

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Metawell GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-MET-20230325-IBC1-EN
Issue date	20.11.2023
Valid to	19.11.2028

Metawall® A2
Metawell GmbH

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1. General Information

Metawell GmbH

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-MET-20230325-IBC1-EN

This declaration is based on the product category rules:

Thin walled profiles and profiled panels of metal, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

20.11.2023

Valid to

19.11.2028



Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)



Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Metawall® A2

Owner of the declaration

Metawell GmbH
Schleifmühlweg 31
86633 Neuburg / Donau
Germany

Declared product / declared unit

The declared unit is 1 m² facade cassette. The weight per unit area including packaging materials is 9.2 kg/m².

Scope:

The manufacturer's declaration applies to the production site in Neuburg/Danube, Germany. The data on which the life cycle assessment is based was collected on a representative basis in 2021/22.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR

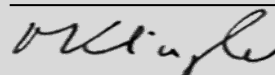
Independent verification of the declaration and data according to ISO 14025:2011

☐

internally

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externally



Matthias Klingler,
(Independent verifier)

2. Product

2.1 Product description/Product definition

The Metawell® A2 facade cassette is made from the very light and extremely rigid Metawell® aluminium sandwich panel. The 15mm material thickness is produced using three separate layers of 2.4mm thick aluminium coils. The three layers include an outer face, an inner face and a corrugated aluminum core. The structure of the aluminium sandwich panel means that even large-area facade cassettes are dimensionally stable and flat.

Fastening is concealed on the back with a suitable substructure.

Individual colour designs in RAL, NCS, BS and metallic shades are possible by means of coil coating.

The respective national regulations at the place of use apply to the use of the product.

The following standards and approvals are relevant for the product:

A. *EN 485-2* and *EN 1396*

B. General technical approval from the Deutsche Institut für Bautechnik Berlin.

Approval no.: Z-10.3-708

2.2 Application

The Metawell® A2 facade cassette is used as a rear-ventilated, suspended facade cladding in accordance with *DIN 18516-1*.

2.3 Technical Data

Construction data

Name	Value	Unit
Thickness cover sheet visible side	1	mm
Height cover sheet back rear	1	mm
Grammage	6.8	kg/m ²
Height of the plate	15	mm

The declared product does not fall within the scope of Regulation (EU) No. 305/2011 (EU Construction Products Regulation). The products therefore do not bear CE labelling.

2.4 Delivery status

The Metawell® A2 facade cassette is produced in customised sizes up to 1560 x 6000 mm (larger sizes on request). These are individually packed in a polythene foam film and delivered in a wooden case with a spruce base and chipboard structure.

2.5 Base materials/Ancillary materials

The product system weighs 6.8 kg/m² without packaging materials and is made up as follows:

Name	Value	Unit
Aluminium	96	%
Adhesive (polyamide)	3	%
Protective film	1	%

A transport box is used as packaging material. This consists of a wooden box made of a spruce substructure and chipboard structure including polythene foam film and was included in the calculation.

The *safety data sheet* according to 1907/2006/EC, Article 31 can be requested from Metawell GmbH.

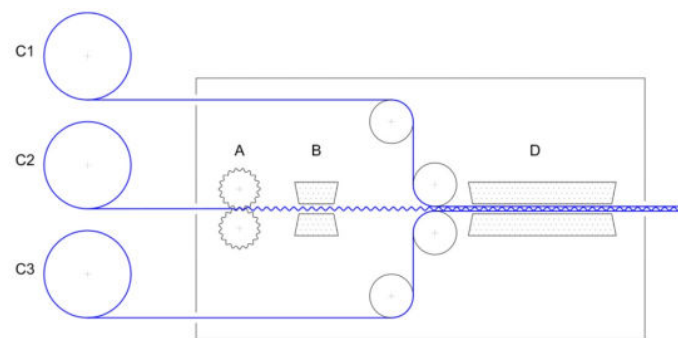
The product/at least one sub-product contains Substances on the ECHA list of Substances of Very High Concern (SVHC) for authorisation (date 17.01.2023) above 0.1% by mass: **no**.

The product/at least sub-product contains other CMR substances of category 1A or 1B that are not on the candidate list, above 0.1% by mass in at least one part of the product: **no**.

Biocidal products have been added to this construction product or it has been treated with biocidal products (it is therefore a treated product within the meaning of the Biocidal Products Regulation (EU) No. 528/2012): **no**.

