ENVIRONMENTAL PRODUCT DECLARATION

acc. to *ISO 14025* and *EN 15804+A2*

Declaration owner	wedi GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-WDI-20240309-IBA1-DE
Date of issue	08/01/2025
Date of expiry	07/01/2030

wedi Structural Panel

wedi GmbH

Institut Bauen und Umwelt e.V.

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ECO PLATFORM EPD VERIFIED

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1. General information

wedi GmbH

Programme holder

IBU – Institut Bauen und Umwelt e.V.

Hegelplatz 1
D-10117 Berlin
Germany

Declaration number

EPD-WDI-20240309-IBA1-DE

This declaration is based on the following product category rules:

Plastics foam insulants 01/08/2021
(PCR tested and approved by the Independent Board of Experts (SVR))

Date of issue

08/01/2025

Date of expiry

07/01/2030

wedi Structural Panel

Owner of declaration

wedi GmbH

Hollefeldstr. 51
D-48282 Emsdetten
Germany

Declared product / Declared unit

1 m² wedi Structural Panel with 20 mm thickness.

Scope:

The life cycle balance covers data from the year 2023 and the wedi GmbH production site in Emsdetten, Germany.

The declaration owner is liable for the underlying data and supporting documents; the IBU shall not be held liable under any circumstances with regard to the manufacturer's information, eco-balance data, and supporting documents.

This EPD was drawn up in accordance with the provisions of EN

Verification

The European standard EN 15804 is the core PCR

Independent verification of the declaration and information as per ISO 14025:2011

☐ internal ☒ external

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2 Product

2.1 Product description/Product definition

The wedi Structural Panel consists of an extruded polystyrene hard foam core with glass fibre reinforcement on both sides and cement mortar coat.
Extruded polystyrene hard foam (XPS) is a plastics foam insulant according to *EN 13164* which is manufactured in the shape of panels with a density range of 32 kg/m³ (+/-3). The wedi Structural Panel has a calculated density of 190 kg/m³, accounting for the coating. The wedi Structural Panel are delivered with thicknesses between 4 and 100 mm and lined edges.

Product acc. to CPR with ETA

The *Regulation (EU) No. 305/2011 (CPR)* applies to the placing on the market of the product within the EU/EFTA (excluding Switzerland). The product requires a declaration of performance in compliance with *ETA 13/0385*, 12.06.2013, 'wedi Sealing System Structural Panel/Fundo' and the CE label. Usage of the product is subject to the applicable national regulations.

2.2 Application

The wedi Structural Panel can be mounted to nearly any substrate, is impermeable to water, heat insulating, light, and stable. The wedi Structural Panel can be coated with all types of plastering and tiles. The wedi Structural Panel is especially suited for the wet area in bathrooms and wellness facilities. It is installed in new buildings and for refurbishment work. It is used on walls as tile carrier, separating wall structure, and on the floor. As a building element, the wedi Structural Panel can be employed to create bathroom furniture, washing stands, benches couches (heated and unheated), niches, and cupboards in the wet area of private and public baths as well as toilet and wellness facilities.

2.3 Technical data constructional

data of the XPS core

Designation	Value	Unit
Density acc. to EN 1602	32	kg/m³
Elasticity modulus acc. to EN 826	10-18	N/mm²
Water vapour diffusion resistance coefficient acc. to EN 12086	100	-
Thermal conductivity acc. to EN 13164	0.036	W/(mK)
Creep properties and permanent pressure resistance acc. to DIN EN 1606	0.08	N/mm²
Maximum water absorption DIN EN 12087	1.5	Vol. %
Compressive strength acc. to EN 826	0.25	N/mm²
Tensile strength acc. to EN 1607	0.45	N/mm²
Sound insulation acc. to DIN EN ISO 140-3	23	dB
Bending stress based on DIN 53293	3900	kPa

The performance values of the product correspond to the declaration of performance in relation to its essential characteristics acc. to /ETA 13/0385/, 12.06.2013,'wedi Abdichtungssystem Bauplatte/ Fundo'. Voluntary information on the product: general building regulatory test certificate (abP), /abP Nr. P25730802.001/, 26.03.2015 'Abdichtungssystem wedi Bauplatte, wedi Fundo' (not covered by CE label).

