ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	Lindner Group
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-LIN-20250233-IBC1-EN
Issue date	30.05.2025
Valid to	29.05.2030

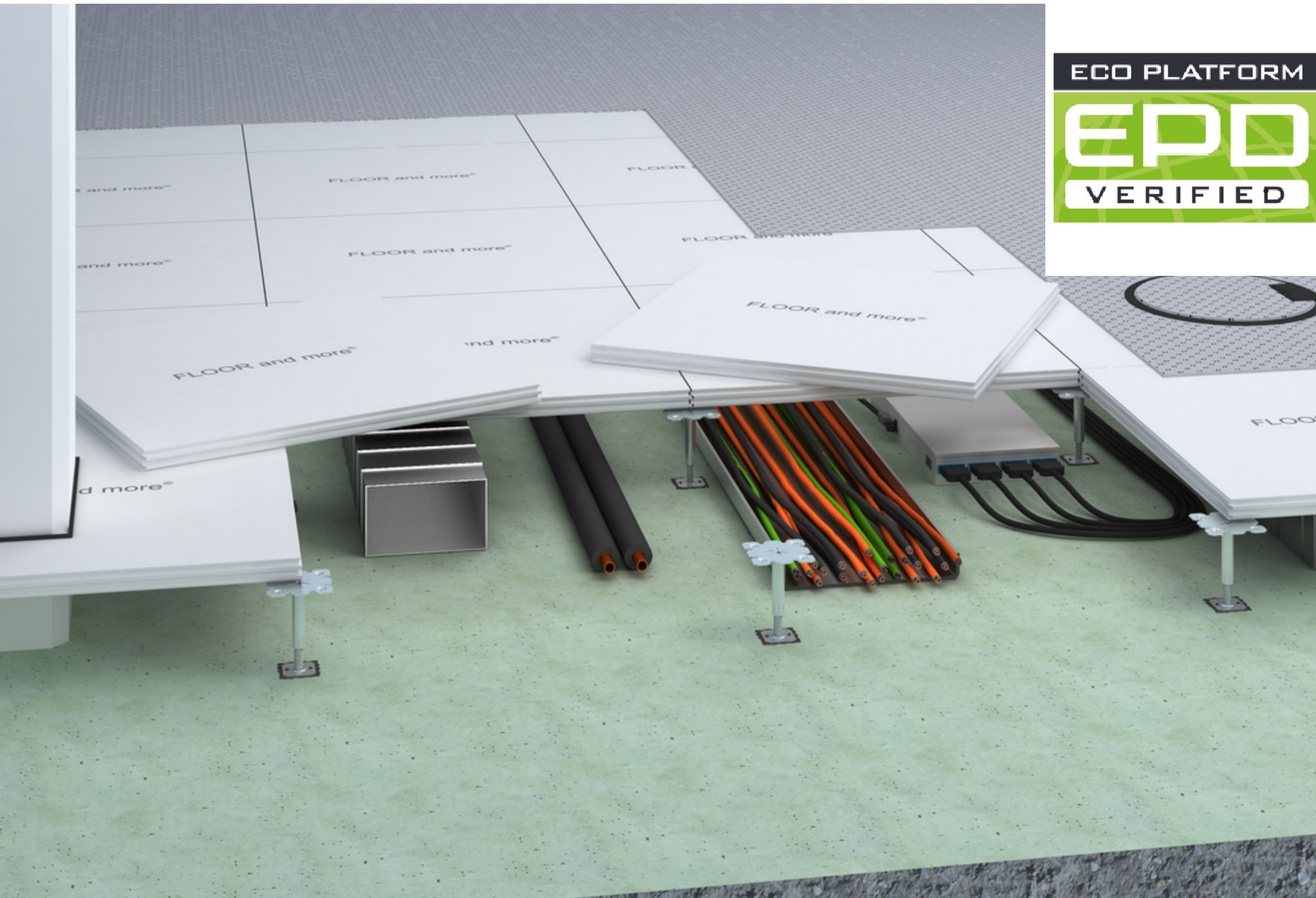
FLOOR and more® hollow floor

Lindner Group

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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



1. General Information

Lindner Group

Programme holder

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

Declaration number

EPD-LIN-20250233-IBC1-EN

This declaration is based on the product category rules:

System floors, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

30.05.2025

Valid to

29.05.2030

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

FLOOR and more® hollow floor

Owner of the declaration

Lindner Group
Bahnhofstraße 5
94424 Arnstorf
Germany

Declared product / declared unit

1 m² of the FLOOR and more® hollow floor system, calculated based on weighted averaging.

Scope:

This EPD pertains to the FLOOR and more® hollow floor system, consisted of gypsum panels with an approximate ranging density of 1,320–1,350 kg/m³ and a thickness of 34–40 mm. The hollow floor panels are manufactured at the Lindner plant in Dettelbach, and the production data are collected for the year 2023.

