

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

|                          |                                      |
|--------------------------|--------------------------------------|
| Owner of the Declaration | Odenwald Faserplattenwerk GmbH       |
| Publisher                | Institut Bauen und Umwelt e.V. (IBU) |
| Programme holder         | Institut Bauen und Umwelt e.V. (IBU) |
| Declaration number       | EPD-OWA-20250202-IBA1-EN             |
| Issue date               | 06.06.2025                           |
| Valid to                 | 05.06.2030                           |

**OWAPlan 90**  
**Odenwald Faserplattenwerk GmbH**

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## 1. General Information

### Odenwald Faserplattenwerk GmbH

**Programme holder**

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

**Declaration number**

EPD-OWA-20250202-IBA1-EN

**This declaration is based on the product category rules:**

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

**Issue date**

06.06.2025

**Valid to**

05.06.2030



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



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

### OWAPlan 90

**Owner of the declaration**

Odenwald Faserplattenwerk GmbH  
Dr.-F.-A.-Freund-Str. 3  
63916 Amorbach  
Germany

**Declared product / declared unit**

1 m<sup>2</sup> OWAplan 90 mineral ceiling tiles with a surface weight of 4,984 kg/m<sup>2</sup>.

**Scope:**

This document refers to 1 m<sup>2</sup> OWAplan 90 mineral ceiling tiles (average product) with a surface weight of 4.984 kg/m<sup>2</sup>, manufactured at the production facility in Amorbach, Germany under the brand names OWAplan 90. 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.

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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 |            |
| <input type="checkbox"/>                                                         | internally |
| <input checked="" type="checkbox"/>                                              | externally |



Dr.-Ing. Nikolay Minkov,  
(Independent verifier)

## 2. Product

### 2.1 Product description/Product definition

Mineral boards are factory-produced boards by the wet-felt process (raw boards or finished boards.) They meet the requirements of *DIN 18177*, *EN 13964* and the *regulation (EU) no. 1272/2008/EU* as well as German legislation on hazardous substances. Mineral boards (wetfelt) consist of mineral wool, fillers and binders. They are mixed with water (auxiliary) to form a paste before being shaped as a panel and dried. The OWAPlan 90 mineral tiles are available in a wide range of different surface designs and product properties. The surface finish of the mineral board is laminated with glass fibre fleece and coated with watersoluble dispersion paint/plaster depending on the design the ceiling tiles are available in different dimensions and edge configurations.

This EPD applies to the following products: OWAPlan 90, Octave 90 High CAC and Sinfonia Balance 25. For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) *Regulation (EU) No. 305/2011 (CPR)* applies. The product needs a declaration of performance taking into consideration *EN 13964:2014*, title and the CE-marking. For the application and use the respective national provisions apply.

### 2.2 Application

OWA mineral boards (wet-felt) are typically used as aesthetic lay-in for suspended ceiling construction. They are used for sound absorption and sound insulation, fire resistance, clean rooms, high hygiene requirements and low emission applications.

### 2.3 Technical Data

OWAacoustic wet-felt mineral boards are regulated by *EN 13964* and have the according labelling and declaration of performance.

#### Constructional data (acc. to DIN 18177 and EN 13964)

| Name                                                              | Value     | Unit              |
|-------------------------------------------------------------------|-----------|-------------------|
| Gross density                                                     | 199       | kg/m <sup>3</sup> |
| Reaction to fire EN 13501-1                                       | A2, s1-d0 |                   |
| Resistance to fire EN 13501-2                                     | REI 60    |                   |
| Sound absorption acc. to EN ISO 354 and EN ISO 11654              | 90        | %                 |
| Airborne sound reduction acc. to ISO 10848-2 and DIN EN ISO 717-1 | 40        | dB                |
| Durability/flexural tensile strength EN 13964                     | C/556     | N/mm <sup>2</sup> |

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 13964:2014*, suspended ceiling requirements and test methods (not part of CE-marking).

### 2.4 Delivery status

The EPD is valid for 25 mm thick boards with variable length and width dimensions.

### 2.5 Base materials/Ancillary materials

#### Composition wet-felt mineral board:

| Name                    | Value   | Unit |
|-------------------------|---------|------|
| Mineral fibre           | 25 - 85 | %    |
| Fillers (Clay, Perlite) | 0 - 35  | %    |
| Binder (Starch)         | 4 - 11  | %    |
| Cellulose fibre         | 0 - 2   | %    |
| Other                   | 0 - 5   | %    |

Dispersion paints and optional glass fiber decor fleece are additionally used for the surface finish as well as water during the production process. Flame retardants are not added. The recycled content is up to 19 %.