2.4 Delivery condition

Dimensions:
Length: 1200-2600 mm
Width: 600, 900, 1200 mm
Thickness: 4-100 mm
More information on www.wedi.eu

2.5 Base/Accessory materials

The wedi Structural Panel has a mass per unit area of 4.05 kg/m², and it is composed of the following elements:

Designation	Value	Unit
Mortar	3.27	kg/m²
XPS core (approx. 32 kg/m³)	0.63	kg/m²
Glass fibre reinforcement	0.15	kg/m²

The primary raw material used is standard polystyrene (GPPS) [CAS 9003-53-6] with 90 to 95 mass %. It is expanded using a propellant with approx. 8 mass %. The propellant consists of carbon dioxide [CAS 124-38-9] and halogen-free co-propellants. The base material XPS has the following mass fractions:

- Polystyrene 90 - 95%
- Propellant 5 - 8%
- Of which carbon dioxide 40 - 80%
- Of which co-propellants 20 - 60%
- Flame retardants 0.5 - 3%
- Additives (e.g., colourants) < 1%

An alternative flame retardant is used as additive. The XPS is free of HBCD and other substances of very high concern (SVHC) under *REACH*. Moreover, additives (such as processing aids and colourants) are added to the extrusion process at concentrations of less than 1%.
Polystyrene and the co-propellants are made from mineral oil and natural gas. It is transported on the road or via pipeline from the production sites to the XPS factories. CO2 is recovered as a by-product of various processes, meaning its availability is unlimited.

The base material mortar has the following mass fractions:

- Cement ~2 - 85%
- Fillers ~10 - 90%
- Gypsum ~0 - 45%
- Additives ~0 - 6%
- Dispersion powder (mortar group 1) ~0 - 5%

The product contains substances on the *candidate list* (as of 28/01/2019) at more than 0.1 mass %: **no**.

The product/at least one partial product contains additional CMR substances, from category 1A or 1B, that are not included in the *Candidate List*, at levels above 0.1 mass % in at least one partial product: **no**.

The construction product in question has biocides added or was treated with biocidal products (making it a treated good in the meaning of the Biocidal Products Regulation (EU) Nr.528/2012): **no**.

2.6 Manufacture

XPS is manufactured in a continuous extrusion process from granulated polystyrene.

The polystyrene is melted and homogenised under high pressure together with the additives in a tandem extruder. The propellant is dissolved in the molten mass, and the mass is extruded through a wide-slit nozzle. Due to the resulting, significant drop in backpressure, the propellant expands the molten mass under ambient temperature conditions. The molten mass cools down, and the polystyrene foam solidifies, creating a closed-cell polystyrene hard foam. The foam cools down further and can be packed once the extrusion skin has been removed.
For coating of the hard foam panel, a polymer-modified mortar is mixed with water and applied to the XPS core together with the glass fabric. The dried panel is now ready for dimensioning. wedi Structural Panels are packed on pallets with polyethylene film.

As a thermoplastic material, polystyrene can be recycled simply and efficiently by melting.

2.7 Environment and health during manufacture

During production of the wedi Structural Panels, no further steps beyond the national occupational health and safety regulations are necessary to protect employee health across all production steps. The production facility is certified to ISO 9001 and ISO 50001.

2.8 Product processing/Installation

Product and application dependent installation recommendations can be found in wedi GmbH's prospects, processing guidance, and product data sheets. This material can be obtained directly from wedi GmbH or online. No particular personal protection is required when processing wedi Structural Panel.
Structural panel waste created as chippings at the construction site should be separately collected and properly disposed of.

2.9 Packaging

The packaging consists of polyethylene film, corrugated cardboard edge guards, and single-use wooden pallet. The packaging materials should be separately collected and properly disposed of.

2.10 Condition in use

All materials used are resistant to ageing and moisture when installed, which means that the insulation performance and mechanical properties remain unchanged throughout the entire service life.

2.11 Environment and health during use

wedi Structural Panel are not directly exposed to the environment or interior air in most applications. According to recognized measurements according to the *AgBB Schema (Prüfbericht Nr. 52933-001)*, the health risks associated with the use of XPS for interior insulation are insignificant (see chapter 7: VOC emissions)

2.12 Reference service life

The service life of the product wedi Structural Panel corresponds to the service life of the structural element in which it is used. This is due to the mechanical strength and resistance to water exposure.

2.13 Extraordinary influences

Fire

wedi Structural Panels are classed as construction material category E acc. to *DIN EN 13501-1*. The fire behaviour is further detailed in the European Technical Assessment.

Fire protection

Designation	Value
Construction material category acc. to EN 13501-1	E

Water

wedi Structural Panels s are chemically neutral, not water-soluble and, when used as intended, do not release any water-soluble materials that could contaminate the groundwater, rivers and oceans. wedi Structural Panels' thermal conductivity is virtually unaffected by the effects of water or water vapour.

