPD
- External fire performance: NPD
- Bullet resistance: NPD
- Explosion resistance: NPD
- Fracture resistance: NPD
- Impact resistance of pendulum body: 1(C)1/NPD
- \cdot Resistance to sudden temperature variations and temperature differentiations: 273.15/473.15 K
- · Resistance to wind, snow, load in m/ma: NPD
- Acoustic attenuation to direct airborne noise: 35 dbA
- Emissivity: NPD
- Thermal properties (U-value): 1.4 W/ •K
- \cdot Light transmittance τv : 0.7
- Light reflection ρ v: 12/13
- · Solar energy transmittance τe: 0.33
- Solar energy reflection ρe: 0.35/0.32
- Solar factor g: 0.37

2.5 SUBSTANCES OF VERY HIGH CONCERN

The product does not contain substances from the "Candidate list of substances of very high concern (SVHC) for authorization" in concentration above 0.1%.

2.6 DESCRIPTION PRODUCTION PROCESS

Ready-made glass panels are send to the factory, where they are first cut. *After that, edges* are ground and subsequently glass panes are tempered in a heat soaking process. Eventually the glass is insulated and packed on wooden pallets.

2 Product





3 Calculation rules

3.1 DECLARED UNIT

1 m2

The technical parameter is "I square meter X 24 millimeter" the functional unit is one square metre (1 m²),and transmittance, Reflectance, U-value, g-value acoustics and safety classification according to European standards respectively are 0.33, 0.35/0.32, 1.4 W/m2·K, 0.37, 35dB, and CLASSI(C)I.

Reference unit: square meter (m2)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	m2
Weight per reference unit	30.583	kg
Conversion factor to 1 kg	0.032698	m2

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with modules C1-C4 and module D LCA. 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
Х	Х	Х	ND	Х	Х	Х	Х	Х								

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 -	Madula C2 - Transport
Installation process	Module Cz – Transport

Module B1 = Use	Module C3 = Waste Processing		
Module B2 = Maintenance	Module C4 = Disposal		
Madula DZ - Davasir	Module D = Benefits and loads beyond the		
Module B3 - Repair	product system boundaries		
Module B4 = Replacement			

3.4 REPRESENTATIVENESS

The input data are representative for insulating glass, a product of Tianjin North Glass Industrial Technical Co., Ltd.. The data are representative globally, since RoW (Rest of the World) Ecolnvent datasets were mainly used, which are most conservative and therefore applicable to other regions. Waste scenario data are representative for Europe as well as other regions where comparable waste processing technologies are used (e.g. U.S.A., Canada).

3.5 CUT-OFF CRITERIA

Product Stage (A1-A3)

The production stage consists of the extraction of raw materials, transportation of the raw materials, processing the raw materials into materials and the production of the product. The required energy for production, ancillary materials, packaging materials and production emissions are included.

End of life stage (C1-C4)

When the end of the life stage of the building is reached, the de-construction/demolition begins. This EPD includes de-construction/demolition (C1), the necessary transport (C2) from the demolition site to the sorting location and distance to final disposal. The end of life stage includes the final disposal to landfill (C4), incineration (C3) and needed recycling processes up to the end-of-waste point (C3). Loads and benefits of recycling, re-use and exported energy are part of module D.

The prescribed waste scenarios from the NMD Determination method v1.0 have been used for the various materials in the product.

Benefits and Loads beyond the system boundary (Module D)



3 Calculation rules

This stage contains the potential loads and benefits of recycling and re-use of raw materials/products. The loads contain the needed recycling processes from end-of-waste-point up to the point-of-equivalence of the substituted primary raw material and a load for secondary material that will be lost at the end-of-life stage.

The loads and benefits of recycling and reuse are included in this module. The benefits are calculated based on the primary content and the primary equivalent.

In addition, the benefits of energy recovery are granted at this stage. The amount of avoid energy is based on the Lower Heating Values of the materials and the efficiencies of the incinerators as mentioned in the NMD Determination method v1.0 or EcoInvent 3.6 (2019).