This product/article/at least one partial article contains substances listed in the *ECHA-candidate list* (date: 27.06.2024) exceeding 0.1 percentage by mass: No

This product/article/at least one partial article contains other carcinogenic mutagenic reprotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: No

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the *(EU) Ordinance on Biocide Products No. 528/2012*): No.

In-can preservatives are used in the production process; however, they are not part of the products and are therefore not within the scope of the Ordinance on Biocide Products.

### 2.6 Manufacture

The described mineral boards are produced using the traditional wet-felt process by the manufacturer OWA. The initial materials are mixed with water to a homogenous suspension that is then pumped onto a belt conveyer (Fourdrinier). The water is removed both mechanically (gravity and vacuum) and by evaporation in a drying oven. The process water is reused as much as possible. It is treated and refeeds into the process water circuit. The boards are scrim laminated, depending on the required appearance. Production waste and dust are reused in the production process.

### 2.7 Environment and health during manufacturing

OWA complies with all European regulations for the production of mineral tiles:

- The manufacturing plant is certified according to *ISO 9001*, *ISO 14001*, *ISO 45001* and *ISO 50001*
- The production has an almost closed water cycle.
- In the production process, low-dust and low-noise production procedures are respected.
- The exhaust air streams are externally monitored.
- Production generates no waste, all resulting blanks, dust and rejects are reused to 100 %
- Exclusive use of mineral fibres according to *Regulation (EU) No. 1272/2008 Note Q*
- Prohibition of the production and use of biopersistent fibres (Ordinance on Hazardous Substances, Annex II, No. 5)
- Prohibition of placing biopersistent fibres on the market (Chemicals Prohibition Order, No. 23 of the Annex to §1)
- Not subject to declaration according to *REACH*

### 2.8 Product processing/Installation

There are no recognised systemic hazards associated with the installation of ceiling tiles. It is recommended that materials are

handled in a manner that minimises dust generation. Cut boards with sharp knives only. Workers should wear appropriate personal protective equipment. Equipment such as gloves, goggles and dust masks are recommended to minimise exposure to dust and prevent skin irritation. For further information see our Product Data Sheet (chapter 7.1).

### 2.9 Packaging

The tiles are packed in cardboard cartons and sealed with polyethylene film. These cartons are stacked on chemically untreated wooden pallets. The so-formed pallets are wrapped with polyethylene stretch film. Film, cardboard and wood can be forwarded to the usual and local recycling systems. Further information see chapter 13.1 of the Product Data Sheet.

### 2.10 Condition of use

When used properly, the mineral boards maintain their mechanical and physical properties for their entire useful life. Direct contact with water should be avoided due to the water-soluble binder starch. For further information see our installation guide, chapter 2.1.

### 2.11 Environment and health during use

When correctly installed no dust/particles will be released during the period of use. There is no content of harmful substances according to CLP regulation (EU) No.1272/2008 and to REACH. Emissions were tested according to and comply with EN 16516, ISO 16000-3-6-9-11, ASTM D5116, DE-UZ 132, EN 717-1.

### 2.12 Reference service life

The service life of the mineral tiles (wet-felted) is up to 50 years, depending on the area of use, exposure and level of maintenance. Within the framework of the conditions of use, no ageing effects are to be expected apart from visual discolouration caused by air circulation.

### 2.13 Extraordinary effects

**Fire**  
The declared products have the building material class A2-s1,d0 according to EN 13501-1. They are therefore designated by lots of European and the German national building regulations as 'non combustible' with negligible smoke development and no burning droplets in the case of fire. Further, they comply with national standards like e.g. ASTM E

84 (class 1) and AS 5637.1:2015 (group 1).

### Fire protection

| Name                                                       | Value     |
|------------------------------------------------------------|-----------|
| Building material class EN 13501-1                         | A2, s1-d0 |
| Building material class ASTM E84                           | Class A   |
| Building material class CAN/ULC-S102                       |           |
| Building material class AS 5637.1:2015                     | Group 1   |
| Building material class AS ISO 9705:2003 (R2016) and C/VM2 | Group 1-S |

### Water

Prolonged contact with water dissolves the starch binder which can lead to a loss of structure. Should the soluble components be carried into the sewage system they are biodegradable, increasing chemical oxygen demand (COD) and biological oxygen demand (BOD).

### Mechanical destruction

The mineral boards (wet-felt) can be broken by hand and also the surface finishes can be damaged, whereby low dust emission can be caused.