Mechanical destruction

Irrelevant to wedi Structural Panel products.

2.14 End-of-life phase

The manufacturer recommends that the product be subjected to energetic utilisation for disposal. The energy contained in the foam is thus recovered so that electricity and heat from fossil energy sources can be substituted for.
Where no homogeneous separation is possible, it is recommended that the product be disposed of via landfilling.

2.15 Disposal

Waste key acc.t to the Waste Index Ordinance (*AVV*): 170604 – insulating material with the exception of insulating material covered by 170601 and 170603.

2.16 Additional information

See www.wedi.eu for additional information on the structural panel and other products.

3 LCA: Calculation rules

3.1 Declared unit

The declared unit used in the present study is a wedi Structural Panel with double-sided coating, 1 m² surface area and 20 mm thickness.

Declared unit and unit mass

Designation	Value	Unit
Declared unit	1	m^2
Density	202.5	kg/m^3
Conversion factor	4.05	-
Mass per unit area	4.05	kg/m^2
Layer thickness	0.02	m

Other declared units are permitted if the conversion is presented in a transparent manner.

The declaration refers to a specific product instead of an average formed from several products. Type corresponding to /PCR Part A/: 1a) Specific product from a plant of the manufacturer.

3.2 System boundary

The type of declaration is an EPD cradle to the factory gate – with options'.

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It covers the production stages, i.e. from provision of raw materials to the gate of the production plant (cradle-to-gate, modules A1 to A3), as well as transport to the construction site (module A4), disposal of the packaging material during the installation stage (module A5) and parts of the end of life, in this case demolition, removal of the demolition material and disposal (modules C1, C2 and C4). At the disposal stage, both the scenario of complete landfilling and the scenario of thermal utilisation for energy recovery were considered. In addition, the potential benefits and burdens are assessed beyond the product's life cycle (module D).

Module A1 includes the provision of all relevant raw materials/auxiliary materials. Transport of these materials are accounted for in module A2. Module A3 includes expenditures relating to the making of the product, such as the provision of fuels, operating materials and energy. The transport of the packed product to the construction site is considered in module A4. Module A5 solely reflects the disposal of the product packaging. The energy consumption of a machine used to deconstruct the product is accounted for in module C1. Module C2 covers the transport of the demolition material to the disposal service. Module C4 accounts for the mere landfilling of the dismantled product. Module D assesses the thermal utilisation of the product at the end of its life cycle and the resulting potential benefits and burdens in the form of an expansion of the system.

3.3 Estimates and assumptions

All material and energy flows of the production processes and the transportation distances of the raw materials were determined using questionnaires.
Assumptions were made regarding the transportation distances to the construction site (A4) and the transportation distances of the demolition material (C2).

3.4 Cut-off rules

In this study, the packaging of the mortar, the glass fabric and the XPS boards were cut off. In addition to the packaging, the latex adhesive for a continuous glass fibre fabric was also cut off. In relation to the mass fraction of raw materials, the proportion of packaging and adhesive is well below the 1% limit. This ensures that the total sum of the neglected input flows is safely below 5% of the energy and mass input. Care was also taken not to neglect any material and energy flows with a particular potential for exerting significant influences on environmental indicators.

3.5 Background data

With the exception of the data for the mortar (EPD with the number EPD DBC-20220217-IBF1-EN), all background data was taken from the *LCA for experts (GaBi) Professional database 2023 edition*.

3.6 Data quality

The foreground data for the year 2023 obtained was validated in accordance with mass and with plausibility criteria.
The background data used for material and energy processes was taken from the *LCA for experts (GaBi) database 2023*. All data sets used were valid at the time of use and were geographically and technically representative.
The data quality can be regarded as being very good on the whole.

3.7 Period under consideration

The data collection for the foreground system relates to the year 2023.

3.8 Geographic representativeness

Land or region where the declared product is manufactured, used (if applicable), and treated at the end of its life cycle: Germany

3.9 Allocation

Allocation within the foreground data

In addition to the product in question, wedi's total production output includes other XPS products of different densities and shapes. The values for thermal and electrical energy as well as auxiliary materials are related to the declared product during data collection. Depending on the process step, this division is based on mass, surface area, piece or dwell time in the machine.

Waste allocation

The inert production waste generated is disposed of in a landfill. Most of the waste consists of mortar residues.

