

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Kalzip GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-KAL-20230028-IBC1-EN
Issue date	12.04.2023
Valid to	11.04.2028

Aluminium FC Facade System - Kalzip® Kalzip GmbH

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1. General Information

Kalzip GmbH

Programme holder

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

Declaration number

EPD-KAL-20230028-IBC1-EN

This declaration is based on the product category rules:

Aluminium roofing and cladding systems, 01.07.2014
(PCR checked and approved by the SVR)

Issue date

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Valid to

11.04.2028



Dipl.-Ing. Hans Peters
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Aluminium FC Facade System - Kalzip®

Owner of the declaration

Kalzip GmbH
August-Horch-Str. 20-22
56070 Koblenz
Germany

Declared product / declared unit

Open-joint, flat, rear ventilated facade system made of aluminium. The EPD refers to 1 m² facade system consisting of 1 mm facade panel made of polyvinylidene fluoride (PVDF)-coated aluminium and a system-related modular aluminium raster click rail for non-penetrative fastening (hang and click) of the panels, incl. packaging.

Scope:

This EPD relates to the manufacture, transport and disposal of a representative product with the highest environmental impact (worst case) for a range of products (Aluminium FC Facade System) from Kalzip. The technical properties are presented in chapter 2.3. Production location of the product is Koblenz, Germany, from where the products are delivered directly to the customer's construction sites.

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
☒	externally



Angela Schindler,
(Independent verifier)

2. Product

2.1 Product description/Product definition

The Kalzip FC facade system is a quick to install rear ventilated facade cladding made from thin walled, cold formed profiled sheets (panels) with open joints. Several profiled panel widths are available to meet different design specifications and load-bearing capacity requirements. A range of material finishes and surface treatments are also available. The Kalzip FC facade system is supplied with an associated support system in the form of raster click rails in various designs or alternatively with mono click holders for the non-penetrative installation ("click in") of the FC panels. The rails and mono click holders are installed on site on commercially available substrates, on concrete, sandwich elements or other substrates.

The system described (aluminium sheet with PVDF-coated surface and raster click rail with mono click holder) represents the system with the highest environmental impact in order to also cover the range of possible variants that Kalzip manufactures with this EPD. Regulation (EU) No. 305/2011 (CPR) applies to the marketing of the product on the market in the EU/EFTA (with the exception of Switzerland). The product requires a declaration of performance taking into account *DIN EN 14782:2006-03*, Self-supporting metal sheet for roofing, external cladding and internal lining - Product specification and requirements. The respective national provisions apply to the use.

2.2 Application

The aluminium FC facade panels are used to form an open-joint, flat as well as rear ventilated curtain walling for horizontally and vertically installed FC facades in new buildings or renovations. The panels are mounted either on individual brackets or on raster click rails, which are supplied with the panels, on a plane substructure.

Rolled profiled panels are used in a wide range of building applications. Typical examples of applications are facades, interior cladding and ceilings.

2.3 Technical Data

Construction data

Name	Value	Unit
Alloys mainly used for the panels	EN AW 3004, 3005, 6025	
Thickness	30	mm
Density	2720	kg/m ³

Performance values of the product according to the declaration of performance in relation to its essential characteristics in accordance with *DIN EN 14782:2006-03* Self-supporting metal sheet for roofing, external cladding and internal lining - Product specification and requirements or *DIN EN 14783*, Fully supported metal sheet and strip for roofing, external cladding and internal lining - Product specification and requirements.

2.4 Delivery status

The declared panel is used as a long sheet in project-related dimensions supplied in lengths up to 10,000 mm, widths up to 800 mm and usually with the thickness of 1 mm.

2.5 Base materials/Ancillary materials

Average mass fractions of the Kalzip worst-case facade system.

Product component	Mass per cent
Aluminium	96.5%
Plastics	3.2%
Stainless steel	0.4%

The product/at least part of the product contains substances on the ECHA list of Substances of Very High Concern (SVHC) (date 20.06.2022) above 0.1% by mass: **no**.

The product/at least one sub-product contains other CMR substances of category 1A or 1B not on the candidate list above 0.1% by mass in at least one sub-product: **no**. Biocidal products have been added to the present 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 aluminium sheets are profiled in-house at the production site in Koblenz (electronically controlled process). Profiling 1 m² consumes 0.122 MJ of electricity and 0.015 kg of lubricant. The raster click rails are supplied as extruded profiles and assembled with the inlays.

2.7 Environment and health during manufacturing

The company is certified according to *ISO 9001*, *ISO 14001* and *ISO 45001*.