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

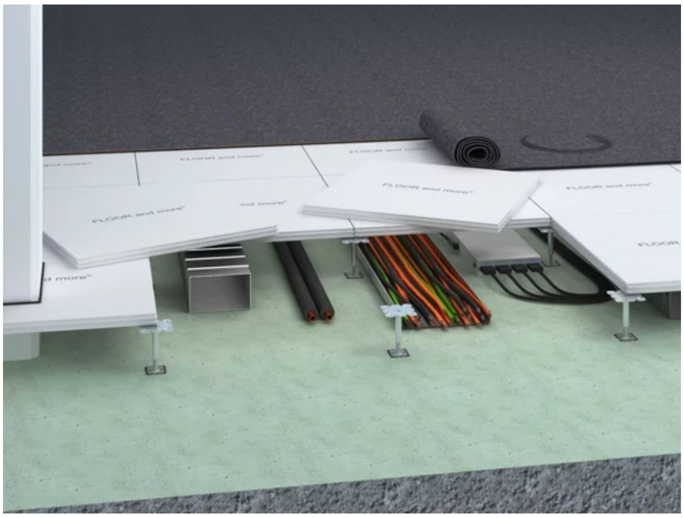
Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Dr. Niels Jungbluth,
(Independent verifier)

2. Product

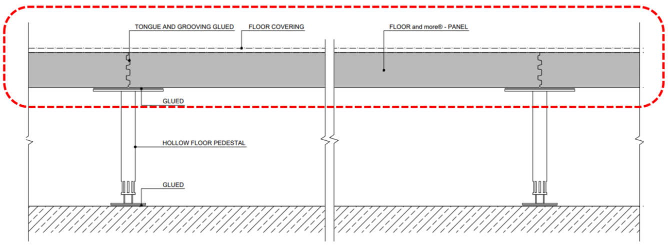
2.1 Product description/Product definition

The declared product, Lindner hollow floor panel, type FLOOR and more®, is a fibre-reinforced calcium sulphate panel, serving as a key component of the dry hollow floor system, FLOOR and more®. This product features a thickness range of 34 to 40 mm and a bulk density of approximately 1,320 to 1,350 kg/m³. The hollow floor panels are typically manufactured in standard dimensions of 600 x 600 mm. The FLOOR and more® panels are assembled using a special serrated groove along the panel edges, forming a closed base layer. The hollow floor panel, type FLOOR and more®, was developed and tested according to the *EN 13213* standard for hollow floors.



The use of this product is subject to the respective national regulations where it is installed, such as the building codes of the federal states in Germany and the technical provisions derived from this legislation.

The substructure (pedestals and profiles) and surface covering are not included in the life cycle assessment (LCA) and Environmental Product Declaration (EPD); they are evaluated through separate LCA values and EPDs.



For the use and application of the product the respective national provisions at the place of use apply, in Germany for example the building codes of the federal states and the corresponding national specifications.

2.2 Application

The FLOOR and More® hollow floor panels, made of fibre-reinforced calcium sulphate, are designed primarily for interior use in public, commercial, and private buildings. They create hollow installation spaces beneath the base layer, which allows for flexible use and the accommodation of various installations, supply lines, and disposal systems.
Access to these cavities can be provided through inspection openings or raised floor routes. When combined with additional components, these panels form the dry hollow floor system, type FLOOR and More®, which can be covered with all standard floor coverings. However, it is essential to coordinate the different system variants to ensure compatibility.

2.3 Technical Data

The technical specifications of the FLOOR and More® within the scope of the EPD are as follows:

Technical data

Name	Value	Unit
Layer thickness base course (from - to)	0.034 - 0.04	m
Grammage / panel weight	39.63 - 53.12	kg/m^2
Density of the base course	1321 - 1349	kg/m^3
Point load Statics (EN 12825)*	2 - 8	kN
Fire protection (EN 13501) reaction to fire	A1	-
Fire protection (EN 13501/DIN 4102) Fire resistance*	F30 / REI30, REI60	-
Sound insulation (laboratory values; VDI 3762 is to be observed)* standard side noise level difference D nfw	37 - 63	dB
Sound insulation (laboratory values; VDI 3762 is to be observed)* sound insulation Rw	62	dB
Sound insulation (laboratory values; VDI 3762 is to be observed)* standard side noise level L nfw	92 - 32	dB
Sound insulation (laboratory values; VDI 3762 is to be observed)* footfall noise level reduction ΔL w	12 - 35	dB

* The listed values represent the full testing range of the FLOOR and more® hollow floor system. Values for the specific hollow floor systems were evidenced by individual test reports.

Product performance characteristics are in accordance with the relevant technical specifications (no CE approval mark).

2.4 Delivery status

FLOOR and more® hollow floor panels (standard 600 x 600 mm) are delivered stacked on a pallet. The stack height depends on the thickness of the panels and the type of covering applied.

2.5 Base materials/Ancillary materials

For greater transparency, the content declaration of the product and base materials for the product are as follows:
A FLOOR and more® hollow floor panel consists of the following base materials:

- Gypsum
- Cellulose Fibre
- Water

These materials are briefly described in more detail below.

Natural gypsum rock
Gypsum is a material in the form of powder from the class of

hydrous sulfates, which can be present in various hydrate stages in combination with water of crystallization or completely without water. Natural gypsum stone is calcium sulfate dihydrate ($CaSO4 \cdot 2H_2O$), while the anhydrous form of calcium sulfate found in nature is anhydrite. By dehydrating the calcium sulfate dihydrate, the gypsum can be converted into its hemihydrate form ($CaSO4 \cdot ½H_2O$) or into its crystal water-free form, anhydrite. Two different calcium sulfate hemihydrates can be produced using different firing conditions; these are known as α-hemihydrate and β-hemihydrate and differ in their physical properties.
Furthermore, production residues and waste from gypsum ($CaSO4 \cdot 2H_2O$), including grit, edgings, and sanding dust are recycled through calcining or reintegrated into the production process. This approach establishes a closed-loop system, enhancing material efficiency and minimizing waste in the manufacturing cycle.

Cellulose fibres
The required cellulose fibres are produced exclusively from secondary materials, including recycled paper and old papers sourced from the Lindner Company in Arnstorf. After high-consistency pulping, thinning with water, and subsequent impurity removal, the material is adjusted to the required consistency.As a result, most FLOOR and more® variants are certified FSC™ Recycled 100%.