Module D

The potential benefits from the substitution of fossil fuels in the course of energy generation with thermal utilization of the product at the end of its life cycle are balanced in module D. The energy generated is credited to the system through substitution processes, whereby it is assumed that the thermal energy is generated from natural gas and the substituted electricity corresponds to the German electricity mix.

Allocation within upstream processes

Allocations by mass and lower calorific value are used for all refinery products. The environmental impact of production is calculated specifically for each refinery product.

3.10 Comparability

On the whole, EPD data can be compared or evaluated only if all datasets to be compared were generated acc. to *EN 15804* and the building context and product-specific performance characteristics are taken into consideration. The life cycle assessment was modelled using the *LCA for experts (GaBi) software version 2023.2*.

4 LCA: Scenarios and additional technical information

Characteristic product properties biogenic carbon

The biogenic carbon content quantifies the amount of biogenic carbon in a construction product that leaves the factory gate and must be specified separately for the product and the associated packaging.

Data used to describe the biogenic carbon content at the factory gate

Designation	Value	Unit
Biogenic carbon in product	4.86E-11	kg C
Biogenic carbon contained in packaging	6.79E-12	kg C

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

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The following technical information provides a background for the declared modules, or can be used to derive specific scenarios in the context of a building assessment when no modules are declared (MND).

Transport to construction site (A4)

Designation	Value	Unit
Transport distance	400	km
Capacity utilisation (including empty runs)	61	%
Bulk density of transported product	202.5	kg/m³

Installation in building (A5)

Designation	Value	Unit
Polyethylene film	0.004	kg
Wood pallet	0.32	kg
Cardboard edge guards	0.003	kg

End of life (C1-C4)

To EoL (end of life) scenarios are assessed:

Scenario 1 deals with expenditures for landfilling. **Scenario 2** looks at the environmental burden generated by the incineration of the product.

Non-combustible components are subsequently disposed of in a landfill.

Designation	Value	Unit
Waste type collected separately	-	kg
Collected as mixed construction waste	4.05	kg
Demolition material transportation distance	100	km
To reuse	-	kg
To recycling	-	kg
To energy recovery (scenario 2)	4.05	kg
To landfill (scenario 1)	4.05	kg

Reuse, recuperation and recycling potential (D), relevant scenario data

Module D also includes the potential benefits from the end-of-life incineration of the XPS panels. Credits for electricity and thermal energy are taken into account on the basis of European boundary conditions.

Designation	Value	Unit
Net flow in module D	4.05	kg
electric efficiency of plant	30.0	%
thermal efficiency of plant	13.1	%

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5 LCA: Results

The following tables show the environmental impacts and life cycle inventory parameters determined for the declared unit of 1 m² wedi Structural Panel (20 mm thick). The declared life cycle stages are marked with an 'X' in the following table, the undeclared ones with 'MND' (module not declared).

SPECIFICATION OF SYSTEM BOUNDARIES (X = INCLUDED IN LIFE CYCLE ASSESSMENT; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Production stage			Building construction stage		Usage stage							Disposal stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacture	Transport from manufacturer to site of utilisation	Installation	Use/Application	Maintenance	Repair	Replacement	Refurbishment	Building operational energy use	Building operational water use	Dismantling/Demolition	Transport	Waste processing	Disposal	Reuse, recuperation or recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

THE LIFE CYCLE ASSESSMENT RESULTS – ENVIRONMENTAL IMPACT acc. to EN 15804+A2: 1 m² wedi Structural Panel thickness 20mm

Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	C4/1	D
GWP total	kg CO_2-eq.	3.67E+00	6.39E-02	3.68E-01	1.39E-01	5.97E-01	3.71E-03	3.17E-02	0	5.81E-02	1.64E+00	-6.59E-01
GWP-fossil	kg CO_2-eq.	4.13E+00	6.38E-02	3.66E-01	1.39E-01	1.92E-02	3.65E-03	3.17E-02	0	6.01E-02	1.64E+00	-6.54E-01
GWP-biogenic	kg CO_2-eq.	-4.62E-01	-2.89E-04	1.93E-03	-6.25E-04	5.77E-01	4.85E-05	-1.44E-04	0	-2.07E-03	-1.61E-03	-4.53E-03
GWP-luluc	kg CO_2-eq.	1.81E-03	3.85E-04	2.34E-05	8.33E-04	1.63E-06	5.65E-07	1.92E-04	0	1.89E-04	1.94E+04	-5.87E-05
ODP	kg CFC11-eq.	9.6E-11	1.13E-14	4.26E-12	3.44E-14	9.07E-14	1.13E-13	7.93E-15	0	1.57E-13	6.73E-13	-9E-12
AP	mol H+-eq.	1.17E-02	6.93E-05	3.14E-04	1.63E-04	1.08E-04	5.62E-06	2.28E-04	0	4.32E-04	6.33E-04	-6.63E-04
EP-freshwater	kg P-eq.	7.73E-06	1.5E-07	8.17E-07	3.29E-07	2.19E-08	2.1E-08	7.53E-08	0	1.23E-07	2.41E-07	-1.69E-06
EP-marine	kg N-eq.	2.31E-03	2.41E-05	1.02E-04	5.75E-05	3.01E-05	1.82E-06	1.14E-04	0	1.11E-04	1.54E-04	-2.44E-04
EP-terrestrial	mol N-eq.	2.5E-02	2.92E-04	1.14E-03	6.93E-04	5.17E-04	1.88E-05	1.26E-03	0	1.23E-03	2.29E-03	-2.59E-03
POCP	kg NMVOC-eq.	1.15E-02	5.97E-05	2.66E-04	1.43E-04	7.87E-05	4.38E-06	2.17E-04	0	3.37E-04	4.5E-04	-6.29E-04
ADPE	kg Sb-eq.	9.27E-06	4.57E-09	2.6E-08	1.01E-08	6.73E-10	6.67E-10	2.32E-09	0	2.82E-09	6.61E-09	-5.69E-08
ADPF	MJ	3.72E+01	8.73E-01	3E+00	1.89E+00	1.39E-01	5.13E-02	4.36E-01	0	8.13E-01	1.49E+00	-1.03E+01
WDP	m3 world-eq. deprived	4.98E-01	3.35E-04	1.74E-02	7.33E-04	6.11E-02	1.07E-04	1.69E-04	0	6.67E-03	1.55E-01	-8.8E-03

GWP = global warming potential; ODP = atmospheric ozone layer depletion potential; AP = soil and water acidification potential; EP = eutrophication potential; POCP = tropospheric ozone formation potential; ADPE = abiotic resource scarcity potential – non-fossil resources (ADP – substances); ADPF = abiotic resource scarcity potential – fossil fuels (ADP – fossil energy carriers); WDP = water deprivation potential (user)

LIFE CYCLE ASSESSMENT RESULTS – RESOURCE UTILISATION INDICATORS acc. to EN 15804+A2: 1 m² wedi Structural Panel thickness 20mm

Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	C4/1	D
PERE	MJ	1.58E+01	5.64E-02	1.89E+00	1.27E-01	4.42E-02	5.01E-02	2.93E-02	0	1.33E-01	3.79E-01	-4.01E+00
PERM	MJ	2.11E+00	0	0	0	0	0	0	0	0	0	0
PERT	MJ	1.79E+01	5.64E-02	1.89E+00	1.27E-01	4.42E-02	5.01E-02	2.93E-02	0	1.33E-01	3.79E-01	-4.01E+00
PENRE	MJ	1.21E+02	8.73E-01	3E+00	1.9E+00	1.39E-01	5.13E-02	4.37E-01	0	8.13E-01	1.49E+00	-1.03E+01
PENRM	MJ	4.92E-01	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.21E+02	8.73E-01	3E+00	1.9E+00	1.39E-01	5.13E-02	4.37E-01	0	8.13E-01	1.49E+00	-1.03E+01
SM	kg	3.2E-03	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0
FW	m3	1.81E-02	5.13E-05	1.61E-03	1.13E-04	1.43E-03	1.71E-05	2.6E-05	0	2.05E-04	3.74E-03	-1.39E-03

PERE = renewable primary energy as energy carrier; PERM = renewable energy for material utilisation; PERT = total renewable primary energy; PENRE = non-renewable primary energy as energy carrier; PENRM = non-renewable primary energy for material utilisation; PENRT = total non-renewable primary energy; SM = use of secondary materials; RSF = renewable secondary fuels; NRSF = non-renewable secondary fuels; FW = net utilisation of sweet water resources

RESULTS OF THE LIFE CYCLE ASSESSMENT – WASTE CATEGORIES AND OUTPUT FLOWS acc. to EN 15804+A2: 1 m² wedi Structural Panel thickness 20mm

Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	C4/1	D
HWD	kg	7.6E-05	2.33E-12	-3.64E-10	3.2E-12	1.39E-12	-9.73E-12	7.4E-13	0	1.75E-11	-7.8E-13	-6.67E-10
NHWD	kg	1.67E-01	1.27E-04	4.48E-03	2.84E-04	5.07E-03	4.82E-05	6.54E-05	0	4.06E+00	3.59E+00	-5.56E-03