2.6 Manufacture

The Metawell® aluminium sandwich panel (raw plank panel) is manufactured in a continuous production process. The coiled aluminium strips (coils C1, C2 and C3) are unwound from the coil by the system, shaped accordingly using a corrugating unit (A) and coated with adhesive (B). After passing through the press (D), the now bonded panels are cut to the desired length.



The colour design is achieved by coil coating the front visible side (Coil C1).

The raw materials used for coil coating are certified according to the latest scientific findings for the intended use and the legal requirements for processing are complied with during coating.

Further processing of the sandwich panel to create the Metawell® A2 facade cassette is carried out by machining. Milling is carried out dry, without the use of cooling lubricants.

Permanent measurement and continuous improvement of production processes is ensured by the *ISO 9001* quality management system.

2.7 Environment and health during manufacturing

Metawell GmbH has an environmental management system in accordance with *ISO 14001* and an occupational health and safety management system in accordance with *ISO 45001*. Both requirements are monitored by accredited certification bodies.

No specific measures are required for environmental protection measures. The general instructions for occupational health and safety apply.

2.8 Product processing/Installation

The Metawell® A2 facade cassettes are connected to the building structure using aluminum wall opposing cleats. The number of brackets depends on the panel size, the selected substructure and the applied wind load. The brackets are attached to the rear sheet using rivets or screws.

Information on the rivet: PolyGrip rivet 4.8 x 10 aluminium/stainless steel, Art. No.: 1433892 from Gesipa. Corrosivity categories according to ISO 9223: C1 to C3.

Details of the screw: Thin sheet metal screw RN KB79 ø 4.5, Art. No.: 00KB79 V 045 x 10 from REISSER Schraubentechnik GmbH.

The use of fasteners must be adapted to the place of use.

The internal drainage is encouraged by the downward orientation of the corrugations within the panel structure. The direction arrow on the protective film identifies the correct installation orientation of the Metawell® A2 facade cassettes to permit the downward drainage.

In addition, the Metawall® A2 facade cassettes are manufactured with a ventilation gap on the back, which must not be closed.

2.9 Packaging

The Metawall® A2 facade cassette is supplied with a plastic protective film in a box made of chipboard with a spruce substructure and a polyethylene foam film.

The plastic protective film is removed after installation.

The packaging boxes can be reused or recycled after use. They can also be fed into the recycling process after separation.

The packaging must be handled in accordance with the national regulations of the Packaging Ordinance.

2.10 Condition of use

During the period of use, the panel bond of the Metawall® A2 facade cassette remains unchanged when used in accordance with the regulations for the application of ventilated rainscreen cladding.

The decorative appearance of the colour coating on the visible side depends on the selected paint system, the location and also the cleaning interval. The specifications of the coil coater must be observed for cleaning, maintenance and, if necessary, repair of the colour coating.

2.11 Environment and health during use

There are no known cause-and-effect relationships with regard to the environment and health or harmful effects when aluminium sheets are used properly.

2.12 Reference service life

The reference service life is 50 years (BBSR 2017). The specified service life of 50 years for the Metawall® A2 facade cassette serves as a tool for product selection, based on the expected use of the building.

Correct use, maintenance and care are prerequisites. No guarantee or warranty claims can be derived from the information on service life.

2.13 Extraordinary effects

Fire

The product is classified as non-combustible according to EN 13501-1.

Fire protection

Name	Value
Building material class	A2
Burning droplets	d0
Smoke gas development	s1

Water

The product is insoluble in water according to **safety data sheet** 1907/2006/EC. No substances that may be hazardous to water are washed out. When exposed to water (e.g. floods), the product system reacts without any impact on the environment.

Mechanical destruction

No risk to the environment is to be expected in the event of mechanical destruction. All substances remain in a bound state.

2.14 Re-use phase

Mechanical destruction after use

The Metawall® A2 facade cassettes can be dismantled non-destructively.

Recycling

The Metawall® A2 facade cassettes can be recycled without separating the material. If the aluminium brackets are attached to the back of the Metawall® A2 facade cassette with the PolyGrip rivet, they can remain on the facade cassette. If the aluminium brackets are fastened with the thin sheet metal screw, the brackets must be removed again. In the absence of waste recycling technologies, the Metawall® A2 facade cassette can be landfilled.

2.15 Disposal

End of Life

The Metawall® A2 facade cassettes can be used for recycling process without material separation. Possible allocation according to the European waste code (AVV). EWC 17 04 02 for aluminium

Production waste

Offcuts from machining are collected separately and fed into the recycling process. EWC 12 01 03 non-ferrous metal filings and turnings.