2.8 Product processing/Installation

The installation of the panels is carried out by a network of trained installation companies in accordance with the procedures of the installation guideline.

2.9 Packaging

The FC facade panels are commissioned in a transport-safe wooden packaging with plastic insert. The raster click rails, on the other hand, are packed with simple wooden strapping and plastic strapping. Both are loaded onto trucks and transported.

2.10 Condition of use

No changes during the use phase compared to the manufacturing state.

2.11 Environment and health during use

No changes during the use phase compared to the state of manufacture.

2.12 Reference service life

The facade system has an assumed service life of 50 years. No reference service life (RSL) could be determined taking *ISO 15686* into account, so that a service life from the *BBSR* table 'Service lives of building components for life cycle assessment according to BNB' was used.

2.13 Extraordinary effects

Fire

The aluminium FC facade system is non-flammable. Fire resistance class: according to *EN 13501-1* = A1

L 235/19: Profiled sheets made of aluminium or aluminium alloys are classified by the European Commission as products that meet the requirements 'external fire performance' without further testing.

Water

Water has no negative effects on the product.

Mechanical destruction

Due to its lightweight construction, there is no danger in the event of an earthquake. In addition, the system has been thoroughly tested and calculated for projects in hurricane-prone areas.

2.14 Re-use phase

With regard to the material composition, the following possibilities arise:

Material recycling

The facade system can be completely recycled. The materials suitable for recycling are the aluminium used for the facade element, the raster click rails and the fixing screws.

Energy recovery

The materials suitable for energy recovery consist of the plastic and wood materials in the packaging and the plastic portion of the raster grid click rail.

2.15 Disposal

In the following, the waste code numbers according to the European Waste Catalogue in accordance with the Waste Catalogue Ordinance AVV are listed for the individual product components.

Packaging waste

The following packaging waste, which is generated during installation in the building, is sent for energy recovery:

15 01 02 Packaging made of plastic

15 01 03 Packaging made of wood.

Product waste

All materials are recycled for energy or metallurgical purposes. 17 02 03 plastics; 17 04 02 aluminium.

2.16 Further information

Contact details can be found on the back of this declaration. Further product information is available online: www.kalzip.de

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit for the facade system is 1 m² incl. packaging.

Declared unit

Name	Value	Unit
Declared unit	1	m ²
Weight unpacked	4.17	kg
Packaging	0.8	kg
Total weight	4.97	kg
Conversion factor to 1 kg	0.2	-

3.2 System boundary

Type of EPD: Cradle to factory gate - with options (module A1–A3, A5, C1–4 and D).

Modules A1–A3

The product stage contains the production of the necessary raw materials including all upstream chains as well as the necessary procurement transports. For the production of the declared unit, the necessary auxiliary and operating materials and their upstream chains were also considered. For the product, this means that the environmental impacts of the PVDF-coated aluminium, the raster click rail and the fastening screws are attributed to the declared product. The production of packaging material (wood and plastic film), electricity and lubricants for production in the factory are also included.

Module A5

The environmental impacts of the incineration of the packaging materials plastic and wood are shown, as well as the expenses for installation.

Module C1

In this module, the disassembly of the product is considered. The same expenditures that are required for the installation have been taken into account.

Module C2

The module includes transports for waste treatment or disposal.

Module C3

The module includes the environmental impacts of the waste treatment (preparation for recycling of metals and energy recovery of plastics) of the product in the end of life.

Module C4

The module deals with the landfilling of materials. No materials are landfilled for this product.

Module D

The module includes the recycling effort and the avoided environmental burdens for aluminium and steel contained in the product. In addition, the avoided burdens of energy production resulting from the generation of energy from the combustible materials are shown.

3.3 Estimates and assumptions

The expenditure for the PVDF coating of the aluminium was covered by modelling an energy expenditure and added to the environmental impact of the required amount of PVDF. The PVDF from the coating is not recycled separately, but melted down together with the aluminium and not recovered. For the calculation of the secondary content of the aluminium used, the manufacturers' data was used as far as available. For the manufacturers for which no secondary content is available, a value of 20 % secondary aluminium was assumed. Multiplied by the quantities purchased, the secondary aluminium content of the facade is 72 %.

3.4 Cut-off criteria

According to operational data collection, no flows were omitted and with the use of generic background data, the cut-off criteria according to *EN 15804* were met.

3.5 Background data

The primary data were provided by Kalzip. The background data comes from the *GaBi* database *GaBi* 10.6.