RWD	kg	1.49E-03	9.13E-07	1.9E-04	2.5E-06	4.58E-06	5.03E-06	5.75E-07	0	9.13E-06	3.49E-05	-4.01E-04
CRU	kg	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0	0	0

HWD = disposed hazardous waste; NHWD = disposed non-hazardous waste; RWD = disposed radioactive waste; CRU = components for reuse; MFR = materials for recycling; MER = materials for energy recovery; EEE = exported electrical energy ; EET = exported thermal energy

RESULTS OF THE LIFE CYCLE ASSESSMENT – additional effect categories acc. to EN 15804+A2-optional: 1 m² wedi Structural Panel thickness 20mm

Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	C4/1	D
PM	Cases of illness	9.47E-08	4.75E-10	2.23E-09	1.15E-09	5.78E-10	4.43E-11	7.87E-10	0	6.57E-11	7.53E-09	-4.82E-09
IR	kBq U235-eq.	9.13E-02	9.4E-05	1.98E-02	2.67E-04	4.83E-04	5.24E-04	6.17E-05	0	2.41E-12	3.75E-03	-4.18E-02
ETP-fw	CTUe	3.19E+01	6.55E-01	1.54E+00	1.38E+00	5.25E-02	1.95E-02	3.19E-01	0	7.2E-09	6.73E-01	-1.58E+00
HTP-c	CTUh	1E-07	1.29E-11	5.88E-11	2.76E-11	4.11E-12	1.01E-12	6.35E-12	0	5.99E-12	8.2E-11	-1.24E-10
HTP-nc	CTUh	3.33E-08	5.34E-10	1.06E-09	1.15E-09	6.8E-11	1.45E-11	2.66E-10	0	4.35E-01	7.93E-09	-3.38E-09
SQP	SQP	8.13E+01	3.09E-01	1.26E+00	6.73E-01	4.75E-02	3.32E-02	1.55E-01	0	3.91E-03	4.13E-01	-2.65E+00

PM = potential occurrence of disease caused by particulate emissions; IR = potential effect through human exposition to U235; ETP-fw = potential toxicity reference unit for ecosystems; HTP-c = potential toxicity reference unit for humans (carcinogenic effect); HTP-nc = potential toxicity reference unit for humans (non-carcinogenic effect); SQP = potential soil quality index

Qualifier 1 – applies to indicator 'potential effect through human exposure to U235'.

This effect category mainly covers the potential impact of low-dosage ionising radiation on human health in the nuclear fuel cycle. It does not account for effects caused by possible nuclear accidents and occupational exposure nor for the disposal of radioactive waste in subterranean installations. This indicator also does not cover the potential ionising radiation emitted by the ground, radon, and certain construction materials.

Qualifier 2 – applies to the indicators: "abiotic resource depletion potential – non-fossil resources", "abiotic resource depletion potential – fossil fuels", "water deprivation potential (user)", "potential toxicity reference unit for ecosystems", "potential toxicity reference unit for humans – carcinogenic effect", "potential toxicity reference unit for humans – non-carcinogenic effect", and "potential soil quality index".

Diligence must be applied when using the results of the environmental impact indicator because they are fraught with high uncertainties or experience with the indicator is limited.

6 LCA: Interpretation

The following dominance analysis refers to the consideration of scenario 1, which provides for the pure landfilling of the demolition material.

Therefore, no credits are considered here.

