ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	Knauf Ceiling Solutions GmbH & Co. KG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-KNA-20240465-IBA1-EN
Issue date	06.12.2024
Valid to	05.12.2029

Woodwool Light

Knauf Ceiling Solutions GmbH & Co. KG

www.ibu-epd.com | https://epd-online.com

1. General Information

Knauf Ceiling Solutions GmbH & Co. KG

Programme holder

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

Declaration number

EPD-KNA-20240465-IBA1-EN

This declaration is based on the product category rules:

Wood cement - Mineral-bonded wooden composites, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

06.12.2024

Valid to

05.12.2029

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

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

Woodwool Light

Owner of the declaration

Knauf Ceiling Solutions GmbH & Co. KG
Elsenthal 15
94481 Grafenau
Germany

Declared product / declared unit

1 m² KCS Woodwool Light (Euroclass B).

Scope:

This document refers to 1 m² of Heradesign Woodwool Light (Euroclass B) with a surface weight of 12.6 kg/m² manufactured at the production facility in Ferndorf (Austria). The product is a magnesite bonded wood wool panel.

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

Matthias Schulz,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Heradesign panels are wood wool panels in accordance with *EN 13168* and/or *EN 13964*, manufactured from wood wool and mineral binding agents.

Product name:

Woodwool Light 25 mm

For the marketing of the products in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies.
The products require a declaration of performance taking into account *EN 13168:2012+A1:2015, Thermal insulation products for buildings - Factory made wood wool (WW) products - Specification* or *EN 13964:2014, Suspended ceilings - Requirements and test methods* and the CE marking.
The respective national regulations apply to their use.

2.2 Application

Heradesign acoustic panels are primarily used as acoustic/decorative wall and ceiling panelling in offices, kindergartens etc.

2.3 Technical Data

Product-specific values can be found at http://www.knaufceilingsolutions.com

Constructional data

Name	Value	Unit
Gross density acc. to EN 1602	504	kg/m^3
Grammage	12.6	kg/m^2
Thickness	25	mm
Bending strength (longitudinal)	n.r.	N/mm^2
Bending strength (transverse)	n.r.	N/mm^2
E-module (longitudinal)	n.r.	N/mm^2
E-module (transverse)	n.r.	N/mm^2
Tensile strength rectangular	n.r.	N/mm^2
Thermal conductivity acc. to EN 12667	0.11	W/(mK)
Water vapour diffusion resistance factor acc. to DIN 4108-4	2 - 5	-
Moisture content at 23 °C, 80%	11	M.-%
Coefficient of thermal expansion	n.r.	$10^{-6}K^{-1}$
Swelling (air-dry to water-saturated)	n.r.	%
Sound absorption coefficient (only with reference to component design)	up to 0.95	%

n.r. = not relevant

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics to *EN 13168:2012+A1:2015, Thermal insulation products for buildings - Factory made wood wool (WW) products - Specification* or rather *EN 13964:2014, Suspended ceilings - Requirements and test methods.*

2.4 Delivery status

Wood wool products are exclusively available as panels.
Typical dimensions:
Lengths: 1200 mm
Widths: 600 mm
Thicknesses: 25 mm

The products are delivered packed in cardboard on pallets.

2.5 Base materials/Ancillary materials

Composition of HERADESIGN products:

Name	Value	Unit
Spruce (Picea abies) (structural material)	34 (+/- 3)	%
Anorganic binder	50 (+/- 3)	%
Magnesium sulphate (MgSO4) CAS: 7487-88-9 (co-binding partner)	5 (+/- 1)	%
Water (H2O) CAS: 7732-16-5 (solvent for magnesium sulphate)	11 (+/- 3)	%

The spruce wood is procured from sustainable forest management and serves as a substrate. Caustic magnesia is extracted from regional magnesite raw material. Magnesium sulphate serves as a co-binding partner; water is partially bound in the form of crystal water and partially contained as residual moisture. No biocides or fire retardants are used in the product.
For optical reasons, the finished products are dyed on the visible side using dispersion paint.

At least one sub-product contains substances of the *candidate list* (date 27.06.2024) above 0.1 % by mass: **no**.