Packaging waste

The packaging waste is sent for energy recovery: EWC 15 01 02 Plastic packaging. EWC 15 01 03 Packaging made of wood.

2.16 Further information

Information, technical data and other product variants are available from:

Metawell GmbH
Schleifmühlweg 31
86633 Neuburg / Donau
Germany
Email: info@metawell.com
Internet: www.metawell.com

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit refers to the production of 1 m² of Metawall® A2 including packaging materials.

Declared unit

Name	Value	Unit
Declared unit	1	m ²
Grammage	9.2	kg/m ²
Layer thickness of entire panel	0.015	m
Weight per unit area without packaging	6.8	kg/m ²

3.2 System boundary

Type of EPD: Cradle to factory gate with options (modules A1-A3, A5, C1-C4, D). The following modules are taken into account in accordance with *EN 15804*:

Module A1–A3

The extraction and processing of raw materials, including all corresponding upstream chains, including the provision of electricity, steam and heat from primary energy raw materials, including their extraction, refining and transport as well as the necessary procurement transport to the factory gate and the production of packaging are taken into account in this module.

Module A5

This module includes the energy recovery of the packaging materials and the protective film. Installation was not taken into account, as the use of fasteners must be adapted to the place of use.

Module C1

Module C1 describes the expenses for dismantling or demolishing the product from the building at the end of its service life. A cordless drill is sometimes used for dismantling.

Module C2

Module C2 considers the transport to the disposal processes. The system boundary for lorry transports lies on the input side with the upstream processes of the fuels and on the output side with the emissions caused (exhaust gases). The distance is calculated at 75 km per disposal stream.

Module C3

Module C3 contains the necessary processes for waste treatment at the end of the product life cycle. The loads for waste treatment are mapped here until the end of the waste property is reached. Aluminium is a recyclable material and loses its waste properties after sorting and shredding. The adhesive it contains is melted down with the aluminium.

Module C4

Module C4 describes the expenses for the disposal of the product or its components if material or energy recovery or reuse is not possible. This is not relevant for the products analysed.

Module D

The value streams generated for a downstream product system due to material recycling processes and energy recovery are reported in this module.

3.3 Estimates and assumptions

In the event of uncertainties due to insufficient data set documentation, sensitivity analyses were carried out in advance. The data sets closest to reality were selected. The distance from the demolition site to the disposal facility (C2) is estimated at 75 km.

3.4 Cut-off criteria

All data from the operating data survey and all available emission measurements from the period under review mentioned in section 3.7 were taken into account. In addition, data on transport costs was collected and modelled for all inputs considered. The infrastructure used in the manufacturing processes (in particular machinery and production facilities) was not included in the balance sheet.

3.5 Background data

The current version 10.7 of the *LCA for Experts* software system (formerly *GaBi*) was used to model the life cycle. All background data sets used were taken from the latest versions of various databases. The data sets contained in the databases are documented online. The LCA was prepared for the reference area of Germany. This means that in addition to the production processes under these boundary conditions, the upstream stages relevant for Germany, such as electricity or the provision of energy sources, were also used.

3.6 Data quality

Data was collected by analysing internal production and environmental data, collecting LCA-relevant data within the supply chain and calculating relevant data for the provision of energy. The plausibility of the data supplied, which originated from operational data collection and measurements, was checked. Following a thorough review, the data is highly representative. No data set is older than 10 years. The product varies mainly in terms of dimensions, so the amount of production waste varies slightly. In relation to the declared unit of 1 m², only slight variability is to be expected.

3.7 Period under review

The data on which the life cycle assessment is based was collected on a representative basis in 2021/2022.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Germany

3.9 Allocation

A co-product does not exist. A single product is manufactured as part of the production process. Production waste is modelled in the closed loop.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. The *LCA for Experts* database 10.7 was used.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The biogenic carbon content was calculated on the basis of the product components. Biogenic carbon is only found in the packaging (wood, chipboard).

Information on the description of the biogenic carbon content at the factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.982	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

The following technical information is the basis for the declared modules.

Installation in the building (A5)

Only the disposal of the packaging and protective film was considered. Installation using screws and a cordless screwdriver varies depending on the location and was not taken into account.