Water
The majority of the process water is sourced from well water pumped on-site, with only a small amount of district water used. After production, the water is treated and recycled back into the process as circulating process water.
The figure below represents the share of each material, as well as the water content of the product. It's important to note that the internally recycled/looped gypsum doesn't impact the weight of the declared unit or the final product since the same amount enters and exits the process.

	Data collection for FLOOR & More® Forground Data				
			dU (kg/m²) 48,7265		
Category	Classification Materiality	Description	Allocation to dU	Unit	Share of material (mass
Raw material	Gypsum	Alpha hemihydrate AGLF	9,3381	kg	16,87%
Raw material	Gypsum	Alpha hemihydrate AGR 40	1,1087	kg	2,00%
Raw material	Gypsum	Beta gypsum LG HH S unground	14,9249	kg	26,96%
Raw material	Gypsum	Beta gypsum unground VRESOVA	24,8075	kg	44,82%
Raw material	Gypsum	Beta gypsum Nbg100% REA	0,5384	kg	0,97%
Raw material	Fibre	Secondary cellulose	3,8080	kg	6,88%
Raw material	Chemical binders	Various Binders	0,0969	kg	0,18%
Water	Calcination water	remaining in the product	0,7309	l	1,32%
Sum			55,3534		100,00%

It is important to note that none of the mentioned materials are substances from the "Candidate List of Substances of Very High Concern for Authorisation" (SVHC) with a mass percentage greater than 0.1% of the construction product's mass. Additionally, the construction product is not classified as a substance or mixture under the chemical law (*REACH*). Therefore, it can be stated that:

- "This product/article/at least one component contains substances listed in the candidate list (date: 17.01.2023 according to https://echa.europa.eu/de/candidate-list-table) exceeding 0.1% by mass: **NO**."

- "This product/article/at least one component contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B that are not on the candidate list, exceeding 0.1% 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) *Regulation on Biocidal Products No. 528/2012*): **NO**."

2.6 Manufacture
Production and treatment of the hollow floor panel involves mixing essential raw materials such as Alpha Hemihydrate, Beta Gypsum, and cellulose fibres. After adding water, these materials are pressed into stable panels under high pressure. The panels are then dried and cut or milled to the required formats.

In further production steps, a serration is milled into the sides of the panels.

Lindner Group operates a quality management system in accordance with */EN ISO 9001/*.

2.7 Environment and health during manufacturing
The production of fibre-reinforced calcium sulfate panels takes place in environmentally approved facilities.

The process water used is recirculated as much as possible within a closed-loop system. The gypsum waste generated is largely reintroduced into the material cycle within the facility.

Lindner Group operates an energy management system in accordance with */EN ISO 50001/* and an environmental management system in accordance with */EN ISO 14001/*.

2.8 Product processing/Installation
The hollow floor panels of type FLOOR and more® delivered to the construction site are combined with additional individual components to create a complete flooring system. For further instructions, please refer to the hollow floor installation guidelines. Installation must be carried out by trained personnel.

2.9 Packaging
Hollow floor panels are delivered stacked on pallets, specifically on single pallets with two runners for the FINAL packaging. They are wrapped in cardboard, strapped with plastic tape, and, if necessary, covered with plastic film to protect them from moisture during transport. Each pallet can reach a maximum height of 4,000 mm and can be stacked up to four pallets high. Additionally, supports and other individual components are stacked or layered in cardboard packaging, ensuring that all items remain secure and protected throughout the delivery process.

The packaging material is easily separable and can, where applicable, be reused or repurposed. The remaining material, once correctly separated, should be collected and taken to the regional recycling centre. Residual materials must be disposed of in accordance with relevant national regulations.

The packaging specifications for all standard Lindner products are detailed in the packaging data sheets.

2.10 Condition of use
The service life of floor panels is planned to match the entire lifespan of the building. Based on long-term experience, no significant changes in material composition are expected during the use of the FLOOR and more® hollow flooring system.

2.11 Environment and health during use
No health hazards or impairments are expected based on current knowledge when the hollow floor panel systems are

used as intended and appropriately. For further details, see Section 7 (Indoor Air Comfort Gold Label).

According to the current state of knowledge, proper use of the described products will not result in exposure to air, water, or soil.

2.12 Reference service life

A reference service life according to *ISO 15686* cannot be calculated for this product. Therefore, the technical service life is derived from the table "Service Life of Components for Life-Cycle Analysis According to the Rating System for Sustainable Construction (*Bewertungssystem Nachhaltiges Bauen – BNB*) – *Code No. 352.911*" by *the Federal Office for Construction and Regional Planning (BBSR)*. The BNB assumes that hollow floor systems and panels will have a service life of over 50 years. This stated service life is contingent upon proper use, maintenance, and care.

The document also describes the influences on the aging of the product when applied according to established technical guidelines.

2.13 Extraordinary effects

Fire

Fibre-reinforced calcium sulphate panels, used as hollow floor panels, are classified as "non-flammable" according to /*EN 13501-1*/ and fall into building material class A1.

Fire prevention

Name	Value	Unit
Building material class	A1	-
Smoke gas development	-	-
Burning droplets	-	-

Water

Lindner's FLOOR and more® hollow floor panels are intended for indoor use and should generally not come into contact with water. Short-term exposure to moisture will not damage the system, provided that the panels are allowed to dry completely afterward. Prolonged exposure to large amounts of water will not cause the leaching of substances that could pollute watercourses.

However, such exposure may impair the technical properties of the panels, as Lindner hollow floor systems are not water-resistant. In very damp or wet conditions, the panels may swell, and the supports may corrode.

