

Result summary



# Modulares Glasdach MS78

LAMILUX Heinrich Strunz GmbH

Calculation number:	ReTHiNK-67790
Generation on:	06-08-2024
Issue date:	13-06-2024
Valid until:	13-06-2029
Status:	verified



# 1 General information

## 1.1 PRODUCT

Modulares Glasdach MS78

## 1.2 VALIDITY

Issue date: 13-06-2024

Valid until: 13-06-2029

## 1.3 OWNER OF THE DECLARATION

**Manufacturer:** LAMILUX Heinrich Strunz GmbH

**Address:** Zehstr. 2, 95111 Rehau

**E-mail:** Helmut.Rosenstiel@lamilux.de

**Website:** www.lamilux.de

**Production location:** Lamilux Heinrich Strunz GmbH

**Address production location:** Zehstraße 2, 95111 Rehau

## 1.4 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



Lucas Pedro Berman, Senda



## 1.5 PRODUCT CATEGORY RULES

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

DIN EN 17213 Windows and doors - Environmental Product Declarations - Product category rules for windows and pedestrian doorsets (2020-09)

## 1.6 DECLARED UNIT

### 1 m<sup>2</sup> glass roof

The declared unit is one square meter glass roof.

Reference unit: square meter (m<sup>2</sup>)

## 1.7 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	m <sup>2</sup>
Weight per reference unit	87.455	kg
Conversion factor to 1 kg	0.011434	m <sup>2</sup>

## 1.8 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options 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
X	X	X	X	X	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

# 1 General information

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	

## 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 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).

## 2 Product

### 2.1 PRODUCT DESCRIPTION

The Modulares Glasdach MS78 is a daylight element. It is available in widths of up to 3 meters with variable lengths. It can be installed with an inclination of between 5° and 30°. This, together with the flat glass surface and the frame profile on the eaves side, ensures optimum water drainage. Dirt edges are also avoided and the glass surfaces are cleaner.

The high glass proportion of the MS78 provides an optimal daylight incidence. The MS78 also allows a custom integration of vents, ensuring a maximum supply of fresh air to a building.

It guarantees maximum safety from the first sealing level thanks to a butt-jointed drainage profile (SEP), the best quality standards thanks to a high degree of prefabrication as well as durable and easy-to-clean materials and surfaces.

Material	Composition
Glass	52,1 %
Aluminium	36,5 %
Steel	4,1 %
Rockwool	3,8 %
Plastic	1 %
Rubber	0,7 %
Electronics	0,5 %
Other	1,3 %

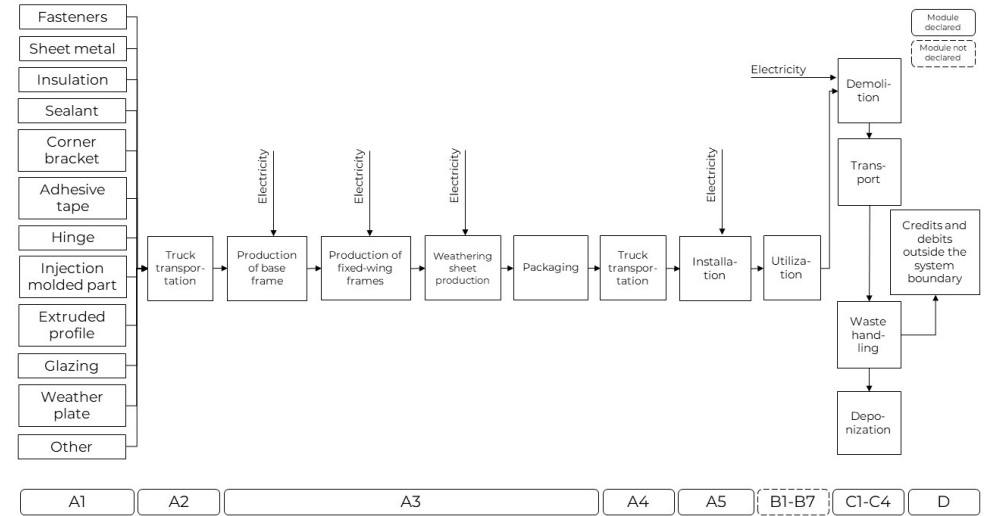
The product is produced in Germany, and sold both inside and outside of Germany.