The product contains other cancerogenic, mutagenic, reprotoxic (CMR) substances of category 1A or 1B that are not on the candidate list, above 0,1 % by mass in at least one part product: **no**.

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

No fire retardants were used in the product.

2.6 Manufacture

2.6.1 Raw material

Spruce wood is stored as trunks 2 metres in length. Depending on climate conditions, storage lasts around 6-12 months. The trunks are transported by conveyor belts to a multi-rip saw, cut into pieces and processed as wood wool using a planing machine. The binding agent components are stored in steel silos.

2.6.2 Mixer

Wood wool, as well as a binding agent and a magnesium sulphate solution, are required for generating a mixture for wood wool pellets. These components are transported to a mixer where they are processed to form the requisite formula.

2.6.3 Scattering and shaping

The mixture is scattered onto a steel band and passed through a binding channel, whereby it is separated from the room by a second horizontal steel strip as well as two side strips. An endless product is produced on leaving the twin belt. The raw goods are then cut to the desired length.

2.6.4 Interim storage and picking
The products are put into interim storage for 3-5 days (drying and maturing process). The requisite edge design is then produced on so-called double-end profiling machines.
Edge processing: 18 standard edges are possible.

2.6.5 Dyeing, packaging and shipping
The requisite colour is applied in a dyeing plant, followed by packaging and storage.
Dyeing: Possible in many RAL colours (left) Products ready for storage (right)

2.7 Environment and health during manufacturing
The Ferndorf manufacturing plant places great value on the Employee safety and has a security management system according to *ISO 45001*. In addition to the compliance with the environmental requirements of the authorities the manufacturing plant operates an environmental management system according to *ISO 14001* and energy management according to *ISO 50001* to keep the environmental impact as low as possible.

The Bureau Veritas certificate confirms compliance with the specified requirements. The manufacturing plant has a "zero waste policy", all production-related waste (cutting waste, production residues) is returned to the production process in the course of raw material preparation.
This also applies to washing water, which is also 100 % recycled in the production process.

2.8 Product processing/Installation
The type of mounting is described in detail in the brochure "System solutions". In it, the possible systems, concealed systems, screw systems etc. are dealt with in detail.
For further information, in addition to the "System Solutions" brochure, individual processing videos can also be downloaded from the website www.knaufceilingsolutions.com.

2.9 Packaging
Heradesign acoustic panels are supplied in protective cardboard packaging with polypropylene (PP) straps on untreated wooden pallets. It must be ensured that the packaging materials are separated and disposed of where such waste incurs.

2.10 Condition of use
No emissions are to be expected during the use phase of the Heradesign acoustic panels because the ingredients are firmly bound in the state of use.
Heradesign acoustic panels do not require any maintenance from which significant effects on the environment can be expected.
Cleaning is done by sweeping off occasionally. No effects are assumed in Module B3 (Repair) because the repair of Heradesign acoustic panels is rarely necessary. In the case of a repair, the entire board is replaced, which would correspond to the environmental impact declared in modules A1–A3.
No effects are assumed for modules B4 and B5 either, because with Heradesign acoustic panels, when used as intended, no replacement or renewal is required during the service life of 50 years. Modules B6 (energy use for operating the building) and B7 (water use for operating the building) are not relevant for Heradesign acoustic panels.

2.11 Environment and health during use
According to current knowledge, hazards to water, air and soil cannot arise if the described products are used as intended. Heradesign products meet the requirements of the Blue Angel (RAL UZ 132, low-emission thermal insulation materials and suspended ceilings for use in buildings, October 2010) and the Danish Indoor Climate label. Test reports from eurofins confirm the fulfilment of the requirements for building structures with regard to health protection (ABG), draft 31.08.2017, as well as the achievement of class A+ of the French Volatile Organic Compound (VOC) regulation (regulation March and April 2011 (DEVL1101903D and DECL1104875A)).

2.12 Reference service life
The service life of Heradesign products is 50 years, but it depends mainly on the life of the building. Due to the mineral binder, no ageing processes are known.