Mechanical destruction

The durability and functionality of the panel system will be impaired in the event of mechanical damage. Depending on the extent of the damage, affected areas can be repaired or replaced with new panels without impairing overall functionality.

2.14 Re-use phase

Direct reuse of the panels immediately after removal is not feasible due to the technical characteristics of the panel edges, however, treatment or processing followed by further reuse, as well as the utilization of raw materials after recycling the panels, have been considered as two potential end-of-life (EoL) scenarios.

- Removal / Reuse: Not considered directly after removal
- Processing / Further Use: As new floor panels with smaller dimensions
- Further Use / Recycling: Turning gypsum floor panels into their constituent materials during the recycling process and further reusing gypsum and fibre as raw materials.

In the reuse scenario, after appropriate treatment, fibre-reinforced plasterboards can be reused as new panels with reduced size. The dismantling process involves carefully cutting the gypsum fibre panels at their original dimensions of 600 × 600 mm on-site, using a jigsaw that requires electrical energy under C1. Similar to other scenarios, this process anticipates an initial loss of 2% during dismantling, followed by an additional 5% loss after sorting (C2 and C4). The remaining panels will be transported to Dettelbach for recovery, where they will undergo edge treatment for further reuse. During this recovery process, which consumes electrical energy under C3, the edges of the panels will be milled to form interlocking tongue-and-groove connections, reducing the dimensions to 585 × 585 mm. New panels will be designated as components for reuse (CRU). Additionally, some material will be lost as dust during the grinding and milling processes, which will be sent to landfill (C4).

In the recycling scenario, panels are recirculated as raw material into the production process of new panels, thus closing the material loop. This scenario involves shredding gypsum panels for recycling, converting them into gypsum dust and secondary cellulose. In this case, both cellulose fibre and the gypsum dust from shredding can replace or compensate for alpha hemihydrate and secondary cellulose in the raw materials.
For this scenario, it is assumed that:

- 2% of the gypsum panels are rejected immediately after dismantling in C1.
- 98% of the gypsum panels are transported to Dettelbach to undergo the shredding process, of which:
- 5% will be rejected before shredding as an impure and valueless mixture containing screws or glue and will be sent to landfill. This amount will be recorded under C4 and will never reach the end-of-waste state.
- The remaining, considered materials for recycling (MFR), will undergo an internal shredding process in Dettelbach, recorded under C3. All relevant processing impacts are taken into account until the shredded panels reach the end-of-waste state, after converting the gypsum panels into gypsum dust and cellulose in C3, which can be reused within the production process. Specifically, this gypsum dust can replace or compensate for alpha hemihydrate.

It should be noted that although 100% of this shredded and recycled gypsum and fibre pass quality assurance, only 86% of this recycled dust is allowed for use in the production process of each square meter. All efforts, expenses, and energy associated with shredding will be recorded under C3, and the gained credit for the material will be documented under Module D.

2.15 Disposal

Any remnants of hollow floor panels from construction sites or dismantling activities that cannot be recycled should be disposed of according to the following waste codes: /*17 08 02*/ for materials based on gypsum, except those classified under /*17 08 01*/.
The first end-of-life (EoL) scenario for FLOOR and more® systems involves landfilling, where all gypsum panels are sent for disposal.
In the second scenario, recycling, approximately 7% of the gypsum panels are disposed of, as recycling is not possible.

In the third scenario, reusing, in addition to the approximately mentioned 7%, a small amount of dust will be produced while treating the edges in C3, and this dust will also be sent for disposal.

2.16 Further information

For additional product information, please visit: www.Lindner-Group.com.

3. LCA: Calculation rules

3.1 Declared Unit

The hollow floor system has an average panel thickness of 36.64 mm and an average density of 1,339.47 kg/m³. Within the product family, the panel thickness ranges from 34 to 40 mm, and the raw density varies from 1,321 to 1,349 kg/m³. The declared unit has a weight of 48,73 kg/m².

Supports and surface coverings are not included in the life cycle assessment due to their varied types and specifications. Possible surface coverings include parquet, linoleum, carpet, etc.

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	m^2
Grammage	48.73	kg/m^2
Gross density	1332.5	kg/m^3
Layer thickness	0.0365	m

3.2 System boundary

The life cycle analysis for the FLOOR and more® hollow floor system covers "cradle to gate" with modules C1–C4 and module D (A1–A3 + C + D).

Specifically, the following processes were included in information module A1–A3 for the production of the FLOOR and more® hollow floor system:

- Raw material provision (A1)
- Transport of raw, auxiliary materials, and consumables to the plant (A2)
- Production processes at the plant, including energy costs (electricity, thermal energy), water consumption, production of packaging materials and disposal of residual substances (A3)
- Transport from the factory gate to the construction site (A4)
- Disposal of packaging materials (A5)
- Dismantling of the panels from the building (C1)
- Transportation of discarded panels to facilities for processing, recycling, or disposal (C2)
- Processing waste materials from the deconstruction stage, including preparation for recycling and energy recovery where applicable (C3)
- Disposal of waste materials that cannot be reused or recycled, including physical pre-treatment and management of the disposal site for landfilling scenarios (C4)
- Reporting on the benefits and loads associated with the reuse, recovery, and recycling of materials beyond the system boundary, including energy recovery from the disposal of materials (D)

3.3 Estimates and assumptions

With the exception of Modules A1 to A3, which describe the manufacturing process and are therefore based on actual foreground data, all other modules are calculated using assumptions, referred to as scenarios.