Name	Value	Unit
Chipboard with spruce substructure	1.4	kg/m ²
Plastic protective film	0.09	kg/m ²
Cardboard box	0.06	kg/m ²

Disposal transport (A5)

Name	Value	Unit
Means of transport	Lorry 17.3 t payload, Euro 5	
Transport distance	75	km
Capacity utilisation (including empty runs)	85	%

Reference service life

Name	Value	Unit
Life Span according to BBSR	50	a

End of the journey through life (C1-C4)

Name	Value	Unit
Recycling	6.8	kg
Means of transport	Lorry 17.3 t payload, Euro 5	
Transport distance	75	km
Capacity utilisation (including empty runs)	50	%

Reuse, recovery and recycling potential (D), relevant scenario information

Module D contains the expenses for recycling the aluminium and avoided environmental impacts for the production of primary aluminium. In addition, there are avoided loads from the generation of electricity and heat in the amount of the energy generated from packaging waste in module A5.

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	X	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² Metawall® A2 inkl. Verpackung

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	3.35E+01	3.98E+00	1.62E-03	6.14E-02	6.57E-01	0	-9.03E+00
GWP-fossil	kg CO ₂ eq	3.71E+01	3.74E-01	1.62E-03	6.09E-02	6.57E-01	0	-9.03E+00
GWP-biogenic	kg CO ₂ eq	-3.6E+00	3.6E+00	0	0	5.74E-05	0	0
GWP-luluc	kg CO ₂ eq	3.01E-02	1.99E-04	1.48E-07	5.52E-04	1.77E-05	0	-2.35E-03
ODP	kg CFC11 eq	1.08E-07	3.83E-13	1.59E-14	7.75E-15	1.75E-12	0	-9.57E-12
AP	mol H ⁺ eq	1E-01	1.46E-03	2.46E-06	2.29E-04	1.09E-03	0	-4.9E-02
EP-freshwater	kg P eq	3.61E-05	1.76E-07	1.6E-09	2.18E-07	1.89E-07	0	-5.67E-06
EP-marine	kg N eq	2.16E-02	6.41E-04	6.94E-07	1.06E-04	4.96E-04	0	-6.62E-03
EP-terrestrial	mol N eq	2.37E-01	7.65E-03	7.34E-06	1.19E-03	5.45E-03	0	-7.2E-02
POCP	kg NMVOC eq	8.5E-01	1.64E-03	1.92E-06	2.09E-04	1.28E-03	0	-2.01E-02
ADPE	kg Sb eq	4.48E-05	4.92E-09	7.83E-11	3.92E-09	9.15E-09	0	7.61E-06
ADPF	MJ	4.77E+02	1.34E+00	3.55E-02	8.11E-01	4.48E+00	0	-1.32E+02
WDP	m ³ world eq deprived	3.56E+00	4.13E-01	1.36E-04	7.2E-04	6.11E-02	0	-1.34E+00

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² Metawall® A2 inkl. Verpackung

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
PERE	MJ	1.14E+02	3.69E+01	4.87E-03	5.91E-02	5.5E-01	0	-6.88E+01
PERM	MJ	3.66E+01	-3.66E+01	0	0	0	0	0
PERT	MJ	1.51E+02	2.59E-01	4.87E-03	5.91E-02	5.5E-01	0	-6.88E+01
PENRE	MJ	4.66E+02	5.81E+00	3.55E-02	8.15E-01	1.24E+01	0	-1.33E+02
PENRM	MJ	1.23E+01	-4.46E+00	0	0	-7.88E+00	0	0
PENRT	MJ	4.78E+02	1.35E+00	3.55E-02	8.15E-01	4.48E+00	0	-1.33E+02
SM	kg	5.73E+00	0	0	0	0	0	1.46E+00
RSF	MJ	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0
FW	m ³	2.08E-01	9.74E-03	8.14E-06	6.47E-05	1.97E-03	0	-1.63E-01

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 = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m² Metawall® A2 inkl. Verpackung

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
HWD	kg	3.12E-05	5.52E-11	2.06E-12	2.52E-12	3.35E-10	0	-4.12E-09
NHWD	kg	4.35E+00	4.53E-02	7.83E-06	1.24E-04	3.28E-03	0	-3.35E+00
RWD	kg	2.32E-02	5.45E-05	5.53E-06	1.52E-06	5.95E-04	0	-9.67E-03
CRU	kg	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	6.61E+00	0	0
MER	kg	0	0	0	0	0	0	0
EEE	MJ	0	5.11E+00	0	0	0	0	0
EET	MJ	0	9.14E+00	0	0	0	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m² Metawall® A2 inkl. Verpackung

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
PM	Disease incidence	ND	ND	ND	ND	ND	ND	ND
IR	kBq U235 eq	ND	ND	ND	ND	ND	ND	ND
ETP-fw	CTUe	ND	ND	ND	ND	ND	ND	ND
HTP-c	CTUh	ND	ND	ND	ND	ND	ND	ND
HTP-nc	CTUh	ND	ND	ND	ND	ND	ND	ND
SQP	SQP	ND	ND	ND	ND	ND	ND	ND

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 - applies to the indicator 'Potential Human exposure efficiency relative to U235'.