### 2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

The Modulares Glasdach MS78 can be used on roofs to provide daylight and ventilate a building.

### 2.3 DESCRIPTION PRODUCTION PROCESS

The Modulares Glasdach MS78 is manufactured in three different steps. First, the raw materials are supplied. Then the sheet metal is laser cut and bent. Then there are three different production processes. The first is the production of the base frames. Then the fixed/sash frames are produced. Finally, the weather sheets are produced. Each of these three elements is transported to the construction site and assembled there.

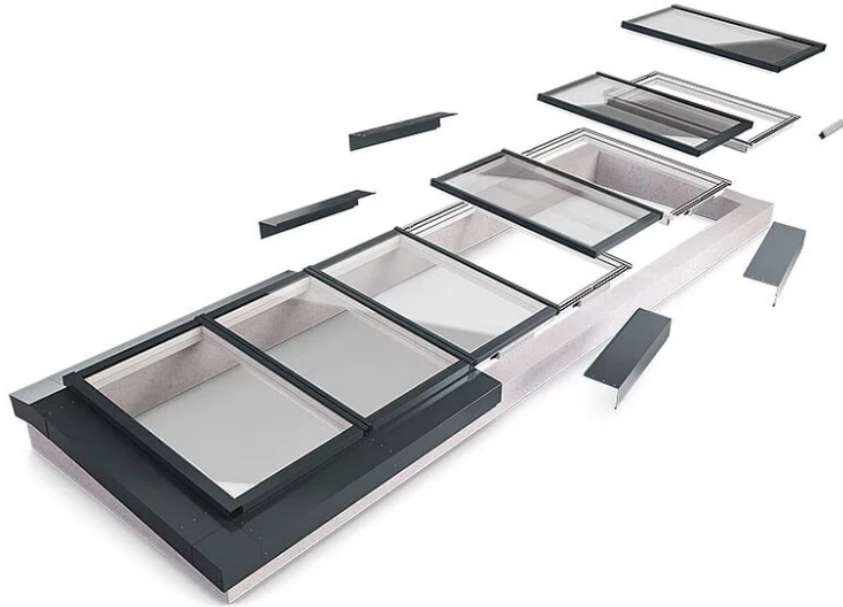


### 2.4 CONSTRUCTION DESCRIPTION

The base frames are fitted first. Then the fixed and sash frames are fitted. The insulation is then fitted. Finally, the weatherboarding is fitted.

For the installation of the Modulares Glasdach MS78, it is assumed that a crane is needed.