3.6 Data quality

Operating data for all products manufactured by Kalzip were used as far as possible. For other components (Rails), average country-specific background data sets are used. The data were collected under consistent methodological conditions and boundary conditions. The data set quality is very good to good. The background data sets from the *GaBi* databases used for the calculation are not older than 10 years.

3.7 Period under review

The data refer to the manufacturing processes of the year 2020.

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

PVDF-coated aluminium waste is produced in modules A1 - A3. This was modelled using the closed-loop method. This reduces the use of secondary aluminium.

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 database used is the *GaBi* database in version 10.6.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

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

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.35	kg C

Procurement transports (A2)

The procurement transports are carried out by truck (40 t total weight, 27 t max. payload; EURO 0-6 mix) and a load factor of 85 % including empty runs. When determining the transport distance, all suppliers were included proportionately. The transport performance amounts to 4807 kgkm.

Installation in the building (A5)

The fasteners are already included in the scope of delivery.

Name	Value	Unit
Electricity consumption	0.001	kWh

Reference service life

Name	Value	Unit
Life Span (according to BBSR)	50	a

End of life (C1–C4)

The transports for waste treatment are carried out by truck (20-26 t total weight / 17.3 t payload; EURO 5) and a load factor of 55% including empty runs. The transport distance to the disposal company is 75 km.

Name	Value	Unit
Recycling	4.11	kg
Energy recovery	0.07	kg

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

Module D includes the expenses for recycling the aluminium as well as avoided environmental burdens for the production of primary aluminium. In addition, there are avoided burdens from the generation of electricity and heat in the amount of energy generated in module A5 from packaging waste, as well as from the incineration of plastic in C3.

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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 Aluminium FC Facade System incl. packaging

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	1.62E+01	1.39E+00	4.95E-04	2.64E-02	1.6E-01	0	-7.95E+00
GWP-fossil	kg CO ₂ eq	1.75E+01	1.18E-01	4.95E-04	2.63E-02	1.6E-01	0	-7.95E+00
GWP-biogenic	kg CO ₂ eq	-1.26E+00	1.27E+00	0	0	0	0	0
GWP-luluc	kg CO ₂ eq	5.64E-03	3.66E-05	3.21E-08	1.77E-04	4.52E-06	0	-1.77E-03
ODP	kg CFC11 eq	4.17E-07	1.1E-13	4.89E-15	2.58E-15	5.2E-13	0	9.11E-11
AP	mol H ⁺ eq	7.13E-02	2.23E-04	7.27E-07	9.33E-05	9.03E-05	0	-4.07E-02
EP-freshwater	kg P eq	1.32E-05	4.38E-08	2.22E-10	9.4E-08	3.2E-08	0	-3.69E-06
EP-marine	kg N eq	1.15E-02	7.45E-05	1.99E-07	4.3E-05	2.53E-05	0	-5.15E-03
EP-terrestrial	mol N eq	1.26E-01	1.07E-03	2.12E-06	4.81E-04	2.88E-04	0	-5.61E-02
POCP	kg NMVOC eq	3.5E-02	1.96E-04	5.61E-07	8.4E-05	7.1E-05	0	-1.58E-02
ADPE	kg Sb eq	1.03E-04	3.16E-09	5.89E-11	2.65E-09	6.5E-09	0	4.03E-05
ADPF	MJ	2.42E+02	3.67E-01	1.05E-02	3.45E-01	1.12E+00	0	-1.01E+02
WDP	m ³ world eq deprived	2.6E+00	1.52E-01	3.7E-05	2.94E-04	1.58E-02	0	-1.12E+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 Aluminium FC Facade System incl. packaging

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
PERE	MJ	7.96E+01	1.39E+01	1.52E-03	2.39E-02	1.69E-01	0	-5.19E+01
PERM	MJ	1.38E+01	-1.38E+01	0	0	0	0	0
PERT	MJ	9.34E+01	7.42E-02	1.52E-03	2.39E-02	1.69E-01	0	-5.19E+01
PENRE	MJ	2.39E+02	1.58E+00	1.05E-02	3.47E-01	3.39E+00	0	-1.01E+02
PENRM	MJ	3.48E+00	-1.22E+00	0	0	-2.27E+00	0	0
PENRT	MJ	2.42E+02	3.68E-01	1.05E-02	3.47E-01	1.12E+00	0	-1.01E+02
SM	kg	2.74E+00	0	0	0	0	0	1.11E+00
RSF	MJ	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0
FW	m ³	1.82E-01	3.58E-03	2.3E-06	2.76E-05	5.21E-04	0	-1.28E-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 Aluminium FC Facade System incl. packaging