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 TIME PERIOD

All relevant data was collected for the calendar year 2022.

3.8 ESTIMATES AND ASSUMPTIONS

All material flows that contribute to more than 1% of the total mass, energy, or environmental impact of the system have been considered in the LCA, and all datasets chosen for the modules A1-A3 refer to the Rest-of-the-World or to China.

Transport distances for all raw materials (raw materials, operating materials, packaging) could be recorded. A payload factor of 50 percent was used for all truck transports (suppliers, disposal transports, and internal transports), which corresponds to a full delivery and empty return trip.

3.9 DATA QUALITY

All product-specific and process-specific data was provided by the manufacturer for the 2022 operating year and is therefore up-to-date. The background database (Ecoinvent v3.6) is regularly reviewed and thus complies with the requirements of EN 15804 (background data not older than 10 years).

3.10 GUARANTEES OF ORIGIN

The company mainly supplies the energy from the national grid. Therefore, a local based approach was chosen and no guarantees of origin are needed. However, part of the electricity consumption is covered by solar panels installed in the company.



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)	Landfill	Incineration	Recycling	Re-use
		[km]	[km]	[km]	[km]	[km]
alass (i.a. flat alass) (NMD ID 28)	Lorry (Truck), unspecified (default) market	0	100	150	50	0
	group for (GLO)	0				0
finishes (adhered to wood, plastic, metal)	Lorry (Truck), unspecified (default) market	0	100	150	50	0
(NMD ID 2)	group for (GLO)	0	100	150	50	0
plastics via residue (NMD ID (3)	Lorry (Truck), unspecified (default) market	0	100	150	FO	0
	group for (GLO)	0	100	100	50	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	Lorry (Truck), unspecified (default) market group for (GLO)
Fuel type and consumption of vehicle	not available
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 [%]
glass (i.a. flat glass) (NMD ID 28)	NL	0	30	0	70	0



4 Scenarios and additional technical information

Waste Scenario	Region	Not removed (stays in work) [%]	Landfill [%]	Incineration [%]	Recycling [%]	Re-use [%]
finishes (adhered to wood, plastic, metal) (NMD ID 2)	NL	0	0	100	0	0
plastics, via residue (NMD ID 43)	NL	0	20	80	0	0

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
glass (i.a. flat glass) (NMD ID 28)	0.000	9.082	0.000	21.191	0.000
finishes (adhered to wood, plastic, metal) (NMD ID 2)	0.000	0.000	0.283	0.000	0.000
plastics, via residue (NMD ID 43)	0.000	0.005	0.021	0.000	0.000
Total	0.000	9.087	0.305	21.191	0.000

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]
glass (i.a. flat glass) (NMD ID 28)	21.191	0.000
finishes (adhered to wood, plastic, metal) (NMD ID 2)	0.000	9.293
plastics, via residue (NMD ID 43)	0.000	0.454
Total	21.191	9.747