As menioned before, developed End-of-Life scenarios are as follows:

- Scenario 0 - Landfilling: Gypsum panels are dismantled and sent directly to a landfill without recycling, remaining as waste and not entering a recovery process.
- Scenario 1 - Shredding for Recycling: The panels are shredded for recycling, with some lost to landfill initially. Most are converted into gypsum dust and cellulose for reuse in production, thus conserving resources.
- Scenario 2 - Recovery for Reuse: Panels are carefully dismantled and sorted on-site. A small percentage is lost, but the majority is processed for reuse after edge treatments. Assumptions and calculations regarding the cutting of plasterboards during dismantling and the required energy are documented in the project background report. When the edges of a gypsum panel are milled, its area is reduced, which in turn leads to a reduction in weight, which is the required input for LCA modelling. The weight loss can be calculated using the area of the panel that has been lost due to milling and the grammage (weight per unit area) of the gypsum panel and has been documented in the project background report.

It is also assumed that all waste incineration plants have an R1 factor greater than 0.6, indicating a high level of efficiency in energy recovery from waste. This assumption is based on statistical data from waste incineration plants in Northern Europe, as detailed in the CEWEP Energy Report II (Status 2007-2010).

Apart from End-of-Life scenarios, for all transportation-related modules—including A2 for raw material extraction, A4 for transport from the production site to the construction site, and C2 for waste processing—the "GLO: LKW-Zug/Sattel-Zug, Euro 6 A-C" process is utilized, assuming a scalable distance of 100 km. This reflects the reality that a significant portion of raw materials and FLOOR and More® products are delivered within Germany, covering a substantial delivery radius from Dettelbach, near Würzburg.

[1] CEWEP Energy Report III (Status 2007-2010). Available at: https://www.cewep.eu/wp-content/uploads/2017/10/1069_13_01_15_cewep_energy_report_iii.pdf Accessed on 06.05.24.

3.4 Cut-off criteria

some materials were excluded from the inventory and analysis both due to the small and negligible amounts and also due to the gaps in the GaBi databases. These exclusions were considered insignificant to the overall environmental performance of the product and do not affect the results of the assessment.

Plastic strips used for packaging have been defined in the inventory but in the modelling process due to their small quantity, the amount has been summed with other combustible materials and declared as mixed waste for incineration under A3.

All transport costs for preliminary products were included where available; however, transport for packaging and small quantities of raw and auxiliary materials was partially excluded. It is estimated that these omitted processes would contribute less than 5% to the impact categories considered.

3.5 Background data

The software system for holistic balancing, *GaBi, developed by Sphera version 10.7.1.28*, was used to model the life cycle of the product in question. Data required for the upstream chain were sourced from the GaBi database:

http://www.gabisoftware.com/support/gabi/gabidatabase-2016-lcidocumentation/

3.6 Data quality

The data quality of the life cycle inventory (LCI) used in the life cycle assessment (LCA) is rigorously evaluated to meet the standards outlined in *EN 15804+A2* and *EN ISO 14044:2006*. The data sets align with the current ILCD format, though not all materials could be represented by complete life cycle inventories.

The assessment considers time-related, geographical, and technological coverage, ensuring that primary data gathered from the Dettelbach production facility reflects the latest production conditions as of 2023 and is supplemented by geographically relevant generic data from the *GaBi* database.

Technological Coverage
The data used in the LCA reflects the specific technologies employed at the Dettelbach production facility. Where specific technology data was unavailable, approximations were made using the closest available

Time-Related Coverage
The primary data collected at the Dettelbach production facility reflects the most recent production conditions, specifically from 2023. This ensures that the data accurately represents the current state of the manufacturing processes. The reference years for the generic data used from the *GaBi* database are consistent with the time frame of the project, providing a reliable temporal alignment.

Geographical Coverage
The foreground data was collected from the production facilities in Germany, ensuring that it is geographically relevant. For background data, the *GaBi* database was chosen because it includes datasets that are geographically specific to Germany and Europe, ensuring that the environmental impacts are accurately represented for the region.
datasets from the *GaBi* database, ensuring that the technological representativeness is maintained.

Completeness
All relevant processes, including material and energy flows involved in the production of the hollow floor system, were thoroughly considered in the life cycle assessment. Data were systematically categorized into specific groups: energy, raw materials, water consumption, wastewater, and waste. This categorization also included materials that remain in a closed loop by reusing their waste, such as the incorporation of gypsum dust back into the material itself. This approach ensured a comprehensive capture of all significant inputs and outputs, allowing for a detailed and accurate assessment of the environmental impacts associated with the product's life cycle.

3.7 Period under review

Production data for this assessment were collected from the Lindner plant in Dettelbach, Germany, for 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 Lindner Group's gypsum-based production line manufactures various products, including the declared FLOOR and More® panel. Data collection for thermal and electrical energy use, as well as raw material consumption, focuses specifically on the declared product and unit. Since the production processes for FLOOR and More® fibre-reinforced plasterboards, are not segmented into distinct subprocesses, all products produced on the same line undergo identical production steps. The only differences between the FLOOR and More® panels and other products are related to the panel's density and thickness.

To accurately allocate resources such as raw materials and energy used in production, these factors are assigned proportionally based on a virtual product that represents an average of all variants, considering sales figures and production amounts through a weighted average approach.

Each of these allocations must reference the modules in which they are performed. Additionally, when considering multiple products processed together, a physical classification method is utilized to allocate environmental impacts based on the consumption of raw materials, packaging, energy, and water relative to total production output.
The methodology comprehensively incorporates end-of-life considerations. Specific allocation methods are clearly documented in the project report, ensuring that the reported data accurately reflects the resources consumed for the production of the FLOOR and More® panels while maintaining transparency and consistency throughout the evaluation process.