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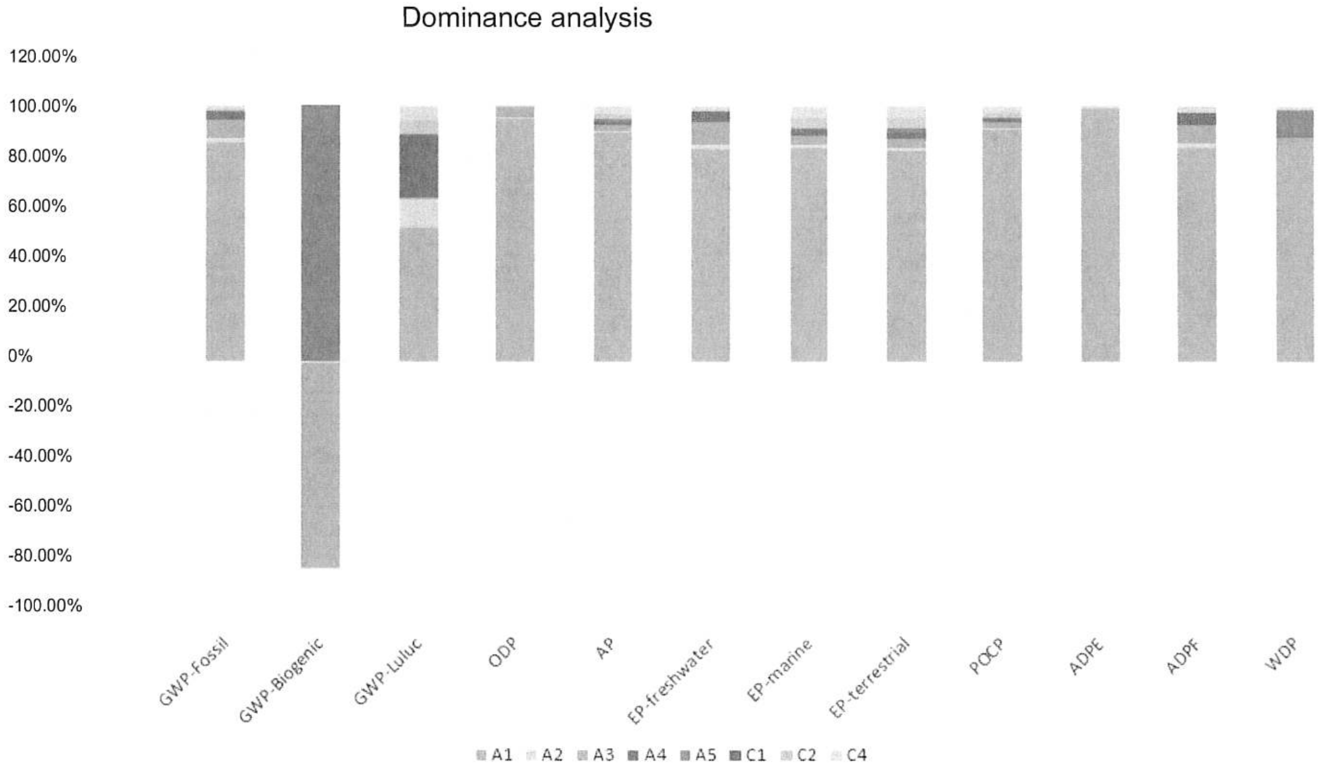

All indicators are significantly dominated by the production stage and the material and energy upstream chains (modules A1 and A3). In modules A1-A3, the raw materials and the energy used for production in particular contribute to the potential environmental impacts. The main influences in the individual impact categories are shown below.

The total global warming potential (GWP-total) is dominated by raw materials (74%) and the thermal recycling of packaging (12%).

The global warming potential fossil (GWP-fossil) is dominated by the raw materials (86%) and the energy input at the Emsdetten production site (8%).

The global warming potential biogenic (GWP-biogenic) is dominated by the thermal recycling of the packaging material (99%) and the raw materials (-80%).

The global warming potential of land use and land use change (GWP-luluc) is dominated by raw materials (53%) and transportation to the construction site (A4) (25%).

The depletion potential of the stratospheric ozone layer (ODP) is dominated by raw materials (95%) and energy expenditure in production (4%).

The acidification potential of soil and water (AP) is dominated by raw materials (90%).

Eutrophication potential freshwater (EP-freshwater) is dominated by raw materials (84%) and energy expenditure in production (9%).

Eutrophication potential saltwater (EP-marine) is most influenced by the raw materials (84%).

Eutrophication potential land (EP-terrestrial) is dominated 83% by raw materials and 4% by the energy used in production.

The formation potential for tropospheric ozone (POCP) is also dominated by raw materials (92%).

A similar picture to the POCP can be seen in the scarcity of abiotic non-fossil resources (ADPE), where the raw materials contribute 99%.

The potential for depletion of abiotic resources fossil fuels (ADPF) is also dominated by raw materials (84%).

The water withdrawal potential (WDP) is dominated by raw materials (85%) and the thermal recycling of packaging materials (11%).

7 References

7.1 VOC emissions

Emissions of volatile organic compounds (VOC) by the wedi building board in accordance with the AgBB scheme were tested by ecoINSTITUT Germany GmbH in spring 2018 (*Prüfbericht Nr. 52933-001*). The tested product is suitable for indoor use.