2.13 Extraordinary effects
Fire
Reaction to fire: Class B-, s1-, d0 nach *EN 13501-1*

Reaction to fire:

Name	Value
Building material class nach EN 13501-1	B
Burning droplets nach EN 13501-1	d0
Smoke gas development nach EN 13501-1	s1

Water
Heradesign acoustic panels are intended for indoor use. Should an unforeseen water effect, e.g. a flood, occur, the panels are fully functional again after drying. There is no impairment of the environment to be expected.

Mechanical destruction
This point is not relevant for a wood-wool building board, as there is no environmental impact in case of unforeseen destruction. It would be more an optical defect.

2.14 Re-use phase
Uncontaminated Heradesign panels can be reused. The following reuse options are available:

Re-use:
Clean Heradesign panels can be re-used.
By screw mounting or an inserted T-rail, re- and new mounting is easily possible without damaging the product.

Composting:
Wood wool panels, mechanically shredded, can be converted into compost material by enrichment with appropriate bacteria. This material can then be used for soil improvement in agriculture.

2.15 Disposal

If the above-mentioned recycling options are not practicable, the slab residues arising on the construction site as well as slabs from demolition activities can easily be disposed of in landfills without pretreatment due to their predominantly mineral content.
Waste code *EAK-code*: 17 01 07

Thermal recycling:
In the manufacturing plant, waste plates can be recycled to binder in a rotary kiln process. This would be the preferred way in terms of a functioning recycling economy.

2.16 Further information

Further information, for example, product data sheets, safety data sheets or declarations of performances are available on the website www.knaufceilingsolutions.com.

3. LCA: Calculation rules

3.1 Declared Unit

This EPD refers to a declared unit of 1 m² of Heradesign Woodwool Light (Euroclass B). The declared unit refers to a surface weight of 12.6 kg/m².

Declared unit

Name	Value	Unit
Declared unit	1	m²
Grammage	12.6	kg/m^2
Grammage	0.013	t/m²
Conversion factor to 1 t	79.37	m²/t
Layer thickness	0.025	m

Other declared units are allowed if the conversion is shown transparently.

Various Heradesign products are manufactured at the site. The allocation of product specific material and energy flows for the different Euroclasses produced (B and A2) is based on the composition of the referring products.

3.2 System boundary

The life cycle assessment of Heradesign ceiling panels includes a cradle-to-gate analysis of the environmental impacts with modules C1–C4 and module D (A1–A3, + C + D). Subsequent life cycle phases are part of the analysis:

Module A1–A3 | Production stage
The production stage includes upstream burdens of raw materials (wood, binding agents, recalcination, auxiliaries, etc.) and the corresponding transports to the production site in Ferndorf (Austria). Material and energy flows needed for the mixing of the components, scattering and shaping, interim storage and picking as well as dyeing and packaging were specifically recorded. In addition, the recalcination process for the provision of Knauf Sekundärkauster is considered. The representation of all specific input and output flows is thus based on company-specific foreground data. 100 % green electricity is used in the production. Thermal energy results from energy recovery from the recalcination process supplemented by natural gas.

Module C1 | Deconstruction and demolition
Disassembly of the product is done either manually or using smaller tools. Referring energy demand is considered to be negligible.

Module C2 | Transport to disposal
The transport to the disposal of the material is estimated declaring a 50 km radius to the landfill. In reality, this scenario may vary depending on the actual location of deconstruction and referring waste treatment.

Module C3 | Waste processing
The declared scenario assumes landfilling of the product. Referring environmental impacts are accounted for in module C4. Therefore, no environmental impacts from waste processing of the product are expected in C3.

Module C4 | Disposal
Modul C4 declares the environmental impacts from landfilling after use of the product. The biogenic carbon in the wood share of the product is treated as emissions of biogenic CO_2 from the technosphere to the natural environment.

Module D | Benefits and loads beyond the system boundary
The declared scenario assumes landfilling of the product. Referring environmental impacts are accounted for in module C4. No benefits or loads outside the system boundary in Module D are to be expected.

3.3 Estimates and assumptions

All assumptions are verified through detailed documentation and correspond to the best possible representation of reality based on the available data. Regional applicability of the used background data refers to average data under European or German conditions taken from the *GaBi* database. German data were used for the Austrian market whenever European or regionalised average data were not available.

