ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	ROCKWOOL A/S
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-RWI-20240559-CBA1-EN
Issue date	25.04.2025
Valid to	24.04.2030

Rockpanel A2 9 mm

ROCKWOOL A/S

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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General Information

ROCKWOOL A/S

Programme holder

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

Declaration number

EPD-RWI-20240559-CBA1-EN

This declaration is based on the product category rules:

Mineral insulating materials, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

25.04.2025

Valid to

24.04.2030

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

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

Rockpanel A2 9 mm

Owner of the declaration

ROCKWOOL A/S
Hovedgaden 584
2640 Hedehusene
Denmark

Declared product / declared unit

1 m^2 of Rockpanel A2 9 mm cladding panel.

Scope:

This declaration refers to Rockpanel A2 cladding panels in 9 mm, produced by Rockpanel, a member of ROCKWOOL Group. The declared reference product in this EPD is 1m^2 Rockpanel A2 9 mm Cladding Panel for facade cladding, roof detailing, soffits and fascias.
The Rockpanel products presented in this declaration are produced in Roermond (Netherlands). The production data correspond to the full year 2022.
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

Ms Jane Anderson,
(Independent verifier)

Product

Product description/Product definition
Rockpanel stone wool facade panels are prefabricated compressed mineral wool products with thermosetting binders.

They are traditionally made from volcanic rock (typically basalt or dolomite), and of recycled material and finished with a cured (waterborne) coating and in some cases an additional Protect Plus Coating. Rockpanel A2 9 mm products have a layer of waterborne coating.

The unfaced and coated synthetic resin-bonded stone wool products described in this declaration are produced in the form of panels in densities of 1250 kg/m^3 with 9 mm thickness.
For the placing of the product on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the *Regulation (EU) No. 305/2011 (CPR)* applies. The product needs a declaration of performance taking into consideration:

- *ETA-13/0340* of 2024/05/27 for Rockpanel A2 9mm.

For the application and use the respective national provisions apply.

Application
The Rockpanel A2 9 mm products contained in this EPD, are cladding panels for facade applications, offered with a density of 1250 kg/m^3 and a thickness of 9 mm.

Technical Data
For the products where the above declared properties apply, the performance data are in accordance with the declaration of performance with respect to its essential characteristics according to European Assessment Document (EAD) *no. EAD 090001-00-0404* for Prefabricated compressed mineral wool boards with organic or inorganic finish and with specified fastening system, edition May 2015.

The technical specifications for the products described in the EPD are given below based on the reference standards. For the product specific characteristics please refer to the manufacturer's specifications, available online in http://www.rockpanel.com/.

Constructional data
The table below refers to Rockpanel A2 with a thickness of 8mm.

Name	Value	Unit
Thermal conductivity acc. to EN 10456	0.55	W/(mK)
Maximum board size	3050x1250	mm x mm
Density (nominal) acc. to EN 323	1250	kg/m³
Mass (nominal)	11.25	kg/m²
Characteristic bending strength acc. to EN 3120; EN 1058	length and width f_{05} greater than or equal to 25.5 (N/mm2)	N/mm²
Modulus of elasticity acc. to EN 310	above or equal to 4740	N/mm²
Vapour transmission Sd at 23°C and 65% RH acc. to ISO 12572:2016	N/A	m
Dimensional Stability acc. to EN 438-2	9.7	(10–6 K-1)

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to the following:

- *ETA-13/0340 of 2024/05/27 for Rockpanel A2 9mm*.

Base materials/Ancillary materials
The average composition used for this EPD is the following (based on the average factory consumption figures for Rockpanel production):

- non-scarce natural stones [32%]
- cement [8%]
- slags and other secondary materials or waste materials [46%]
- mineral oil and bonding agent [0,5%]
- binder [11%]
- coating [3,6%]

Packaging represents 6% of the final product delivered to the customer. The raw materials are non-scarce stones, secondary materials and briquettes, which are made of rock mineral wool waste, secondary materials and by-products from other industries such as slags, alumina and wool waste and cement. The binder is a phenol formaldehyde resin which is polymerized into solid resin during the production of the final stone wool product. The coating when present is a waterborne acrylic coating and an additional (optional) PU coating also referred to as Protect Plus. The products described in this EPD, Rockpanel A2 9 mm contains a layer of the waterborne coating.