This impact category mainly deals with the possible effect of low-dose ionising radiation on human health in the nuclear fuel cycle. It does not take into account effects due to possible nuclear accidents and occupational exposure, nor the disposal of radioactive waste in underground facilities. Potential ionising radiation from soil, radon and some building materials is also not measured by this indicator.

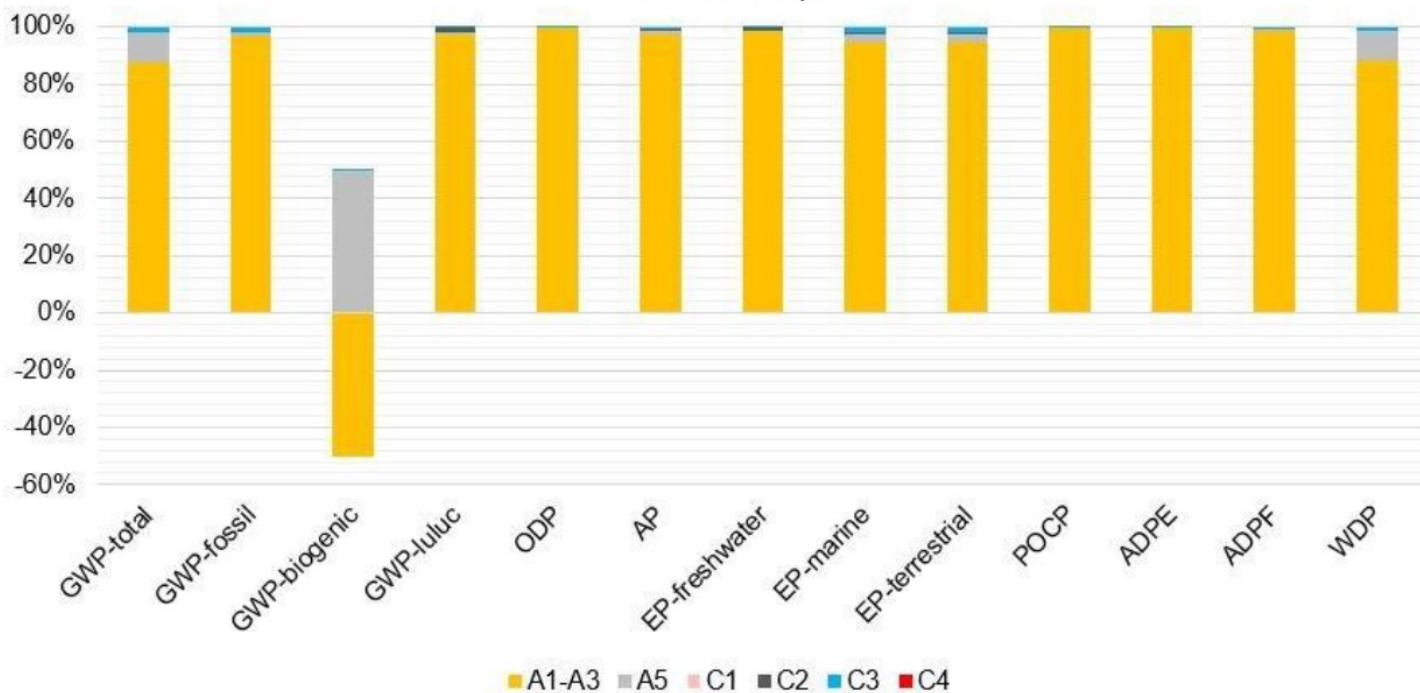
Disclaimer 2 - applies to the indicators: 'Abiotic depletion potential for non-fossil resources', 'Abiotic depletion potential for fossil resources', 'Water (user) deprivation potential', 'Potential comparative Toxic Unit for ecosystems', 'Potential comparative Toxic Unit for humans (cancerogenic)', 'Potential comparative Toxic Unit for humans (not cancerogenic)', 'Potential soil quality index'.