## 2 Product



### 3 Results

#### 3.1 ENVIRONMENTAL IMPACT INDICATORS PER SQUARE METER

##### CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1- A3	A4	A5	C1	C2	C3	C4	D	Total
AP	mol H+ eqv.	5.11E+0	2.62E-2	2.40E-1	5.38E+0	1.73E-2	1.45E-2	3.76E-3	4.50E-3	3.98E-2	9.65E-4	-2.40E+0	3.06E+0
GWP-total	kg CO2 eqv.	7.79E+2	4.52E+0	2.82E-1	7.84E+2	5.57E+0	4.54E+1	6.65E-1	7.77E-1	1.88E+1	1.95E-1	-3.65E+2	4.90E+2
GWP-b	kg CO2 eqv.	2.89E+0	2.08E-3	-4.13E+1	-3.84E+1	3.60E-3	4.19E+1	1.93E-2	3.58E-4	3.76E-1	6.99E-4	1.60E+0	5.45E+0
GWP-f	kg CO2 eqv.	7.73E+2	4.51E+0	4.15E+1	8.19E+2	5.57E+0	3.51E+0	6.44E-1	7.76E-1	1.84E+1	1.94E-1	-3.66E+2	4.83E+2
GWP-luluc	kg CO2 eqv.	2.37E+0	1.65E-3	1.17E-1	2.49E+0	2.21E-3	1.93E-3	1.50E-3	2.84E-4	4.85E-3	4.38E-5	-1.38E+0	1.12E+0
EP-m	kg N eqv.	7.88E-1	9.22E-3	4.49E-2	8.42E-1	3.55E-3	4.98E-3	4.77E-4	1.59E-3	7.57E-3	3.94E-4	-3.63E-1	4.97E-1
EP-fw	kg P eqv.	2.61E-2	4.55E-5	1.71E-3	2.78E-2	5.10E-5	8.56E-5	6.88E-5	7.83E-6	2.59E-4	1.67E-6	-1.20E-2	1.63E-2
EP-T	mol N eqv.	8.72E+0	1.02E-1	4.97E-1	9.32E+0	3.97E-2	5.61E-2	5.88E-3	1.75E-2	8.62E-2	3.65E-3	-4.14E+0	5.39E+0
ODP	kg CFC 11 eqv.	3.60E-5	9.96E-7	2.80E-6	3.98E-5	1.30E-6	2.61E-7	5.42E-8	1.71E-7	7.75E-7	4.05E-8	-1.36E-5	2.88E-5
POCP	kg NMVOC eqv.	2.53E+0	2.90E-2	1.65E-1	2.72E+0	1.55E-2	1.50E-2	1.49E-3	4.99E-3	2.40E-2	1.07E-3	-1.20E+0	1.59E+0
ADP-f	MJ	7.97E+3	6.81E+1	5.48E+2	8.59E+3	8.75E+1	2.50E+1	1.33E+1	1.17E+1	6.90E+1	2.89E+0	-3.43E+3	5.36E+3
ADP-mm	kg Sb-eqv.	1.36E-2	1.14E-4	1.09E-2	2.46E-2	1.64E-4	2.09E-5	4.69E-6	1.97E-5	1.63E-4	9.46E-7	1.06E-1	1.31E-1
WDP	m3 world eqv.	1.32E+2	2.43E-1	1.17E+1	1.44E+2	2.94E-1	3.82E-1	1.48E-1	4.19E-2	1.07E+0	4.14E-2	-2.74E+1	1.18E+2

AP=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global 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)

### 3 Results

#### ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D	Total
ETP-fw	CTUe	1.98E+4	6.07E+1	1.13E+3	2.10E+4	7.32E+1	4.80E+1	9.07E+0	1.04E+1	4.02E+2	4.00E+2	-9.00E+3	1.30E+4
PM	disease incidence	6.06E-5	4.06E-7	3.16E-6	6.41E-5	4.05E-7	1.19E-7	9.84E-9	6.98E-8	4.76E-7	1.88E-8	-2.89E-5	3.64E-5
HTP-c	CTUh	4.01E-6	1.97E-9	6.28E-8	4.07E-6	2.07E-9	7.13E-9	2.34E-10	3.39E-10	7.27E-9	5.83E-11	-4.91E-7	3.60E-6
HTP-nc	CTUh	1.82E-5	6.64E-8	9.18E-7	1.92E-5	7.75E-8	4.41E-8	7.99E-9	1.14E-8	2.96E-7	1.79E-9	-7.45E-6	1.22E-5
IR	kBq U235 eqv.	1.62E+1	2.85E-1	1.40E+0	1.79E+1	3.82E-1	1.61E-1	1.14E-1	4.90E-2	2.97E-1	1.20E-2	-4.56E+0	1.44E+1
SQP	Pt	1.93E+3	5.90E+1	5.24E+3	7.23E+3	8.04E+1	1.24E+1	3.24E+0	1.02E+1	6.34E+1	6.01E+0	-2.16E+3	5.25E+3

**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
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
	Acidification potential, Accumulated Exceedance (AP)	None
ILCD type / level 2	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
ILCD type / level 3	Potential Human exposure efficiency relative to U235 (IRP)	1
	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

### 3 Results

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.