### 2.14 Re-use phase

Correctly demounted boards can be reinstalled. Lightly damaged boards can be used as cut-to-size tiles. With our OWA green circle (Germany), correctly sorted mineral boards with sufficient material quality can be returned to the production process. For further information see our OWA guideline at OWA green circle [www.owa.de/de/owa-green-circle](http://www.owa.de/de/owa-green-circle). The recyclability is 100 %.

### 2.15 Disposal

The waste code number for mineral boards at construction site is according to the *European Waste Index* is 17 06 04. Please contact our customer service under +49 9373 201-999 for possibilities using the take-back scheme "OWA green circle (Germany)".

### 2.16 Further information

Additional information is available at [www.owa.de](http://www.owa.de).

## 3. LCA: Calculation rules

### 3.1 Declared Unit

This declaration refers to 1 m<sup>2</sup> of OWAplan 90, mineral board with a thickness of 25 mm and a nominal density of 199.38 kg/m<sup>3</sup>. The EPD applies to OWAplan 90, Octave 90 High CAC and Sinfonia Balance 25. The weight of the product is 4.984 kg/m<sup>2</sup>.

### Declared unit and mass reference

| Name                          | Value  | Unit              |
|-------------------------------|--------|-------------------|
| Declared unit                 | 1      | m <sup>2</sup>    |
| Grammage                      | 4.984  | kg/m <sup>2</sup> |
| Gross density                 | 199.38 | kg/m <sup>3</sup> |
| Layer thickness of the panels | 0.025  | m                 |

The average product is defined by production-weighted average of the annual outputs. The products are grouped according to their similarities in thickness, composition and technical properties.

### 3.2 System boundary

Type of EPD: cradle to gate with options. The EPD considers the modules A1-A3, A4, A5, C1-C4 and D.  
Module A1-A3 considers the provision of all raw materials including the transportation to the production site. It also covers the manufacturing of the product including provision of electricity (0.85 kg CO<sub>2</sub>-eq./kWh - German residual grid mix) and thermal energy from natural gas. Manufacturing losses are reused in the production."  
Module A4 considers a 100 km truck transport to the construction site.  
Module A5 considers the treatment and disposal of packaging materials. Credits for potential avoided burdens due to energy substitution of electricity and thermal energy generation are declared in module D.  
Module C1 considers the manual deconstruction (burden-free) of the product at End of life.  
Module C2 considers the transportation to waste processing by truck.  
Two scenarios are considered in the End-of-life: recycling (1) and landfilling (2).  
Module C3 (Scenario 1) calculates the recycling processing efforts, in which the entire product is processed and a material

credit for input material is applied in module D. For C3/1 the results are '0'.

Module C4/1 (Scenario 2) considers landfilling of the product. For C4 the results are '0'.

Module D includes potential benefits for the thermal and electrical energy generated in module A5 due to packaging treatment and also the material credit due to the product processing in module C3. Avoided burdens have been calculated by the inversion of electricity grid mix and thermal energy from natural gas. The material credit is calculated by using a generic data set for gravel.

### 3.3 Estimates and assumptions

The following assumptions are included in the EPD:

- It is assumed that packaging materials are disposed of via incineration (wooden pallets) and recycling (cardboard).

### 3.4 Cut-off criteria

The packaging of the raw materials, as well as their disposal, is not considered in the scope of this study.

### 3.5 Background data

The background data has been taken from the latest available *Sphera LCA FE* (former GaBi database).

The requirements for data quality and background data correspond to the specifications of the *PCR Part A*.

### 3.6 Data quality

All primary data are collected for the reference year 2023. All secondary data come from the *Sphera LCA FE* (GaBi) databases and are representative of the years 2022--2026. As the study intended to compare the product systems for the reference year, temporal representativeness is good. The overall technological and geographical representativeness is also considered to be good.

### 3.7 Period under review

The period under review for the collection of production data is the year 2023.

### 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: Europe

### 3.9 Allocation

The production process does not deliver any co-products. The applied software model does not contain any allocation.

### 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 background data are taken from the *Sphera LCA FE* (former GaBi database), *CUP 2024.1*.

## 4. LCA: Scenarios and additional technical information

### Characteristic product properties of biogenic carbon

Biogenic carbon is present in the product and the packaging material.

### Information on describing the biogenic carbon content at factory gate

| Name                                              | Value | Unit |
|---------------------------------------------------|-------|------|
| Biogenic carbon content in product                | 0.24  | kg C |
| Biogenic carbon content in accompanying packaging | 0.107 | kg C |

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO<sub>2</sub>.

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

### Transport to the building site (A4)

Module A4 considers a 100 km truck transport from the manufacturing plant in Germany to an average European customer site.

| Name                                        | Value  | Unit    |
|---------------------------------------------|--------|---------|
| Litres of fuel                              | 0.0125 | l/100km |
| Transport distance                          | 100    | km      |
| Capacity utilisation (including empty runs) | 61     | %       |

### Installation into the building (A5)

The installation of the board is done manually.