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

Abbreviation	Unit	Al	A2	A3	C1	C2	C3	C4	D
AP	mol H+ eqv.	3.36E-1	1.08E-2	1.45E-1	0.00E+0	1.58E-3	1.12E-3	3.80E-4	-4.20E-2
GWP-total	kg CO2 eqv.	3.32E+1	1.86E+0	1.87E+1	0.00E+0	2.72E-1	1.18E+0	3.97E-2	-8.53E+0
GWP-b	kg CO2 eqv.	2.29E-1	8.57E-4	-4.10E+0	0.00E+0	1.25E-4	1.71E-1	1.26E-4	-6.95E-2
GWP-f	kg CO2 eqv.	3.30E+1	1.86E+0	2.28E+1	0.00E+0	2.72E-1	1.01E+0	3.96E-2	-8.45E+0
GWP-luluc	kg CO2 eqv.	1.30E-2	6.81E-4	7.18E-3	0.00E+0	9.96E-5	1.48E-4	7.66E-6	-7.31E-3
EP-m	kg N eqv.	5.29E-2	3.80E-3	2.88E-2	0.00E+0	5.55E-4	4.12E-4	1.43E-4	-5.97E-3
EP-fw	kg P eqv.	6.05E-4	1.87E-5	5.59E-4	0.00E+0	2.74E-6	5.87E-6	2.91E-7	-3.38E-4
EP-T	mol N eqv.	6.46E-1	4.18E-2	3.22E-1	0.00E+0	6.12E-3	3.96E-3	1.57E-3	-9.71E-2
ODP	kg CFC 11 eqv.	3.42E-6	4.10E-7	8.97E-7	0.00E+0	6.00E-8	2.94E-8	1.90E-8	-3.61E-7
POCP	kg NMVOC	1.59E-1	1.19E-2	8.68E-2	0.00E+0	1.75E-3	1.13E-3	4.49E-4	-1.80E-2
		7 (05.2	2005.1	2.255.2	0.005.0	(105:0	2 625 0	1005.0	
ADP-f	MJ	3.49E+2	2.80E+1	2.25E+2	0.00E+0	4.10E+0	2.62E+0	1.26E+0	-7.70E+1
ADP-mm	kg Sb-eqv.	3.86E-3	4.71E-5	4.81E-4	0.00E+0	6.89E-6	8.51E-6	3.45E-7	-9.75E-4
WDP	m3 world eqv.	7.81E+0	1.00E-1	2.54E+1	0.00E+0	1.47E-2	1.12E-1	3.86E-3	-2.91E+0

AP=Acidification (AP) | GWP-total=Clobal warming potential (GWP-total) | GWP-b=Clobal warming potential - Biogenic (GWP-b) | GWP-f=Clobal warming potential - Fossil (GWP-f) | GWP-f=Clobal warming potential - Land use and land use change (GWP-luluc) | EP-m=Eutrophication marine (EP-m) | EP-fw=Eutrophication, freshwater (EP-fw) | EP-T=Eutrophication, terrestrial (EP-T) | ODP=Ozone depletion (ODP) | POCP=Photochemical ozone formation - human health (POCP) | ADP-f=Resource use, fossils (ADP-f) | ADP-mm=Resource use, minerals and metals (ADP-mm) | WDP=Water use (WDP)



ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15084+A2

Abbreviation	Unit	Al	A2	A3	C1	C2	C3	C4	D
ETP-fw	CTUe	8.29E+2	2.50E+1	5.61E+2	0.00E+0	3.66E+0	7.67E+1	6.97E-1	-2.90E+2
PM	disease incidence	3.35E-6	1.67E-7	1.87E-6	0.00E+0	2.45E-8	1.70E-8	8.11E-9	-3.66E-7
HTP-c	CTUh	9.39E-9	8.10E-10	8.14E-9	0.00E+0	1.19E-10	1.51E-9	1.46E-11	-2.58E-9
HTP-nc	CTUh	2.77E-7	2.73E-8	2.55E-7	0.00E+0	4.00E-9	7.05E-9	3.79E-10	-9.01E-8
IR	kBq U235 eqv.	7.71E-1	1.17E-1	3.13E-1	0.00E+0	1.72E-2	1.36E-2	5.45E-3	-2.54E-1
SQP	Pt	1.72E+2	2.43E+1	5.54E+2	0.00E+0	3.56E+0	2.33E+0	2.77E+0	-5.25E+1

ETP-fw=Ecotoxicity, freshwater (ETP-fw) | PM=Particulate Matter (PM) | HTP-c=Human toxicity, cancer (HTP-c) | HTP-nc=Human toxicity, non-cancer (HTP-nc) | IR=Ionising radiation, human health (IR) | SQP=Land use (SQP)

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

ILCD classification	Indicator	Disclaimer	
	Global warming potential (GWP)	None	
ILCD type / level 1	Depletion potential of the stratospheric ozone layer (ODP)	None	
	Potential incidence of disease due to PM emissions (PM)	None	
	AAcidification potential, Accumulated Exceedance (AP)	None	
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment	None	
	(EP-freshwater)	None	
	Eutrophication potential, Fraction of nutrients reaching marine end compartment	N	
ILCD type / level 2	(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	
II CD 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	
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2	
	Potential Comparative Toxic Unit for humans (HTP-c)	2	