This product/article/at least one partial article contains substances listed in the candidate list (*ECHA* PR/19/12) (date: 16.07.2019) exceeding 0.1 percentage by mass: no.
Mineral wool fibres produced by ROCKWOOL are classified as non-hazardous under *REACH* (Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures). ROCKWOOL are registered with *REACH* under the following definition: 'Man-made vitreous (silicate) fibres with random orientation with alkaline oxide and alkali earth oxide (Na2O+K2O+CaO+MgO+BaO) content greater than 18% by weight and fulfilling one of the Note Q conditions'. ROCKWOOL products produced in Europe fulfil the Note Q requirements. This is certified by the independent certification body *EUCEB* (European Certification Board for mineral wool products). More information on *EUCEB* can be found under www.euceb.org.

Reference service life
Assumed intended working life of the Rockpanel A2 9 mm boards is 60 years, provided that they are subject to appropriate use and maintenance; this is in line with the results of an independent accelerated durability test, done by Bouw Technologie and available from Rockpanel upon request. Reference Service life is minimum 60 years according to *EAD 090001-01-0404*. The specific *ETA* provide assumed intended working life of 50 years.

It is expected that under normal use conditions the actual service life will be considerably longer without major degradation affecting the essential requirements. Indications given as to the working life of the boards cannot be interpreted as a guarantee given by ROCKWOOL B.V. / Rockpanel.

LCA: Calculation rules

Declared Unit

The specific product referred to in the declared unit is 1 m^2 of Rockpanel A2 9 mm cladding panel, with a layer of waterborne coating. The reference product has a thickness of 9 mm and a density of 1250 kg/m^3.

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Gross density	1250	kg/m^3
Grammage	11.25	kg/m^2
Surface	1	m^2
Layer thickness	0.009	m
Weight	11.25	kg
Conversion factor to m3	111.1	

System boundary

EPD type: **Cradle to gate with options, modules C1–C4, and module D.** The modules considered in the life cycle assessment as per system boundaries are described as follows:

Production

The product stage A1-A3 includes:
Provision of preliminary products and energy and relevant upstream processes;

- Transporting the raw materials and preliminary materials to ROCKWOOL production facilities;
- Production process in the ROCKWOOL production facilities including energy inputs and emissions;
- Electricity consumption, from purchased Renewable Energy Certificates (REC);
- Waste processing up to the end-of-waste state or disposal of waste residues, during the production stage;
- Production of packaging material;
- Manufacturing of products and co-product.

The environmental impact of co-products from the steel and coal fired electricity production (slags, alumina and ashes entering the system as inputs to the manufacturing) is accounted for. Recycled stone wool comes free of environmental burden, as it enters the product system as waste. Their transport to the factory is accounted for. Modules A1, A2 and A3 are declared as an aggregated module A1-A3.

Construction/Installation

The Construction Stage A4-A5 includes:

- A4 transport to the building site
- A5 installation to the building

The transport in A4 is modelled based on the amount of panels that fit in the truck. The values are based on annual average delivery data. In A5 the default installation is assumed to be manual, therefore no energy consumption or ancillary equipment is needed. The product waste from installation is assumed to be 5% and according to the modularity principle of *EN 15804*, its impacts are fully allocated to A5.
The A5 stage, according to *EN 15804* includes also waste processing up to the end-of-waste state or disposal of final residues during the construction process stage and impacts and aspects related to product losses during installation. Finally, the A5 module includes also the corresponding end-of-life considerations for packaging. The default assumption here for installation waste is 100% landfill.

Building Use

The use-stage B1-B7, related to the building fabric includes:

- B1 – Use or application of the installed product;
- B2 – Maintenance;
- B3 – Repair;
- B4 – Replacement;
- B5 – Refurbishment;
- B6 – Operational energy use;
- B7 – Operational water use;

Rockpanel Stone wool cladding panel is installed permanently in the structure and does not require maintenance, repair, replacement or refurbishment under normal use conditions. Similarly, Rockpanel has no operational energy or water use. Functionality is maintained usually for 60 years when coating is present. This, as mentioned earlier can be backed up by the independent accelerated Durability Test by Bouw Technologie and also by the product specific *ETA*.

End of Life

The End-of-life stage C1-C4 includes:

- C1 de-construction, demolition;
- C2 transport to waste processing;
- C3 waste processing for reuse, recovery and/or recycling;
- C4 disposal.

These stages also include provision and all transport, provision of all materials, products and related energy and water use. Manual deconstruction is assumed for C1 and no impacts are assigned. The benefits from disposal (heat or electricity recovery) are assigned to module D.