In detail, allocations relevant for calculation must encompass several key areas:

- Allocation of energy, auxiliary, and operating materials used for individual products in a factory.
- Allocation of co-production processes.
- Allocation in the use of recycled and/or secondary raw materials.
- Loads and benefits beyond the system boundary from recycling or energy recovery of packaging materials and production waste.
- Loads and benefits beyond the system boundary from recycling or energy recovery from the end of life of the product.

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 were sourced from the *GaBi* database 2023 (see Section 8, References).

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The biogenic carbon content quantifies the amount of biogenic carbon present in FLOOR and More® as it leaves the factory gate and must be separately declared for both the product and its accompanying packaging.
Specifically for FLOOR and More®, the secondary cellulose used in the production of gypsum boards is classified as a biogenic carbon-containing material.

Regarding the packaging, 99.37% of the materials consist of biogenic carbon-containing substances, which include wood and cardboard, taking into account the actual or assumed material moisture.
A summary of the biogenic carbon calculations based on the project background report is as follows:

Product

- Input of secondary cellulose in the product: 3.5274 kg
- **Total Bound carbon in the product (Bio_product): 1.52 kg C**
- Conversion of carbon to carbon dioxide in the product: 5.57 kg CO_2

Packaging

- Input of packaging cardboard: 0.0657 kg
- Input of packaging wood: 0.5839 kg
- Total Bound carbon in packaging cardboard: 0.0283 kg C
- Total Bound carbon in packaging wood: 0.1754 kg C
- **Bound carbon in the packaging (Bio_packaging): 0.2037 kg C**
- Conversion of carbon to carbon dioxide in the packaging: 0.7469 kg CO_2

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	1.52	kg C
Biogenic carbon content in accompanying packaging (Wooden palette+Cardboard)	0.2037	kg C

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

Scenarios Intro

Scenario 0: Landfill
Scenario 1: Shredding for recycling
Scenario 2: Refurbishment for reuse

Transport from the gate to the site (A4)

Name	Value	Unit
Fuel type	Diesel Mix	-
Fuel	0.14	kg/m²
Transport distance	100	km
Capacity utilisation (including empty runs)	70	%
Total weight of the transported good (packed)	49.4	kg

Assembly (A5)

The main auxiliary material for the construction of the FLOOR and More® system on-site is steel pedestals, with four pedestals required for each square meter, resulting in a total weight of 0.8056 kg per declared unit (dU). Each individual pedestal weighs 0.2014 kg. However, the scope of this EPD does not cover the pedestals.

Name	Value	Unit
Pedestals - not in the EPD scope	0.8056	kg

Reference service life

A reference service life cannot be calculated for this product. A technical service life of around 50 years is assumed according to the *BNB.*

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

End of life (C1-C4)

Name	Value	Unit
Collected separately waste type	48.7	kg
Sc 0 landfill	48.7	kg
Sc 1 landfill	3.36	kg
Sc 1 Recycling	45.34	kg
Sc 2 landfill	3.4	kg
Sc 2 Reuse	45.3	kg

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

Name	Value	Unit
Credit from material Sc 1- gypsum	42.05	kg
Credit from material Sc 1- fibre	3.29	kg
Credit from material Sc 2- gypum board	45.3	kg

5. LCA: Results

Information on the environmental impacts is established using the characterisation factors according to /CML, as published in April 2013/. Long-term emissions are not taken into consideration.

The characterisation factors applied correspond with the requirements of Annex C in /DIN EN 15804/.

Scenario 0: Landfill - represented by C2, C3, C4, D
Scenario 1: Shredding for recycling - represented by C2/1, C3/1, C4/1, D/1
Scenario 2: Refurbishment for reuse - represented by C1, C2/2, C3/2, C4/2, D/2

It should be noted that C1 values differ for three different end-of-life scenarios. This is because, in the ReUse scenario, the panels will be reused, and the demounting process under C1 must be conducted in a non-destructive manner, requiring electrical energy to cut the panels with a jigsaw. However, for the other two scenarios, the demounting process can be done manually and involves only demolishing the panels. Therefore, the C1 values are 0 for Scenario 0 and 1, but not for Scenario 2.

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: 48.73 kg/m² Weight per square meter