3.4 Cut-off criteria

All inputs and outputs for which data are available and a significant impact is expected are included in the LCA model. Data gaps are filled with conservative assumptions from average data (when available) or with generic data and are documented accordingly. Only data with a contribution of less than 1 % were cut off. Ignoring such data is justified based on the insignificance of the expected effect. Processes, materials or emissions known to have a significant contribution to the environmental effects of the products under examination have not been neglected. The data collection was verified using available comparative values. It is assumed that the data have been completely recorded and that the overall total of ignored input flows does not amount to more than 5 % of the total energy and mass flows. Environmental impacts of machines, plant and infrastructure were not included.

3.5 Background data

This study uses generic background data for the evaluation of upstream environmental impacts from *GaBi* databases (*GaBi* 10; 2022.2).

3.6 Data quality

Data collection is based on product-specific questionnaires. It follows an iterative process clarifying questions via e-mail, telephone calls or in personal or web-meetings. Intensive discussions between Knauf Ceiling Solutions and Daxner & Merl results in an accurate mapping of product-related material and energy flows. This leads to a high quality of foreground data collected. Data collection relies on a consistent process according to *ISO 14044.*

The technological, geographical and time-related representativeness of the database was kept in mind when selecting background data. Whenever specific data were missing, either generic datasets or representative average data were used instead. The implemented *GaBi* background datasets refer to the latest versions available (not more than ten years old) and are carefully chosen.

3.7 Period under review

Foreground data were collected in the 2018 production year, and the data are based on the volumes produced on an annual basis. The data is representative for the production conditions in 2022 at the site in Ferndorf.

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: Austria

3.9 Allocation

The life cycle assessment considers the material inherent properties of wood (carbon content and primary energy content) and relies on its physical relations.

The annually used raw material and referring energy flows at Ferndorf were allocated to the specific products based on the square meters produced yearly.

Wooden residues result from the production process. As they account for less than 1 % of the yearly turnover of the organisation, they were not considered as co-products. Referring quantities were cut-off.

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 *GaBi* background database was used to calculate the LCA (*GaBi* 10; 2022.2).

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon
The biogenic carbon content quantifies the amount of biogenic carbon in the declared building product.

Production stage (A1–A3)
In module A1–A3 the absorption of 6.56 kg biogenic CO_2 per declared unit in the Heradesign ceiling panels has been considered, due to the carbon stored in the wood.
In the recalcination process, the emissions of 0.79 kg of biogenic CO_2 were balanced in module A1–A3.

Information for describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	1.79	kg C
Biogenic carbon content in accompanying packaging	0.13	kg C

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

Installation (A5)
The End-of-Life of product packaging is not declared in module A5.

Name	Value	Unit
Packaging (cardboard)	0.076	kg
Packaging (pallets)	0.2	kg

The biogenic carbon content of the cardboard and the wooden pallets has been treated CO_2-neutral and not accounted for as carbon storage.

End of Life (C1–C4)

Name	Value	Unit
Landfilling	12.6	kg

During landfilling 6.56 kg of biogenic CO_2 remain in the product. Due to the binding properties of magnesite, Heradesign ceiling panels can be deposited. This corresponds to a representative scenario. Long-term landfill gas measurements as well as periodic material withdrawals from the deposited products confirm the retention of the biogenic bound carbon during landfilling.

In accordance with the requirements of *EN 15804*+A2, the biogenic carbon in the wood of the products is declared as emissions of biogenic CO_2 from the technosphere into the natural environment in module C4.

5. LCA: Results

The following table contains the LCA results for a declared unit of 1 m² Heradesign Woodwool Light (Euroclass B) with a surface weight of 12.6 kg/m². This corresponds to 0.013 t/m².