AgBB summary of results (28 days [µg/m³])

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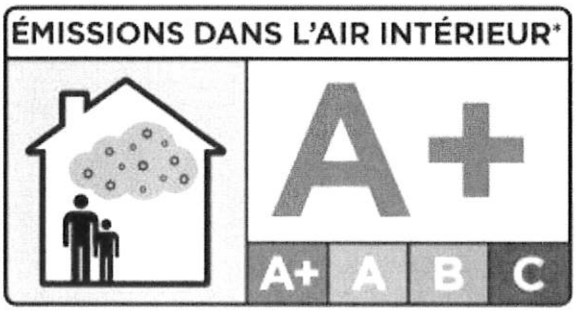
Designation	Value	Unit
TVOC (C6 - C16)	24	µg/m3
Sum SVOC (C16 - C22)	< 5	µg/m3
R (dimensionless)	0.68	-
VOC without NIK	8	µg/m3
Carcinogenic substances	< 1	µg/m3

With the results of the VOC measurement, the requirements of the French VOC Classification Ordinance and the French CMR Emissions Ordinance were met and the product was assigned to emission class A+.



AgBB summary of results (3 days [µg/m³])

Designation	Value	Unit
TVOC (C6 - C16)	89	µg/m3
Sum SVOC (C16 - C22)	< 5	µg/m3
R (dimensionless)	1.06	-
VOC without NIK	29	µg/m3
Carcinogenic substances	< 1	µg/m3

7.2 Leaching
Tests on leaching behaviour are not relevant for wedi building boards, as the product does not come into contact with rain or groundwater due to its application.

7.3 Management systems
The production site and headquarters of wedi GmbH is certified with a quality management system in accordance with *ISO 9001* and an energy management system in accordance with *ISO 50001*.

8. List of references

Standards

EN 15804
EN 15804:2012+A1 2013, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

EN 15804
EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

ISO 14025
EN ISO 14025:2011, Environmental labels and declarations – Type III environmental declarations – Principles and procedures

ISO 9001
DIN EN ISO 9001:2008, Quality management systems – Requirements (ISO 9001:2008)

ISO 50001
DIN ISO 50001:2011, Energy management systems – Requirements with guidance for use

EN 13164
DIN EN 13164:2015-04, Thermal insulation products for buildings – Factory made extruded polystyrene foam (XPS) products

EN 826
DIN EN 826:2013-05, Thermal insulating products for building applications – Determination of compression behaviour

EN 1607
DIN EN 1607:2013-05, Thermal insulating products for building applications – Determination of tensile strength perpendicular to faces

EN 12086
DIN EN 12086:2013-06, Thermal insulating products for building applications – Determination of water vapour transmission properties

EN 12087
DIN EN 12087:2013-06, Thermal insulating products for building applications – Determination of long term water absorption by immersion

EN 12088
DIN EN 12088:2013-06, Thermal insulating products for building applications – Determination of long term water absorption by diffusion

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

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

Further reading

AVV
European Waste Index Ordinance (Waste Index Ordinance – AVV)

IBU 2021
Institut Bauen und Umwelt e.V.: Allgemeine Anleitung für das EPD-Programm des Institut Bauen und Umwelt e.V., version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021 http://www.ibu-epd.com

LCA for experts (GaBi)
LCA for experts (GaBi): Software und Datenbank zur Ganzheitlichen Bilanzierung, Professional Datenbank, Content Version 2023.2.

PCR Teil A
Produktkategorieregeln für gebäudebezogene Produkte und Dienstleistungen, Teil A: Rechenregeln für die Ökobilanz und Anforderungen an den Projektbericht, version 2.1, 11/2021

PCR Teil B
Anforderungen an die EPD für Dämmstoffe aus Schaumkunststoffen

ETA-13/0385
ETA-13/0385. European Technical Approval wedi Fundo, June 2018

Environmental Product Declaration (EPD) Modified mineral mortars of group 1
Declaration number EPD-DBC-20220217-IBF1-EN

abP Nr. P-25730802.001
Allgemeines bauaufsichtliches Prüfzeugnis Nr. P-25730802.001, 26.03.2015 'Abdichtungssystem wedi Bauplatte, wedi Fundo"

Prüfbericht Nr. 52933-001
Gutachten gemäß AgBB-Schema 2015 Prüfbericht Nr. 52933-001 von eco-INSTITUT Germany GmbH, Köln für die wedi Bauplatte, 26.03.2018 Nr. P- 25730802.001

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I, Dr. Sascha MALAK, translator for the English language, authorized by the President of Hamm Higher Regional Court (reg. no. 3162 E-17.5722), hereby certify the above to be a correct and complete translation of an original from German into English.

Dortmund, 14 March 2025