The packaging material treatment and disposal are also considered in module A5.

| Name                                                                 | Value  | Unit |
|----------------------------------------------------------------------|--------|------|
| Output substances following waste treatment on site (PE-Film)        | 0.012  | kg   |
| Output substances following waste treatment on site (Cardboard)      | 0.022  | kg   |
| Output substances following waste treatment on site (wooden pallets) | 0.2387 | kg   |

The useful reference life of the mineral boards (wet-felt) is up to 50 years depending on application, loading and level of maintenance, based on the experience of OWA with products being in use for more than 50 years.

### End of life (C1-C4)

The deconstruction (C1) is assumed to be done manually (no environmental impact).

The transport to waste processing (C2) is assumed to be 50 km.

Scenario 1: Recycling (C3, C4)

Scenario 2: Landfill (C3/1, C4/1)

| Name                                  | Value | Unit |
|---------------------------------------|-------|------|
| Collected as mixed construction waste | 4.984 | kg   |
| Recycling (Scenario 1)                | 4.984 | kg   |
| Landfilling (Scenario 2)              | 4.984 | kg   |

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

Module D includes potential benefits in form of energy recovery of the incineration process in A5 (incineration of packaging waste) and C3 (recycling of the product).

Module D/1 includes the potential benefits in form of energy recovery of the incineration process in A5 (incineration of packaging waste).

## 5. LCA: Results

The following tables display the environmentally relevant results according to EN 15804+A2 for 1 m<sup>2</sup> of OWAPlan 90.

Two end-of-life scenarios are declared in the EPD:

The recycling scenario (EoL 1) shows the corresponding results in C3, for C3/1 the results are '0'.

The landfilling scenario (EoL 2) shows the results in C4/1, for C4 the results are '0'.

Module D considers the benefits of packaging treatment (from Module A5) and material credit after waste processing (from Module C3).

Module D/1 considers the benefits of packaging treatment (from Module A5) only.

**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        | MND       | MND         | MNR    | MNR         | MNR           | MND                    | MND                   | X                          | X         | X                | X        | X                                               |

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m<sup>2</sup> OWAPlan 90

| Parameter      | Unit                             | A1-A3     | A4       | A5       | C1 | C2       | C3       | C3/1 | C4 | C4/1     | D         | D/1       |
|----------------|----------------------------------|-----------|----------|----------|----|----------|----------|------|----|----------|-----------|-----------|
| GWP-total      | kg CO <sub>2</sub> eq            | 5.25E+00  | 4.06E-02 | 4.16E-01 | 0  | 1.93E-02 | 9.41E-01 | 0    | 0  | 9.55E-01 | -2.54E+00 | -1.33E-01 |
| GWP-fossil     | kg CO <sub>2</sub> eq            | 6.53E+00  | 3.97E-02 | 3.5E-02  | 0  | 1.88E-02 | 6.1E-02  | 0    | 0  | 7.46E-02 | -2.53E+00 | -1.32E-01 |
| GWP-biogenic   | kg CO <sub>2</sub> eq            | -1.29E+00 | 2.27E-04 | 3.81E-01 | 0  | 1.08E-04 | 8.8E-01  | 0    | 0  | 8.8E-01  | 1E-04     | -9.24E-04 |
| GWP-luluc      | kg CO <sub>2</sub> eq            | 9.66E-03  | 7.63E-04 | 2.25E-05 | 0  | 3.62E-04 | 1.52E-05 | 0    | 0  | 4.48E-04 | -6.23E-03 | -1.59E-05 |
| ODP            | kg CFC11 eq                      | 1.33E-11  | 1.25E-14 | 6.88E-14 | 0  | 5.94E-15 | 3.01E-15 | 0    | 0  | 2.03E-13 | -9.01E-12 | -1.7E-12  |
| AP             | mol H <sup>+</sup> eq            | 2.94E-02  | 4.77E-05 | 8.33E-05 | 0  | 2.26E-05 | 6.89E-05 | 0    | 0  | 5.3E-04  | -2.29E-02 | -1.27E-04 |
| EP-freshwater  | kg P eq                          | 1.99E-05  | 1.08E-07 | 1.84E-08 | 0  | 5.12E-08 | 5.98E-09 | 0    | 0  | 1.7E-07  | -1.62E-05 | -3.45E-07 |
| EP-marine      | kg N eq                          | 6.5E-03   | 1.71E-05 | 2.41E-05 | 0  | 8.12E-06 | 2.17E-05 | 0    | 0  | 1.36E-04 | -4.57E-03 | -4.6E-05  |
| EP-terrestrial | mol N eq                         | 1.01E-01  | 2.04E-04 | 3.97E-04 | 0  | 9.69E-05 | 2.37E-04 | 0    | 0  | 1.5E-03  | -7.82E-02 | -4.89E-04 |
| POCP           | kg NMVOC eq                      | 1.24E-02  | 4.78E-05 | 6.35E-05 | 0  | 2.27E-05 | 6.08E-05 | 0    | 0  | 4.17E-04 | -6.2E-03  | -1.21E-04 |
| ADPE           | kg Sb eq                         | 4.87E-07  | 6.75E-09 | 7.54E-10 | 0  | 3.2E-09  | 3.76E-10 | 0    | 0  | 4.84E-09 | -3.18E-07 | -1.32E-08 |
| ADPF           | MJ                               | 9.11E+01  | 5.21E-01 | 1.1E-01  | 0  | 2.47E-01 | 7.1E-01  | 0    | 0  | 9.84E-01 | -3.05E+01 | -2E+00    |
| WDP            | m <sup>3</sup> world eq deprived | 2.3E-01   | 2.84E-04 | 4.31E-02 | 0  | 1.35E-04 | 2.85E-04 | 0    | 0  | 8.51E-03 | -1.44E-01 | -1.82E-03 |