Module D includes reuse, recovery and/or recycling potentials expressed as net loads and benefits. Here the loads from the packaging disposal in A5 and from electricity generation on landfill are considered.

The product system with the system boundaries is presented in the graph below:

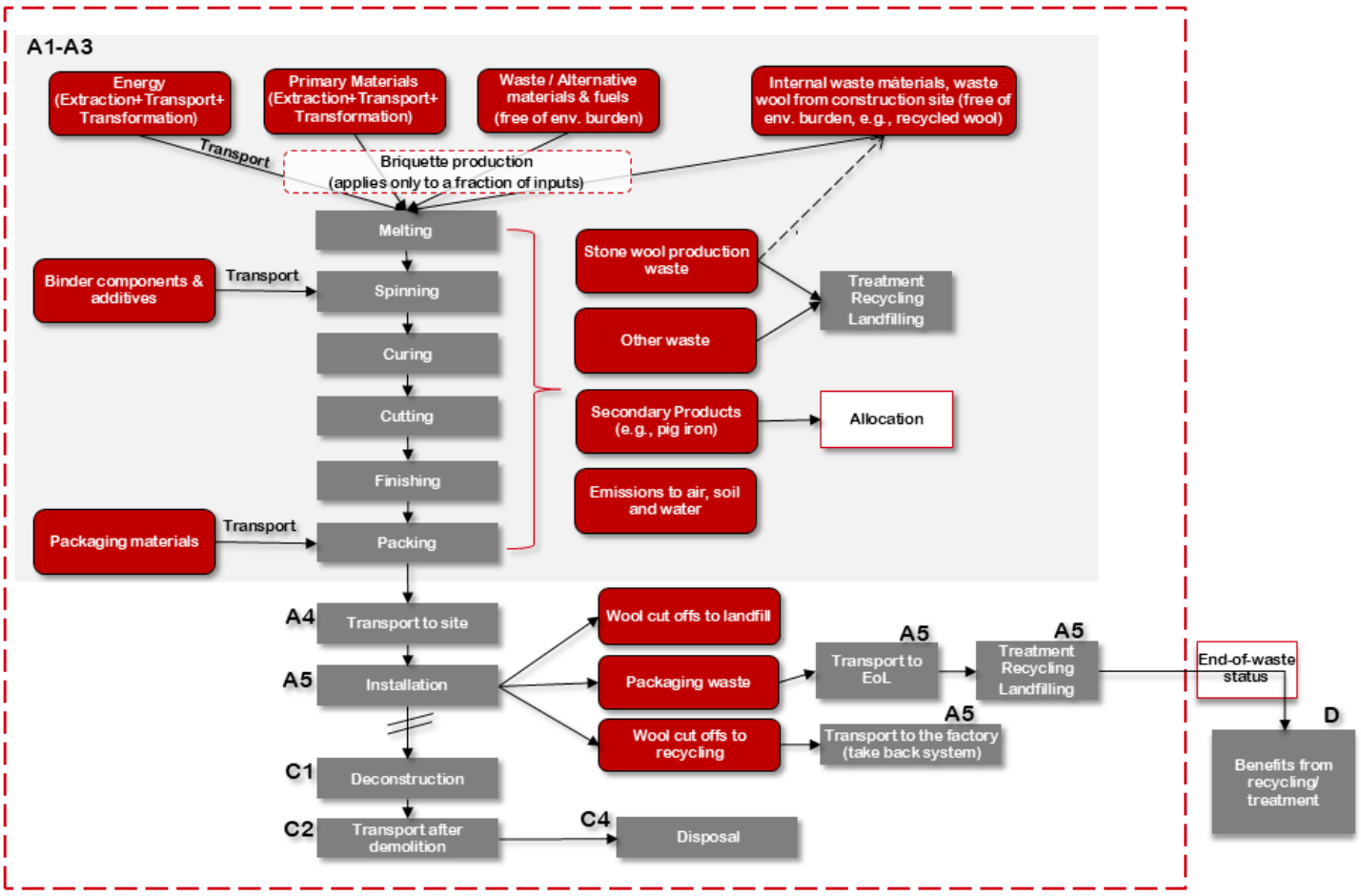

Figure 1: Product system with system boundaries

Geographic Representativeness

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

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 used software for the development of the declaration was "*LCA for experts*" (formerly known as *GaBi*) software version 10.7.1.28 was used, and database version 2023.2. EF reference package 3.1.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The biogenic carbon content quantifies the amount of biogenic carbon in a construction product leaving the factory gate, and it shall be separately declared for the product and for any accompanying packaging.
If the total mass of biogenic carbon containing materials is less than 5 % of the total mass of the product and accompanying packaging, the declaration of biogenic carbon content may be omitted. The mass of packaging containing biogenic carbon shall always be declared.