Parameter	Unit	A1-A3	A4	A5	C1	C2	C2/1	C2/2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
GWP-total	kg CO_2 eq	9.59E+00	4.24E-01	7.58E-01	5.5E-03	2.09E-01	3.95E-01	1.35E-01	0	7.11E+00	5.28E+00	6.25E+00	4.51E-01	5.07E-01	-5.17E-01	-1.03E+01	-1.56E+01
GWP-fossil	kg CO_2 eq	1.59E+01	4.1E-01	1.19E-02	5.49E-03	2.02E-01	3.94E-01	1.35E-01	0	1.9E+00	1.85E-01	7.22E-01	4.98E-02	3.15E-02	-1.12E-02	-9.75E+00	-1.51E+01
GWP-biogenic	kg CO_2 eq	-6.32E+00	1.07E-02	7.46E-01	6.55E-07	5.3E-03	-1.39E-03	-6.06E-04	0	5.21E+00	5.1E+00	5.52E+00	4.02E-01	4.76E-01	-5.06E-01	-5.54E-01	-5.06E-01
GWP-luluc	kg CO_2 eq	1.16E-02	2.54E-03	4.02E-05	8.09E-07	1.25E-03	2.33E-03	8.09E-04	0	1.1E-04	2.72E-05	4.55E-03	1.57E-04	9.92E-05	-5.78E-07	-8.48E-04	-1.11E-02
ODP	kg CFC11 eq	1.17E-10	1.05E-13	3.19E-14	3.28E-16	5.17E-14	9.61E-14	3.34E-14	0	1.4E-13	1.1E-14	3.76E-12	1.3E-13	8.12E-14	-1.1E-13	-2.59E-11	-1.11E-10
AP	mol H^+ eq	1.81E-02	5.71E-04	5.92E-05	6.55E-06	2.82E-04	5.24E-04	1.8E-04	0	1.34E-03	2.21E-04	1.04E-02	3.58E-04	2.26E-04	-1.22E-05	-9.28E-03	-1.72E-02
EP-freshwater	kg P eq	9.13E-05	1E-06	5.12E-07	5.54E-10	4.94E-07	9.18E-07	3.19E-07	0	1.61E-07	1.87E-08	2.96E-06	1.02E-07	6.43E-08	-1.45E-08	-9.78E-06	-8.68E-05
EP-marine	kg N eq	7.09E-03	2.14E-04	2.53E-05	2.18E-06	1.06E-04	1.97E-04	6.73E-05	0	5.63E-04	7.34E-05	2.68E-03	9.26E-05	5.85E-05	-4.63E-06	-3.56E-03	-6.75E-03
EP-terrestrial	mol N eq	7.39E-02	2.53E-03	2.31E-04	2.37E-05	1.25E-03	2.33E-03	7.97E-04	0	6.2E-03	7.97E-04	2.95E-02	1.02E-03	6.44E-04	-4.86E-05	-3.89E-02	-7.03E-02
POCP	kg NMVOC eq	1.77E-02	5.07E-04	1.36E-04	6.02E-06	2.5E-04	4.66E-04	1.6E-04	0	1.58E-03	2.03E-04	8.1E-03	2.79E-04	1.77E-04	-1.24E-05	-1.02E-02	-1.69E-02
ADPE	kg Sb eq	1.85E-06	3.08E-08	5.07E-10	2.3E-11	1.52E-08	2.82E-08	9.79E-09	0	1.83E-08	7.76E-10	6.79E-08	2.34E-09	1.48E-09	-8.49E-10	-3.02E-07	-1.76E-06
ADPF	MJ	2.39E+02	5.78E+00	2.31E-01	8.2E-02	2.85E+00	5.3E+00	1.84E+00	0	3.16E+01	2.76E+00	1.95E+01	6.72E-01	4.25E-01	-4.36E-01	-1.43E+02	-2.28E+02
WDP	m^3 world eq deprived	3.51E-01	2.23E-03	1.12E-03	3.12E-05	1.1E-03	2.05E-03	7.1E-04	0	3.18E-03	1.05E-03	1.6E-01	5.53E-03	3.51E-03	-1.02E-03	-3.25E-01	-3.35E-01

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 48.73 kg/m² Weight per square meter

Parameter	Unit	A1-A3	A4	A5	C1	C2	C2/1	C2/2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
PERE	MJ	5.81E+01	3.87E-01	9.81E+00	3.12E-04	1.91E-01	3.55E-01	1.23E-01	0	5.47E+01	5.36E+01	6.18E+01	4.15E+00	1.42E-01	-7.36E-02	-1.31E+01	-6.53E+01
PERM	MJ	6.73E+01	0	-9.78E+00	0	0	0	0	0	-5.45E+01	-5.36E+01	-5.86E+01	-4.04E+00	-7.24E-02	0	0	-5.4E+01

PERT	MJ	1.25E+02	3.87E-01	2.13E-02	3.12E-04	1.91E-01	3.55E-01	1.23E-01	0	1.35E-01	1.05E-02	3.19E+00	1.1E-01	6.93E-02	-7.36E-02	-1.31E+01	-1.19E+02
PENRE	MJ	2.39E+02	5.79E+00	7.92E-01	8.2E-02	2.86E+00	5.31E+00	1.84E+00	0	3.16E+01	2.76E+00	1.95E+01	6.73E-01	4.25E-01	-4.36E-01	-1.43E+02	-2.28E+02
PENRM	MJ	5.61E-01	0	-5.61E-01	0	0	0	0	0	0	0	0	0	0	0	0	4.01E-02
PENRT	MJ	2.4E+02	5.79E+00	2.31E-01	8.2E-02	2.86E+00	5.31E+00	1.84E+00	0	3.16E+01	2.76E+00	1.95E+01	6.73E-01	4.25E-01	-4.36E-01	-1.43E+02	-2.28E+02
SM	kg	8.11E+00	0	0	0	0	0	0	0	0	0	0	0	0	-2.81E-01	-2.81E-01	-7.99E+00
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	5.92E-02	3.45E-04	4.71E-05	1.23E-05	1.7E-04	3.16E-04	1.1E-04	0	8.99E-04	4.15E-04	4.92E-03	1.7E-04	1.07E-04	-1.22E-04	-2.42E-02	-5.64E-02

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: 48.73 kg/m² Weight per square meter

Parameter	Unit	A1-A3	A4	A5	C1	C2	C2/1	C2/2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
HWD	kg	1.12E-06	9.76E-12	1.08E-11	4.17E-12	4.81E-12	8.95E-12	3.11E-12	0	6.44E-09	1.4E-10	4.2E-10	1.45E-11	9.26E-12	-5.87E-12	-6.34E-08	-1.06E-06
NHWD	kg	4.5E+00	8.66E-04	8.08E-02	2.15E-05	4.27E-04	7.94E-04	2.76E-04	0	2.4E+00	1.48E+00	9.75E+01	3.3E-03	6.5E-01	-1.22E-04	-5.76E-02	-4.28E+00
RWD	kg	6.39E-03	7.62E-06	2.2E-05	7.13E-06	3.76E-06	6.99E-06	2.43E-06	0	4.53E-04	2.4E-04	2.19E-04	7.56E-06	4.85E-06	-9.26E-05	-1.44E-03	-6.17E-03
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	4E-01	0	0	0	0	0	4.54E+01	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	1.27E-01	0	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	1.27E-01	0	0	0	0	0	0	0	0	0	0	0	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 48.73 kg/m² Weight per square meter