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 m<sup>2</sup> OWAPlan 90

| Parameter | Unit           | A1-A3    | A4       | A5        | C1 | C2       | C3        | C3/1 | C4 | C4/1     | D         | D/1       |
|-----------|----------------|----------|----------|-----------|----|----------|-----------|------|----|----------|-----------|-----------|
| PERE      | MJ             | 1.27E+01 | 5.76E-02 | 4.73E+00  | 0  | 2.73E-02 | 6.77E+00  | 0    | 0  | 1.72E-01 | -1.5E+01  | -8.18E-01 |
| PERM      | MJ             | 1.15E+01 | 0        | -4.69E+00 | 0  | 0        | -6.77E+00 | 0    | 0  | 0        | 0         | 0         |
| PERT      | MJ             | 2.42E+01 | 5.76E-02 | 3.46E-02  | 0  | 2.73E-02 | 2.95E-03  | 0    | 0  | 1.72E-01 | -1.5E+01  | -8.18E-01 |
| PENRE     | MJ             | 9.05E+01 | 5.21E-01 | 6.26E-01  | 0  | 2.47E-01 | 7.1E-01   | 0    | 0  | 9.84E-01 | -3.05E+01 | -2E+00    |
| PENRM     | MJ             | 5.16E-01 | 0        | -5.16E-01 | 0  | 0        | 0         | 0    | 0  | 0        | 0         | 0         |
| PENRT     | MJ             | 9.11E+01 | 5.21E-01 | 1.1E-01   | 0  | 2.47E-01 | 7.1E-01   | 0    | 0  | 9.84E-01 | -3.05E+01 | -2E+00    |
| SM        | kg             | 1.3E+00  | 0        | 0         | 0  | 0        | 0         | 0    | 0  | 0        | 3.71E+00  | 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        | m <sup>3</sup> | 2.26E-02 | 5.38E-05 | 1.02E-03  | 0  | 2.55E-05 | 1.03E-04  | 0    | 0  | 2.6E-04  | -9.92E-03 | -2.61E-04 |

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 m<sup>2</sup> OWAPlan 90

| Parameter | Unit | A1-A3    | A4       | A5       | C1 | C2      | C3       | C3/1 | C4 | C4/1     | D         | D/1      |
|-----------|------|----------|----------|----------|----|---------|----------|------|----|----------|-----------|----------|
| HWD       | kg   | 2.16E-08 | 2.53E-11 | 7.74E-11 | 0  | 1.2E-11 | 6.09E-12 | 0    | 0  | 2.47E-10 | -1.14E-08 | -1.9E-09 |

|      |    |          |          |          |   |          |          |   |   |          |           |           |
|------|----|----------|----------|----------|---|----------|----------|---|---|----------|-----------|-----------|
| NHWD | kg | 8.45E-01 | 8.8E-05  | 3.69E-03 | 0 | 4.17E-05 | 2.19E-04 | 0 | 0 | 4.99E+00 | -7.67E-01 | -1.14E-03 |
| RWD  | kg | 1.87E-03 | 8.29E-07 | 2.97E-06 | 0 | 3.93E-07 | 3.42E-05 | 0 | 0 | 1.02E-05 | -8.45E-04 | -7.3E-05  |
| CRU  | kg | 0        | 0        | 0        | 0 | 0        | 0        | 0 | 0 | 0        | 0         | 0         |
| MFR  | kg | 0        | 0        | 0        | 0 | 0        | 4.98E+00 | 0 | 0 | 0        | 0         | 0         |
| MER  | kg | 0        | 0        | 0        | 0 | 0        | 0        | 0 | 0 | 0        | 0         | 0         |
| EEE  | MJ | 0        | 0        | 4.79E-01 | 0 | 0        | 0        | 0 | 0 | 0        | 0         | 0         |
| EET  | MJ | 0        | 0        | 1.12E+00 | 0 | 0        | 0        | 0 | 0 | 0        | 0         | 0         |