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	0.0222	kg C

Note: per kg of product

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

The following technical information for the declared modules can be used for scenario development in a building context.

Transport to the building site (A4)

Default fuel use of 38 L per 100 km per truck with full load.

Name	Value	Unit
Litres of fuel	0.32	l/100km
Transport distance	673	km
Capacity utilisation (including empty runs)	85	%
Gross density of products transported	1250	kg/m^3

Installation into the building (A5)

Name	Value	Unit
Electricity consumption	-	kWh
Material loss	5	%

Reference service life according to *BBSR* 2017

Name	Value	Unit
Code 335.611: Cavity wall insulation	≥ 50	a
Code 335.641: External thermal insulation composite system (ETICS)	40	a
Code 345.316: Special cladding: Thermal insulation (interior)	≥ 50	a
Code 352.121: Impact sound insulation	≥ 50	a
Code 352.122: Floor insulation, including insulation of the top floor	≥ 50	a
Code 353.421: Insulation of the cellar ceiling	≥ 50	a
Code 363.531: Insulation above and between rafters	≥ 50	a
Code 364.211: Insulation above, between and under rafters	≥ 50	a

For design applications, please refer to the manufacturer's guidelines. The life span value applies only under the assumption of proper installation and use conditions under the manufacturer's specification.

End of life (C1 - C4)

Name	Value	Unit
Landfilling	11.25	kg
Transport to landfill	50	km

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Any declared benefits and loads from net flows leaving the product system that have not been allocated as co-products and that have passed the end-of-waste state are included in module D. Such declared benefits can occur in stages A5 and C4. The generated energy, such as heat and electricity from waste incineration of packaging is assigned to module D. The benefits are calculated using current average substitution processes. The heat is credited for with heat from natural gas. The electricity is credited for with the specific country's electricity mix. This is also applied for materials that are landfilled as the benefits from electricity production from landfill gas recovery are included in module D.

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	X	X	X	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² Rockpanel A2 9 mm with an Rd- value of 0.016

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	1.41E+01	3.32E-01	1.45E+00	0	0	5.01E-02	0	3.52E-01	-7.57E-01
GWP-fossil	kg CO_2 eq	1.43E+01	3.29E-01	1.05E+00	0	0	5.04E-02	0	1.86E-01	-4.45E-01
GWP-biogenic	kg CO_2 eq	-2.95E-01	0	4.05E-01	0	0	0	0	0	-3.12E-01
GWP-luluc	kg CO_2 eq	4.01E-03	3.02E-03	4.25E-04	0	0	4.67E-04	0	5.34E-04	-6.96E-05
ODP	kg CFC11 eq	9.15E-08	2.88E-14	4.94E-09	0	0	4.41E-15	0	1.71E-14	-1.89E-12
AP	mol H^+ eq	7.55E-02	5.06E-04	4.13E-03	0	0	6.31E-05	0	1.33E-03	-9.66E-04
EP-freshwater	kg P eq	3.19E-04	1.19E-06	1.77E-05	0	0	1.84E-07	0	1.44E-06	-7.91E-07
EP-marine	kg N eq	1.62E-02	1.59E-04	1.02E-03	0	0	2.18E-05	0	3.61E-04	-1.76E-04
EP-terrestrial	mol N eq	2.29E-01	1.89E-03	1.27E-02	0	0	2.63E-04	0	3.82E-03	-1.85E-03
POCP	kg NMVOC eq	4.73E-02	4.12E-04	2.81E-03	9.75E-10	0	5.44E-05	0	1.11E-03	-5.93E-04
ADPE	kg Sb eq	2.47E-06	2.12E-08	1.19E-07	0	0	3.27E-09	0	1.72E-08	-2.85E-08
ADPF	MJ	1.95E+02	4.48E+00	1.11E+01	0	0	6.85E-01	0	2.52E+00	-9.83E+00
WDP	m^3 world eq deprived	4.1E+00	3.77E-03	2.65E-01	0	0	5.81E-04	0	1.99E-02	-1.24E-01

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 Rockpanel A2 9 mm with an Rd- value of 0.016