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

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

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² Heradesign Woodwool Light (12.6 kg/m²), Euroclass B

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO_2 eq	-9.2E-01	0	3.82E-02	0	6.73E+00	0
Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 eq	5.66E+00	0	3.79E-02	0	1.88E-01	0
Global Warming Potential biogenic (GWP-biogenic)	kg CO_2 eq	-6.59E+00	0	0	0	6.59E+00	0
Global Warming Potential luluc (GWP-luluc)	kg CO_2 eq	1.58E-03	0	2.55E-04	0	3.47E-04	0
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	8.68E-12	0	3.71E-15	0	4.42E-13	0
Acidification potential of land and water (AP)	mol H^+ eq	1.33E-02	0	1.26E-04	0	1.33E-03	0
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	1.05E-05	0	1.35E-07	0	3.19E-07	0
Eutrophication potential aquatic marine (EP-marine)	kg N eq	3.8E-03	0	5.78E-05	0	3.41E-04	0
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	4.11E-02	0	6.47E-04	0	3.75E-03	0
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	1.1E-02	0	1.13E-04	0	1.04E-03	0
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	5.28E-07	0	3.81E-09	0	1.93E-08	0
Abiotic depletion potential for fossil resources (ADPF)	MJ	6.57E+01	0	4.96E-01	0	2.46E+00	0
Water use (WDP)	m^3 world eq deprived	2.88E-01	0	4.23E-04	0	2.06E-02	0

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² Heradesign Woodwool Light (12.6 kg/m²), Euroclass B

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	1.89E+01	0	3.44E-02	0	3.69E-01	0
Renewable primary energy resources as material utilization (PERM)	MJ	6.62E+01	0	0	0	0	0
Total use of renewable primary energy resources (PERT)	MJ	8.51E+01	0	3.44E-02	0	3.69E-01	0
Non renewable primary energy as energy carrier (PENRE)	MJ	6.57E+01	0	4.98E-01	0	2.47E+00	0
Non renewable primary energy as material utilization (PENRM)	MJ	0	0	0	0	0	0
Total use of non renewable primary energy resources (PENRT)	MJ	6.57E+01	0	4.98E-01	0	2.47E+00	0
Use of secondary material (SM)	kg	3.18E+00	0	0	0	0	0
Use of renewable secondary fuels (RSF)	MJ	0	0	0	0	0	0
Use of non renewable secondary fuels (NRSF)	MJ	0	0	0	0	0	0
Use of net fresh water (FW)	m^3	2.2E-02	0	3.98E-05	0	6.26E-04	0

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m² Heradesign Woodwool Light (12.6 kg/m²), Euroclass B

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	3.5E-08	0	2.64E-12	0	1.27E-10	0
Non hazardous waste disposed (NHWD)	kg	4.68E-01	0	8.12E-05	0	1.26E+01	0
Radioactive waste disposed (RWD)	kg	1.1E-03	0	9.25E-07	0	2.74E-05	0
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	0	0	0	0	0	0
Materials for energy recovery (MER)	kg	0	0	0	0	0	0
Exported electrical energy (EEE)	MJ	0	0	0	0	0	0
Exported thermal energy (EET)	MJ	0	0	0	0	0	0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m² Heradesign Woodwool Light (12.6 kg/m²), Euroclass B