NHWD = 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 m<sup>2</sup> OWAPlan 90

| Parameter | Unit              | A1-A3    | A4       | A5       | C1 | C2       | C3       | C3/1 | C4 | C4/1     | D         | D/1       |
|-----------|-------------------|----------|----------|----------|----|----------|----------|------|----|----------|-----------|-----------|
| PM        | Disease incidence | 2.79E-07 | 4.56E-10 | 4.52E-10 | 0  | 2.16E-10 | 6.98E-10 | 0    | 0  | 6.65E-09 | -1.65E-07 | -9.01E-10 |
| IR        | kBq U235 eq       | 2.4E-01  | 8.74E-05 | 3.16E-04 | 0  | 4.14E-05 | 2.65E-03 | 0    | 0  | 1.16E-03 | -1.27E-01 | -7.77E-03 |
| ETP-fw    | CTUe              | 2.43E+01 | 4.04E-01 | 4.85E-02 | 0  | 1.92E-01 | 9.07E-02 | 0    | 0  | 5.67E-01 | -1.74E+01 | -2.98E-01 |
| HTP-c     | CTUh              | 7.52E-09 | 8.06E-12 | 3.1E-12  | 0  | 3.82E-12 | 3.03E-12 | 0    | 0  | 1.34E-11 | -3.59E-09 | -2.15E-11 |
| HTP-nc    | CTUh              | 9.17E-08 | 3.39E-10 | 6.15E-11 | 0  | 1.61E-10 | 1.98E-10 | 0    | 0  | 5.17E-10 | -6.43E-08 | -7.74E-10 |
| SQP       | SQP               | 1.29E+02 | 3.46E-01 | 4.28E-02 | 0  | 1.64E-01 | 8.62E-03 | 0    | 0  | 2.8E-01  | -6.14E+01 | -5.35E-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

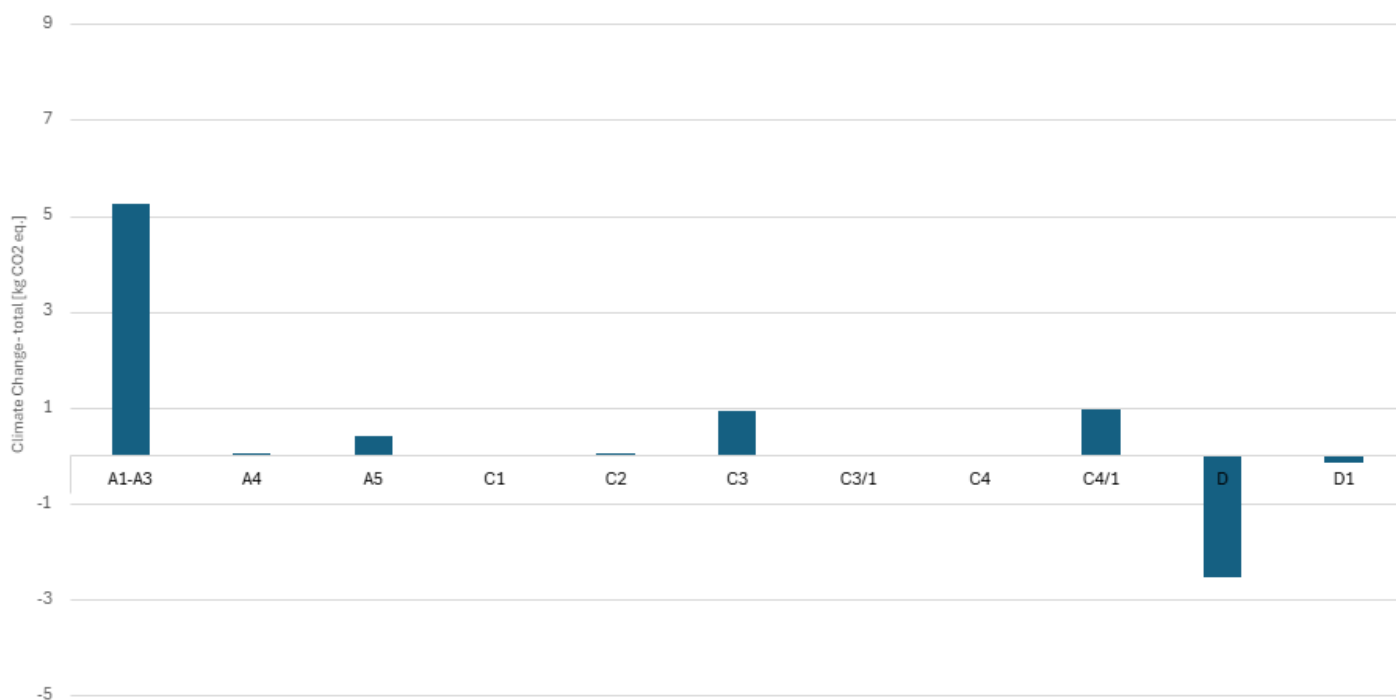
Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure 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.