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
HWD	kg	5.12E-08	2.94E-11	7.5E-13	1.83E-12	8.19E-11	0	-2.22E-06
NHWD	kg	3.44E+00	1.04E-02	2.23E-06	5.65E-05	9.75E-03	0	-2.56E+00
RWD	kg	1.23E-02	1.82E-05	1.74E-06	6.44E-07	1.82E-04	0	-6.83E-03
CRU	kg	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	4.11E+00	0	0
MER	kg	0	0	0	0	0	0	0
EEE	MJ	0	2.19E+00	0	0	1.17E-01	0	0

EET	MJ	0	3.93E+00	0	0	2.11E-01	0	0
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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 Aluminium FC Facade System incl. packaging

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
PM	Disease incidence	1.2E-06	1.12E-09	6.49E-12	5.41E-10	8.21E-10	0	-2.9E-07
IR	kBq U235 eq	2.26E+00	2.98E-03	2.55E-04	9.72E-05	2.67E-02	0	-1.44E+00
ETP-fw	CTUe	7.15E+01	1.8E-01	3.21E-03	2.45E-01	3.5E-01	0	-3.85E+01
HTP-c	CTUh	3.11E-08	1.02E-11	5.92E-14	5.04E-12	7.15E-12	0	-5.31E-09
HTP-nc	CTUh	1.73E-07	3.81E-10	3.01E-12	3.14E-10	3.6E-10	0	-1.02E-07
SQP	SQP	2.51E+02	1.17E-01	9.63E-04	1.46E-01	1.12E-01	0	-5.04E+00

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

In module D, ODP has a positive value, which is due to the process of aluminium recycling.

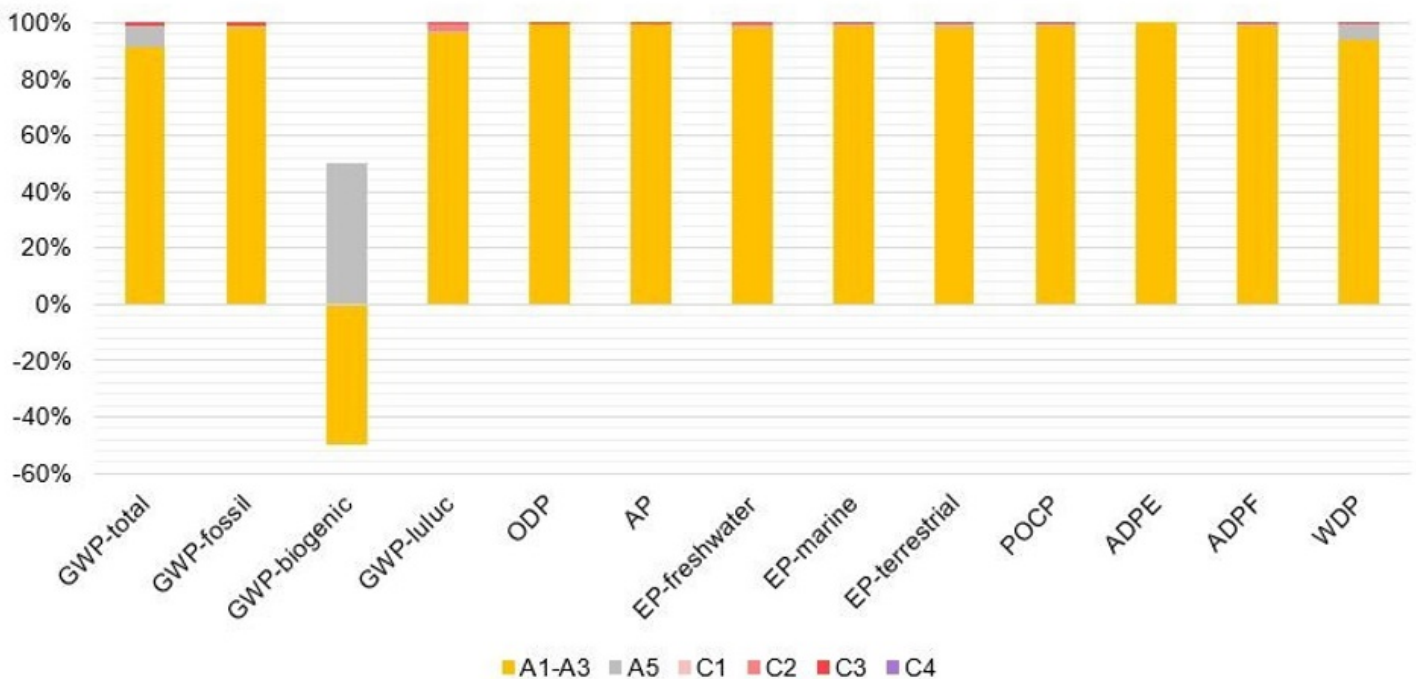
Disclaimer 1 - applies to the indicator "Potential human exposure efficiency relative to U235". This impact category mainly addresses the potential effect of low dose ionising radiation on human health in the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents and occupational exposure, nor does it consider effects due to 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 as there is limited experience with the indicator.