Parameter	Unit	A1-A3	C1	C2	C3	C4	D

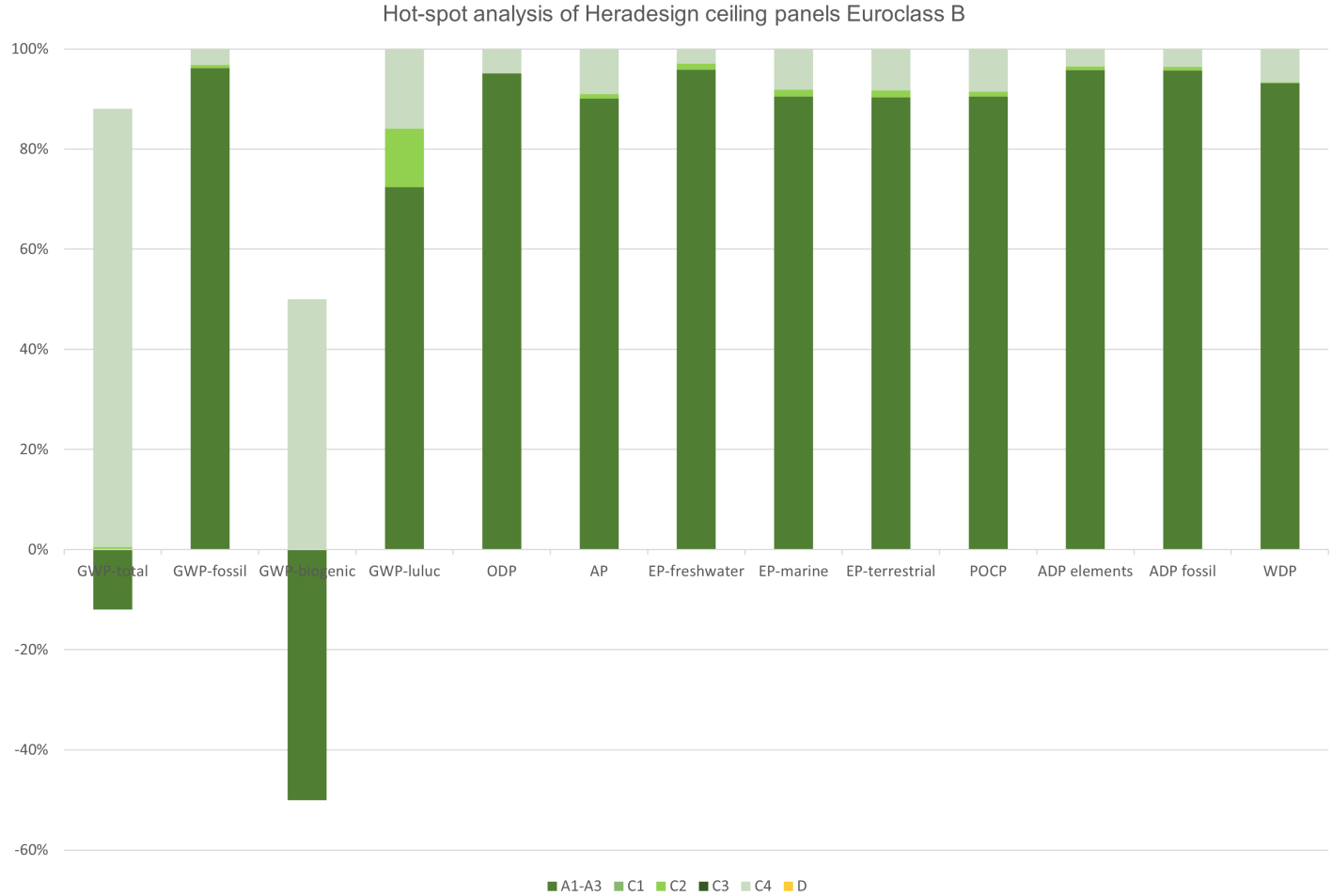
Incidence of disease due to PM emissions (PM)	Disease incidence	ND	ND	ND	ND	ND	ND
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	ND	ND	ND	ND	ND	ND
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	ND	ND	ND	ND	ND	ND
Soil quality index (SQP)	SQP	ND	ND	ND	ND	ND	ND

The additional and optional impact categories according to *EN 15804*+A2 are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption':
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 following interpretation contains a summary of the LCA results referenced to a declared unit of 1 m² Heradesign Woodwool Light (Euroclass B).



A comparison of the individual life-cycle phases results in a clear dominance of the production phase (modules A1–A3), with the exception of global warming potential (GWP). The **amount of wood** stored in the product refers to a negative contribution to global warming potential. This is due to the sequestration of biogenic carbon of wood during tree growth. The sequestered carbon does not contribute to global warming as long as it is stored in the biomass. In the case of landfilling, this carbon content is stored in the product. If the material is used as secondary material after deconstruction, the stored carbon is emitted during recalcination.
The environmental effects in the production phase are mainly dominated by the upstream production of **caustic calcined magnesium oxide** in the supply chain of Knauf Ceiling Solutions. Direct emissions from the calcination process as well as energy provision for the process account for the major environmental impacts in this context. The chosen background data refers to a realistic representation of the upstream processes as far as possible.

What's more, **energy provision for the production** at Ferndorf represents another important factor in the environmental profile of Heradesign ceiling panels.