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
PERE	MJ	6.13E+01	3.14E-01	3.46E+00	0	0	4.85E-02	0	3.33E-01	-4.73E+00
PERM	MJ	9.93E+00	0	-3.6E+00	0	0	0	0	0	0
PERT	MJ	7.12E+01	3.14E-01	-1.48E-01	0	0	4.85E-02	0	3.33E-01	-4.73E+00
PENRE	MJ	1.38E+02	4.49E+00	8.22E+00	0	0	6.87E-01	0	2.52E+00	-9.84E+00
PENRM	MJ	5.67E+01	0	-2.55E-01	0	0	0	0	0	0
PENRT	MJ	1.95E+02	4.49E+00	7.97E+00	0	0	6.87E-01	0	2.52E+00	-9.84E+00
SM	kg	7.91E-02	0	5.48E-03	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m^3	9.58E-02	3.47E-04	4.84E-03	0	0	5.34E-05	0	6.07E-04	-3.46E-03

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 Rockpanel A2 9 mm with an Rd- value of 0.016

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
HWD	kg	2.54E-06	1.66E-11	1.27E-07	0	0	2.54E-12	0	2.65E-10	1.5E-08
NHWD	kg	1.4E+00	6.45E-04	8.61E-01	0	0	9.9E-05	0	1.2E+01	5.94E-01
RWD	kg	7.7E-04	5.8E-06	1.11E-04	0	0	8.88E-07	0	2.66E-05	-3.47E-04
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	2.62E-01	0	0	0	0	0	0
MER	kg	0	0	2.41E-01	0	0	0	0	0	0
EEE	MJ	0	0	1.01E+00	0	0	0	0	0	0

EET	MJ	0	0	2.29E+00	0	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 Rockpanel A2 9 mm with an Rd- value of 0.016

Parameter	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
PM	Disease incidence	2E-06	4.69E-09	1.04E-07	0	0	4.27E-10	0	1.63E-08	-4.58E-08
IR	kBq U235 eq	1.43E-01	8.38E-04	1.73E-02	0	0	1.28E-04	0	2.87E-03	-5.86E-02
ETP-fw	CTUe	2.29E+01	3.16E+00	2.06E+00	2E-07	0	4.83E-01	0	1.45E+00	-6.76E-01
HTP-c	CTUh	6.54E-09	6.36E-11	3.69E-10	1.47E-14	0	9.73E-12	0	2.06E-10	-1.56E-10
HTP-nc	CTUh	4.57E-07	2.8E-09	2.64E-08	1.82E-16	0	4.3E-10	0	2.19E-08	-5.41E-10
SQP	SQP	2.04E+02	1.85E+00	1.06E+01	0	0	2.86E-01	0	4.92E-01	-5.58E+01

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 – for the indicator “Potential Human exposure efficiency relative to U235”. 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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “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 shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

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EN 15804:2012+A1 2013, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.
EN 15804:2012+A2:2019, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

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

DIN EN ISO 14040
ISO 14040:2006, Environmental management. Life cycle assessment - Principles and framework.

DIN EN ISO 14044
ISO 14044:2006, Environmental management. Life cycle assessment – Requirements and Guidelines.

IBU 2022
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LCA Group Rules and Model
Third party Verified LCA Group Rules and Base model for the development of EPDs.

BBSR 2017
Service life of building components for lifecycle analysis in accordance with BNB, version dated 24 February 2017.

CLP Regulation
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December2008 on classification, labelling and packaging of substances and mixtures, last amended by Commission Delegate Regulation (EU) No 2020/217 of 4 October 2019 (OJ L 44,18.02.2020, p. 1-14).

ECHA Candidate List
The Candidate List of substances of very high concern, available via Candidate List of substances of very high concern for Authorization - ECHA (europa.eu).
https://www.echa.europa.eu/candidate-list-table

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EN 310
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EN 323
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EN 438-2
EN 438-2:2016+A1:2018, High-pressure decorative laminates (HPL) — Sheets based on thermosetting resins (usually called laminates) — Determination of properties.

EN 1058
EN 1058:2009, Wood-based panels —. Determination of characteristic 5-percentile values and characteristic mean value.

EN 3120
EN 3120:2012, Aerospace series — Titanium alloy TI-P64003 — Cold worked and stress relieved — Seamless tube for pressure systems 4 mm ≤ D ≤ 51 mm, 690 MPa ≤ Rm ≤ 1 030 MPa.

EN 10456
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values.

EN 16783:2024
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ISO 12572:2016
ISO 12572:2016, Hygrothermal performance of building materials and products – Determination of water vapour transmission properties – Cup method.

LCA for Experts (Formerly GaBi)
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