The impact assessment results are only relative statements that do not make any statements about endpoints of the impact categories, exceedances of threshold values, safety margins or about risks. For all indicators mentioned, the characterisation factors of EK-JRC were applied.

6. LCA: Interpretation

Dominance Analysis



Module A1–A3 has a dominant influence for all environmental indicators considered. In the following, the environmental impacts are described using the example of the Global Warming Potential (GWP-total) is analysed to identify the responsible sources along the life cycle. The production phase (module A1–A3) implies a contribution to the total Global Warming Potential of 91 %. Here, primary aluminium of the raster click rail (32 %), primary aluminium

sheet (31 %) and secondary aluminium sheet (30 %) of the manufactured facade system dominate the total emissions of the module. All other materials contribute less than 7 % each to the manufacturing phase. Both the transports to the company (A2) and the disposal transports (C2) have no major relevance in terms of GWP, with 1.6 % and 0.1 % respectively. Product installation at the construction site and disposal of packaging (A5) have a

contribution of 8 %. The negative contribution to GWP-biogenic in A1–A3 and the positive contribution in A5 can be explained by the use of wood packaging in which biogenic carbon is bound. The waste treatment at the end of life of the product has a share of 1 % of the GWP-total. This is mainly caused by the energy recovery of the plastic of the raster click rail (67 %).

As this is a worst-case consideration, the values of the specific products, all of which are covered by the EPD, are usually better than the calculated example system. It can be assumed that the environmental impacts are reduced for other possible configurations.

7. Requisite evidence

No further evidence is relevant for this product.

8. References

Standards

EN 13501

DIN EN 13501-1:2010-01, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests.

EN 14782

DIN EN 14782:2006-03, Self-supporting metal sheet for roofing, external cladding and internal lining - Product specification and requirements.

EN 14783

DIN EN 14783, Fully supported metal sheet and strip for roofing, external cladding and internal lining - Product specification and requirements.

EN 15804

DIN EN 15804:2022-03, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

EN AW-3004

EN AW-3004:2011-07, Aluminium Material Data Sheet EN AW-3004, EN AW-AI Mn1Mg1.

EN AW-3005

EN AW-3005:2011-07, Aluminium Material Data Sheet EN AW-3005, EN AW-AI Mn1Mg0,5.

EN AW-3105

EN AW-3105:2011-07, Aluminium Material Data Sheet EN AW-3105, EN AW-AI Mn0,5Mg0,5.

EN AW-6025

EN AW-6025, Aluminium Material Data Sheet EN AW-6025, EN AW-AIMg2,5SiMnCu.

ISO 9001

ISO 9001:2015-09, Quality management systems- Requirements.

ISO 14001

ISO 14001:2015-09, Environmental management systems - Requirements with guidance for use.

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 15686

ISO 15686:2011-05, Buildings and constructed assets - Service life planning - Part 1,2,7,8.

ISO 45001

ISO 45001:2018, 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: Nutzungsdauern von Bauteilen zur Lebenszyklusanalyse nach BNB, 2017.

GaBi

GaBi 10.6: Software and Database for Life Cycle Engineering, Sphera Solutions GmbH, Leinfelden-Echterdingen, 2022.

IBU 2021

Institut Bauen und Umwelt e.V., Berlin (ed.): 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.

L 235/19

L 235/19, Commission decision of 6 September 2000 implementing Council Directive 89/106/EEC as regards the external fire performance of roof coverings.

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 on the project report according to EN 15804+A2:2019 (v1.2), 2021-01.

PCR Aluminium roofing and cladding systems

Institut Bauen und Umwelt e.V., Berlin (ed.): Product Category Rules for Building-Related Products and Services. Part B: Rules für Environmental Product Declarations, for aluminium roofing and cladding systems, version 1.4, Jul. 2014.

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