In contrast to the previous EPD, the replacement of 50 % of the caustic calcined magnesite with Knauf secondary causter is taken into account. This results in further reduction potential compared to the various previous EPDs. For example, the potential fossil greenhouse gas emissions are reduced by further 17 % (comparison in accordance with *EN 15804*+A1).

7. Requisite evidence

Heradesign acoustic panels are certified with the German ecolabel "Blue Angel" (RAL-UZ 132) as well as the Danish product quality seal for indoor climate (certificate Nr. 056) as certificate for the environmental friendliness of the products.

7.1 Testing pretreatment of substances used

No waste wood is used for the production of Heradesign acoustic panels.

7.2 Leaching

Not applicable. Heradesign products are designed for indoor use, a leaching measurement is not useful.

7.3 VOC-emissions

Testing authority: Eurofins Product Testing A/S
Test report: VOC Emissionsprüfbericht Indoor Air Comfort GOLD (07.12.2022)
Number: 392-2022-00379403_A_EN
Test period: 02.11.–30.11.2022
Result: According to the test report, the product fulfils the requirements of the French VOC-Ordinance, the AgBB (Committee for health-related evaluation of building products) schema, the Belgian regulations, the
Indoor Air Comfort Gold Standard, the BLUE ANGEL, BREEAM NOR and LEED v4

AgBB result overview (28 days)

6.11 Comparison with Limit Values of Blue Angel (DE-UZ 132)

	Test after 28 days	
	Concentration µg/m³	Limit Value µg/m³
TVOC w/o acetic acid	< 5	≤ 100
TSVOC	< 5	≤ 20
Acetic acid	< 5	≤ 140
R-value (dimensionless)	0.067	≤ 1
Sum of VOC without NIK/LCI	< 5	≤ 50
Any individual carcinogens	< 1	≤ 1
Formaldehyde	6.7	≤ 60
Acetaldehyde	< 3	≤ 120

8. References

Standards

DIN 4108-4
DIN 4108-4:2017-03, Thermal insulation and energy economy in buildings - Part 4: Hygrothermal design values.

EN 1602
DIN EN 1602:2013-05, Thermal insulating products for building applications - Determination of the apparent density.

EN 12667
DIN EN 12667:2001-05, Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance.

EN 13168
EN 13168:2012+A1:2015, Thermal insulation products for buildings - Factory made wood wool (WW) products - Specification.

EN 13501-1
EN 13501-1:2007+A1:2009, Fire classification of construction products and building elements.

EN 13964
EN 13964:2014-04-15, Suspended ceilings - Requirements and test methods.

EN 15804
DIN EN 15804:2012+A2 2019+AC:2021, Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products.

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

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

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

ISO 14044
ISO 14044:2006-07, Environmental management - Life cycle assessment - Requirements and guidelines.

ISO 50001
EN ISO 50001:2018, Energy mamagement systems - Requirements with guidance for use.

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

Further literature

AgBB
The Committee for Health-related Assessment of Building Products (AgBB) developed test criteria and assessment standards for a uniform and comprehensible health assessment of building product emissions in Germany.

EAK-code EAK-Code 17 01 07: European Waste Catalogue: Mixtures of concrete, brick, tiles and ceramics with the exception of materials under17 01 06.

ECHA Candidate List
Candidate List of substances of very high concern for Authorisation (ECHA Candidate List), retrieved June 27.2024, published in accordance with Article 59(10) of the REACH Regulation. Helsinki: European Chemicals Agency.

GaBi
GaBi 10, Software-System and Database for Life Cycle Engineering. DB 2022.2. Sphera, 1992–2022. Available at: http://documentation.gabisoftware.com

IBU 2021
Institut Bauen und Umwelt e.V.: General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V.. Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021.
www.ibu-epd.com

PCR part A
Product category rules for building-related products and services. Part: Calculation rules for the life cycle assessment and requirements on the project report acording EN 15804+A2:2019. Version 1.3. Berlin: Institut Bauen und Umwelt e.V. (Hrsg.), 2022.

PCR: Wood cement - Mineral-bonded wooden composites
Product category rules for building-related products and services. Teil B: Requirements on the EPD for Wood cement - Mineral-bonded wooden composites, Version v10. Berlin: Institut Bauen und Umwelt e.V. (Hrsg.), 2024.

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