ILCD classification	Indicator	Disclaimer
	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)

Abbreviation	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	МЈ	1.73E+1	3.51E-1	7.56E+1	0.00E+0	5.13E-2	1.71E-1	1.93E-2	-8.51E+0
PERM	МЈ	0.00E+0	0.00E+0	3.36E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	МЈ	1.73E+1	3.51E-1	1.09E+2	0.00E+0	5.13E-2	1.71E-1	1.93E-2	-8.51E+0
PENRE	МЈ	3.77E+2	2.97E+1	2.39E+2	0.00E+0	4.35E+0	2.77E+0	1.33E+0	-8.24E+1
PENRM	МЈ	0.00E+0							
PENRT	МЈ	3.77E+2	2.97E+1	2.39E+2	0.00E+0	4.35E+0	2.77E+0	1.33E+0	-8.24E+1
SM	Kg	9.03E-2	0.00E+0	8.22E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	МЈ	0.00E+0							
NRSF	МЈ	0.00E+0							
FW	M3	2.08E-1	3.41E-3	6.03E-1	0.00E+0	4.99E-4	3.33E-3	1.50E-3	-8.38E-2

PARAMETERS DESCRIBING RESOURCE USE

PERE=renewable primary energy ex. raw materials | PERM=renewable primary energy used as raw materials | PERT=renewable primary energy total | PENRE=non-renewable primary energy used as raw materials | PENRT=non-renewable primary energy total | SM=use of secondary material | RSF=use of renewable secondary fuels | NRSF=use of non-renewable secondary fuels | FW=use of net fresh water



OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbreviation	Unit	Al	A2	A3	C1	C2	C3	C4	D
HWD	Kg	1.27E-3	7.10E-5	5.39E-4	0.00E+0	1.04E-5	6.40E-6	1.40E-6	-6.56E-5
NHWD	Kg	2.34E+0	1.78E+0	4.23E+0	0.00E+0	2.60E-1	7.09E-1	9.08E+0	-8.66E-1
RWD	Kg	1.04E-3	1.84E-4	3.86E-4	0.00E+0	2.69E-5	1.61E-5	8.55E-6	-2.07E-4

HWD=hazardous waste disposed | NHWD=non hazardous waste disposed | RWD=radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1	A2	A3	C1	C2	C3	C4	D
CRU	Kg	0.00E+0							
MFR	Kg	0.00E+0	0.00E+0	3.05E+0	0.00E+0	0.00E+0	2.12E+1	0.00E+0	0.00E+0
MER	Kg	0.00E+0							
EET	СM	0.00E+0	3.02E+0						
EEE	МЈ	0.00E+0	1.75E+0						

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



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	0	kg C
Biogenic carbon content in accompanying packaging	1.091	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount of uptake of carbon dioxide is account in module A1 by the main parts of the product. Related uptake and release of carbon dioxide in downstream processes are not taken into account in this number although they do appear in the presented results.

Uptake Biogenic Carbon dioxide	Amount	Unit
Packaging	4	kg CO2 (biogenic)



6 Interpretation



The environmental impact in the composition of the 6+12A+6 insulating glass unit is determined by the extraction and processing of the raw materials (module A1), followed by the manufacturing energy cost as well as the waste generated during the process (module A3). The stage that generates the least environmental impact is the transport of the materials, both to the production place (module A2) and the waste treatment place (module C2).



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 14040:2006

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 17074

EN 17074:2019: Glass in building – Environmental product declaration – Product category rules for flat glass products

PCR A

General Program Category Rules for Construction Products from the EPD program Kiwa-Ecobility Experts, 2022-02-14

PCR B

EN 17074:2019: Glass in building – Environmental product declaration – Product category rules for flat glass products



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