The results of this environmental impact indicator must be used with caution, as the uncertainties in these results are high or because there is only limited experience with the indicator.

The impact assessment results are only relative statements that do not provide any information on the endpoints of the impact categories, exceedance of threshold values, safety margins or risks. The EK-JRC characterisation factors were used for all indicators mentioned.

6. LCA: Interpretation

Dominance Analysis



Module A1-A3 has a dominant influence on all the environmental indicators analysed. In the following, the environmental impacts are analysed using the example of global warming potential (GWP-total) in order to identify the responsible sources along the life cycle. The manufacturing phase (modules A1-A3) contributes 88% to the total global warming potential. Here, the provision of secondary aluminium strip (60 %) and primary aluminium strip (38 %) dominate the total emissions of the module. All other materials contribute less than 2 % each to the production phase. Both the transport to

the company (A2) and the disposal transport (C2) with 0.1 % and 0.2 % respectively, have no major relevance in terms of GWP. The disposal of waste on the construction site (A5) has a contribution of 10 %. The negative contribution to GWP-biogenic in A1-A3 and the positive contribution in A5 can be explained by the use of wooden packaging in which biogenic carbon is bound. Waste treatment at the end of the product's life accounts for 1.7 % of the total GWP. The product mainly varies in size, so the amount of production waste varies slightly. In relation to the declared unit of 1 m², only slight variability is to be expected.

7. Requisite evidence

No evidence is required for this environmental product declaration with regard to the material composition in the

product and its scope of application.

8. References

Standards

DIN 18516-1

DIN 18516-1:2010-06, Cladding for external walls, ventilated at rear - Part 1: Requirements, principles of testing.

EN 485-2

DIN EN 485-2:2016-10, Aluminium and aluminium alloys - Sheet, strip and plate - Part 2: Mechanical properties.

EN 1396

DIN EN 1396:2015-06, Aluminium and aluminium alloys - Coil coated sheet and strip for general applications - Specifications.

EN 13501-1

DIN EN 13501-1:2019-05, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests.

EN 13964

DIN EN 13964:2014-08, Suspended ceilings - Requirements and test methods.

EN 15804

DIN EN 15804:2022-03, Sustainability of construction works -

Environmental product declarations - Core rules for the product category of construction products.

ISO 9001

DIN EN ISO 9001:2015, Quality management systems - Requirements.

ISO 9223

DIN EN ISO 9223:2012-05, Corrosion of metals and alloys - Corrosivity of atmospheres - Classification, determination and estimation (ISO 9223:2012).

ISO 14001

DIN EN ISO 14001:2015-11, Environmental management systems - Requirements with guidance for use (ISO 14001:2015).

ISO 14025

DIN EN ISO 14025:2009-11, Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

ISO 14040

DIN EN ISO 14040:2009-11, Environmental management - Life cycle assessment - Principles and framework.

ISO 14044

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

ISO 45001

ISO 45001:2018-03, Occupational health and safety management systems - Requirements with guidance for use.

Further literature**AVV**

Waste Catalogue Ordinance (AVV) of 10 December 2001 (BGBl. I p. 3379), last amended by Article 1 of the Ordinance of 30 June 2020 (BGBl. I p. 1533).

BBSR

Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR): Table "Nutzungsdauern von Bauteilen für Lebenszyklusanalysen nach Bewertungssystem Nachhaltiges Bauen (BNB)", 2017.

LCA for Experts (formerly GaBi)

LCA for Experts 10.7: Software and Database for Life Cycle Engineering, Sphera Solutions GmbH, Leinfelden-

Echterdingen, 2023.

IBU 2021

Institut Bauen und Umwelt e.V., Berlin (Hrsg.): Die Erstellung von Umwelt-Produktdeklarationen (EPD); Allgemeine EPD-Programmanleitung des Institut Bauen und Umwelt e.V. (IBU). Version 2.0. 2021. www.ibu-epd.com

PCR Part A

Institut Bauen und Umwelt e.V., Berlin (ed.): Product category rules for building-related products and services. Part A: Calculation rules for the life cycle assessment and requirements for the background report according to EN 15804+A2:2019 (v1.3), 2022-08.

PCR: Thin walled profiles and profiled panels of metal

Institut Bauen und Umwelt e.V., Berlin (ed.): Product Category Rules for building-related products and services. Part B: EPD requirements for thin walled profiles and profiled panels of metal (v3), 07/2023.

Safety data sheet

Safety data sheets of the individual components in accordance with Regulation 1907/2006/EC 1907/2006/EC



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