## 6. LCA: Interpretation

The interpretation is based on the assumptions and limitations described in the background report, both with regard to the methods and the data. A dominance analysis is used for interpretation. The following figure shows the results of the

individual modules as an example of the global warming potential.



The main points are:

- the manufacturing phase dominates the product system (energy consumption and raw material production);

- the transport modules (A4 and C2) have a negligible influence;
- the manual construction (A5) and deconstruction (C1) are negligible;

- the two EoL scenarios lead to very similar impacts in modules C3 and C4/1, the associated benefits differ significantly.

The variation for all included panels is within +/-1 %.

## 7. Requisite evidence

### 7.1 Bio-persistence

The mineral wool used for the production of mineral ceiling tiles complies with the requirements of Annex IV, no. 22 of the Ordinance on Hazardous Substances and section 23 of the Annex to § 1 Chemicals Prohibition Ordinance. Evidence is given by the RAL seal (GZ 388).

### 7.2 Formaldehyde and VOC emissions:

Emissions were tested according to and comply with *EN 16516*, *ISO 16000-3-6-9-11*, *ASTM D5116*, *RAL DE-UZ 132*, *EN 717-1*.

#### DE-UZ 132 (28 Days)

The table summarizes the emission values after 28 days from the following test report 392-2020-00382401\_K8\_EN.

| Name                    | Value | Unit              |
|-------------------------|-------|-------------------|
| TVOC (C6 - C16)         | < 5   | µg/m <sup>3</sup> |
| Sum SVOC (C16 - C22)    | < 5   | µg/m <sup>3</sup> |
| R (dimensionless)       | -     | -                 |
| VOC without NIK         | <1    | µg/m <sup>3</sup> |
| Carcinogenic Substances | < 1   | µg/m <sup>3</sup> |
| Formaldehyde            | < 3   | µg/m <sup>3</sup> |
| Acetaldehyde            | < 3   | µg/m <sup>3</sup> |
| Acetic Acid             | < 5   | µg/m <sup>3</sup> |

### 7.3 Radioactivity

Measurements of radioactivity did not reveal any evidence of artificial radioactivity outside the natural background radiation. Measuring point: Prüfstelle für Strahlenschutz, Zentralstelle Nürnberg.

Test Number: S26829E

## 8. References

### Standards

#### DIN 18177

DIN 18177:2012, Mineral tiles manufactured in the factory by the wet felt process - Characteristic values and test methods.

#### EN 13501-1

DIN EN 13501-1:2019, Classification of construction products and building elements according to their reaction to fire, Part 1: Classification with the results of tests on the reaction to fire of construction products.

#### EN 13501-2

DIN EN 13501-2:2023-12, Fire classification of construction products and building elements - Part 2: Classification using the results of fire resistance tests, with the exception of ventilation systems.

#### EN 13964

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

#### EN 15804

DIN EN 15804:2012+A2:2019, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

#### ISO 354

DIN EN ISO 354:2003-12, Acoustics - Measurement of sound absorption in reverberant rooms.

#### ISO 717-1

DIN EN ISO 717-1:2013-06, Acoustics - Assessment of sound

insulation in buildings and of building elements - Part 1: Airborne sound insulation.

#### ISO 10848-2

DIN EN ISO 10848-2:2006-08, Acoustics - Measurement of airborne and impact sound transmission between adjacent rooms in test stands - Part 2: Application to lightweight components where the connection has a minor influence.

#### ISO 11654

DIN EN ISO 11654:1997-07, Acoustics - Sound absorbers for ISO 16000-6 use in buildings - Evaluation of sound absorption.