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

#### PARAMETERS DESCRIBING RESOURCE USE

Abbr.	Unit	A1	A2	A3	A1- A3	A4	A5	C1	C2	C3	C4	D	Total
PERE	MJ	9.70E+2	8.52E-1	4.43E+2	1.41E+3	1.37E+0	2.91E+0	2.51E+0	1.47E-1	7.21E+0	5.89E-2	-7.65E+2	6.63E+2
PERM	MJ	0.00E+0	0.00E+0	3.50E+2	3.50E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.50E+2
PERT	MJ	9.70E+2	8.52E-1	7.92E+2	1.76E+3	1.37E+0	2.91E+0	2.51E+0	1.47E-1	7.37E+0	5.96E-2	-7.65E+2	1.01E+3
PENRE	MJ	8.37E+3	7.23E+1	5.61E+2	9.01E+3	9.29E+1	2.64E+1	1.39E+1	1.24E+1	7.19E+1	3.02E+0	-3.65E+3	5.58E+3
PENRM	MJ	8.00E+1	0.00E+0	2.29E+1	1.03E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.07E+0	1.02E+2
PENRT	MJ	8.46E+3	7.23E+1	5.84E+2	9.11E+3	9.29E+1	2.64E+1	1.39E+1	1.24E+1	7.38E+1	3.07E+0	-3.65E+3	5.69E+3
SM	Kg	3.13E+0	0.00E+0	1.06E-3	3.13E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.34E-2	3.14E+0
RSF	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	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	0.00E+0	0.00E+0	0.00E+0
FW	M3	5.64E+0	8.29E-3	4.06E-1	6.05E+0	1.08E-2	2.64E-2	1.11E-2	1.43E-3	4.83E-2	3.21E-3	-1.95E+0	4.21E+0

**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 ex. raw materials | **PENRM**=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



### 3 Results

#### OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1- A3	A4	A5	C1	C2	C3	C4	D	Total
HWD	Kg	1.53E-1	1.72E-4	5.02E-2	2.03E-1	2.23E-4	3.66E-5	8.83E-6	2.97E-5	1.77E-1	3.40E-6	2.18E-1	5.98E-1
NHWD	Kg	1.43E+2	4.32E+0	8.11E+0	1.55E+2	5.89E+0	3.39E+0	4.48E-2	7.42E-1	3.39E+0	1.80E+1	-6.81E+1	1.19E+2
RWD	Kg	2.35E-2	4.47E-4	1.47E-3	2.54E-2	5.92E-4	1.59E-4	9.40E-5	7.69E-5	3.24E-4	1.84E-5	-5.32E-3	2.14E-2

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	A4	A5	C1	C2	C3	C4	D	Total
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	0.00E+0	0.00E+0	0.00E+0
MFR	Kg	0.00E+0	0.00E+0	2.45E+0	2.45E+0	0.00E+0	1.25E+0	0.00E+0	0.00E+0	6.28E+1	0.00E+0	0.00E+0	6.65E+1
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	0.00E+0	0.00E+0	0.00E+0
EET	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	0.00E+0	1.17E+2	1.17E+2
EEE	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	0.00E+0	6.82E+1	6.82E+1

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

### 3 Results

#### 3.3 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	11.36	kg C

##### UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount carbon dioxide uptake is taken into account. 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	41.67	kg CO2 (biogenic)

## 4 Contact information

Publisher	Operator	Owner of declaration
 <p><b>Kiwa-Ecobility Experts</b> Wattstraße 11-13 13355 Berlin, DE</p>	 <p><b>Kiwa-Ecobility Experts</b> Wattstraße 11-13 13355 Berlin, DE</p>	 <p><b>LAMILUX Heinrich Strunz GmbH</b> Zehstr. 2 95111 Rehau, DE</p>
<p><b>E-mail:</b> DE.Ecobility.Experts@kiwa.com</p> <p><b>Website:</b> <a href="https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/">https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/</a></p>	<p><b>E-mail:</b> DE.Ecobility.Experts@kiwa.com</p> <p><b>Website:</b> <a href="https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/">https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/</a></p>	<p><b>E-mail:</b> Helmut.Rosenstiel@lamilux.de</p> <p><b>Website:</b> <a href="http://www.lamilux.de">www.lamilux.de</a></p>

Kiwa-Ecobility Experts is established member of the 