#### ISO 9001

DIN EN ISO 9001:2015-11, Quality management systems - Requirements.

#### ISO 14001

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

#### ISO 45001

DIN ISO 45001:2018-06, Occupational health and safety management systems - Requirements with guidance for use.

#### ISO 50001

DIN EN ISO 50001:2011-12, Energy management systems - Requirements with guidance for use.

#### ISO 14025

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

**ISO 16000-3**

DIN ISO 16000-3:2023-12 Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor and test chamber air - Active sampling method.

**ISO 16000-6**

DIN ISO 16000-6:2022-03, Indoor air - Part 6: Determination of organic compounds (VVOC, VOC, SVOC) in indoor and test chamber air by active sampling on sorbent tubes, thermal desorption and gas chromatography using MS or MS FID.

**ISO 16000-9**

DIN ISO 16000-9:2008-04, Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method.

**ISO 16000-11**

DIN ISO 16000-11:2006, Indoor air - Part 11: Determination of the emission of volatile organic compounds from building products and furnishing — Sampling, storage of samples and preparation of test specimens.

**ASTM E 84-24**

Standard Test Methods for Surface Burning Characteristics of Building Materials.

**AS 5637.1:2015**

Determination of fire hazard properties Wall and ceiling linings

**ASTM D5116-10**

Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products

**DE-UZ 132**

Blauer Engel, DE-UZ 132; Low-emission thermal insulation materials and suspended ceilings for interior applications

**EN 717-1**

Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emission by the chamber method; German version EN 717-1:2004

**EN 16516**

DIN EN 16516:2020-10, Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air.

**CAN/ULC-S102**

Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies

**AS ISO 9705:2003 (R2016) and C/VM2**

Verification Method C/VM2 Framework for Fire Safety Design

**Further References****AVV, German List of Wastes Ordinance**

Regulation on the European Waste List.

**Chemicals Prohibition Ordinance**

Chemicals Prohibition Ordinance (German designation: Chemikalien-Verbotsverordnung – ChemVerbotsV) of 20 January 2017 (Federal Law Gazette I p. 94; 2018 I p. 1389), last amended by Article 300 of the Ordinance of 13 February 2024 (Federal Law Gazette I No. 43).

**ECHA-candidate list**

List of substances of very high concern (SVHC) for authorisation (ECHA Candidate List), 04.07.2024, published under Article 59(10) of REACH. Helsinki: European Chemicals Agency.

**Eurofins Product Testing A/S**

Test report: VOC emission test report (15.10.2020), Number: 392-2020-00376101\_K8\_EN, 392-2020-00382401\_K8\_EN, 392-2020-00371701\_K8\_EN, 392-2020-00415301\_K8\_EN.

**Ordinance on Biocide Products**

Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products.

**Ordinance on Hazardous Substances**

Ordinance on Hazardous Substances, of 26 November 2010 (Federal Law Gazette I p. 1643, 1644), last amended by Article 2 the Law of 21 July 2021 (Federal Law Gazette I p. 3115).

**IBU 2021**

Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021 [www.ibu-epd.com](http://www.ibu-epd.com)

**PCR Part A**

Institut Bauen und Umwelt e.V. (IBU), 2024. Product Category Rules for Building-Related Products and Services. Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report. Version 1.4.

**PCR Part B: Mineral panels**

Institut Bauen und Umwelt e.V. (IBU), 2024. Product Category Rules for Building-Related Products and Services. Part B: Requirements on the EPD for Mineral panels. Version 1.11., 01.08.2024.

**RAL Mineral Wool Quality Seal -RAL-GZ 388**

GGM members with the right to use the RAL quality mark including plants and fibre types, as of January 2021. Home - English ([ral-mineralwolle.de](http://ral-mineralwolle.de))

**REACH**

Regulation (EC) No 1907/2006 of the European Parliament and Council from 18 December 2006, Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

**Regulation (EU) Nr. 305/2011(CPR)**

Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC Text with EEA relevance.

**Regulation (EU) Nr.1272/2008**

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, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

**Product Data Sheet, chapter 7.1/13.1**

2021-0\_OWAcoustic-engl 2021-04-01. ([owa-ceilings.co.uk](http://owa-ceilings.co.uk))

**Installation guide, chapter 2.1**

DS 9801\_Installation guide. ([owa.de](http://owa.de))

**Sphera LCA FE**



Sphera LCA for Experts, LCA FE, software -system and  
databases, Managed LCA content MLC (fka GaBi database),  
University of Stuttgart and Sphera Solutions GmbH, 2023, CUP

Version: 2024.1, MLC data set documentation under  
<https://lcadatabase.sphera.com/> (Sep 2024)



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