Parameter	Unit	A1-A3	A4	A5	C1	C2	C2/1	C2/2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
PM	Disease incidence	4.03E-07	4.69E-09	5.62E-10	6.37E-11	2.31E-09	4.3E-09	1.48E-09	0	9.55E-09	2.14E-09	1.28E-07	4.41E-09	2.79E-09	-1.08E-10	-5.72E-08	-3.83E-07
IR	kBq U235 eq	7.18E-01	8.16E-04	5.48E-03	5.52E-04	4.03E-04	7.48E-04	2.6E-04	0	3.55E-02	1.86E-02	2.49E-02	8.6E-04	5.6E-04	-2.36E-02	-1.67E-01	-7.06E-01
ETP-fw	CTUe	5.27E+01	4.22E+00	9.15E-02	8.94E-03	2.08E+00	3.87E+00	1.34E+00	0	7.11E-01	3.01E-01	1.05E+01	3.64E-01	2.3E-01	-2.02E-02	-5.48E+01	-5.01E+01
HTP-c	CTUh	3.08E-09	8.41E-11	6.52E-12	3.58E-13	4.15E-11	7.71E-11	2.68E-11	0	2.14E-10	1.2E-11	1.64E-09	5.65E-11	3.57E-11	-2.71E-12	-1.96E-09	-2.93E-09
HTP-nc	CTUh	1.03E-07	3.52E-09	7.82E-10	1.89E-11	1.74E-09	3.23E-09	1.12E-09	0	1.07E-08	6.36E-10	1.73E-07	5.96E-09	3.77E-09	-3.51E-11	-5.72E-08	-9.82E-08
SQP	SQP	9.9E+01	2.06E+00	4.16E-02	7.7E-04	1.01E+00	1.89E+00	6.55E-01	0	1.26E-01	2.59E-02	4.92E+00	1.7E-01	1.03E-01	-3.01E-02	-1.1E+01	-9.41E+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

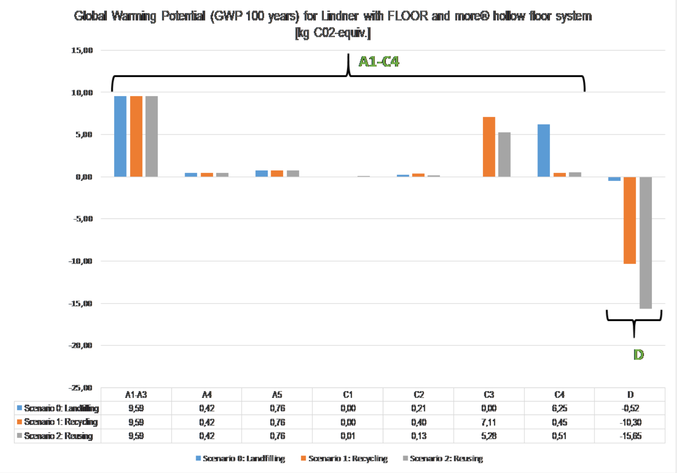
Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure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

This EPD is valid for a product Family, where there are minimal differences in thickness, density, and weight, which shows that deviations from the declared unit, 48.7 kg/m², fall within a small range of minus 19% deviation for the lighter product and to plus 9% for the heavier version. For greater transparency, results have also been calculated for two specific products: the

heaviest at 53.12 kg/m² and the lightest at 39.63 kg/m², in comparison with the declared unit.
A comparison of the Global Warming Potential (GWP) between two FLOOR and More® variants and the Declared Unit shows very little difference, confirming the reliability of the Environmental Product Declaration (EPD). The lighter variant, has a GWP total for the A1-A3 stages of 7.80 kg CO_2-equivalent. This is an 18.60% reduction compared to the Declared Unit, has a GWP total of 9.59 kg CO_2-equivalent. The heavier variant has a GWP total of 10.45 kg CO_2-equivalent, showing a 9.10% increase compared to the Declared Unit. These small variations indicate that, despite differences in weight, both variants ensure consistent sustainability across the products.



	A1-A3	A4	A5	C1	C2	C3	C4	D
Scenario 0: Landfilling	9,59	0,42	0,76	0,00	0,21	0,00	6,25	-0,52
Scenario 1: Recycling	9,59	0,42	0,76	0,00	0,40	7,11	0,45	-10,30
Scenario 2: Reusing	9,59	0,42	0,76	0,01	0,13	5,28	0,51	-15,65

Total Global Warming Potential (GWP)

In all three disposal scenarios, the GWP during the production phase (modules A1-A3) remains the same at 9.59 kg CO_2-equivalent, with emissions from transportation (module A4) at 0.42 kg CO_2-equivalent and from the construction phase (module A5) at 0.76 kg CO_2-equivalent.The manufacturing processes from stages A1 to A5 remain consistent across all scenarios. These stages encompass the initial phases of production, including raw material extraction, transport, manufacturing, and assembly,end disposal of packaging.

In Scenario 0, the end-of-life treatment of the product involves landfilling. This results in an increased total Global Warming Potential (GWP) in stage C4/1 because of the presence of biogenic carbon in the product, which has to be balanced across the system boundary. As landfill processes do not prevent the release of biogenic carbon, this scenario contributes to a higher total GWP impact due to emissions during decomposition.

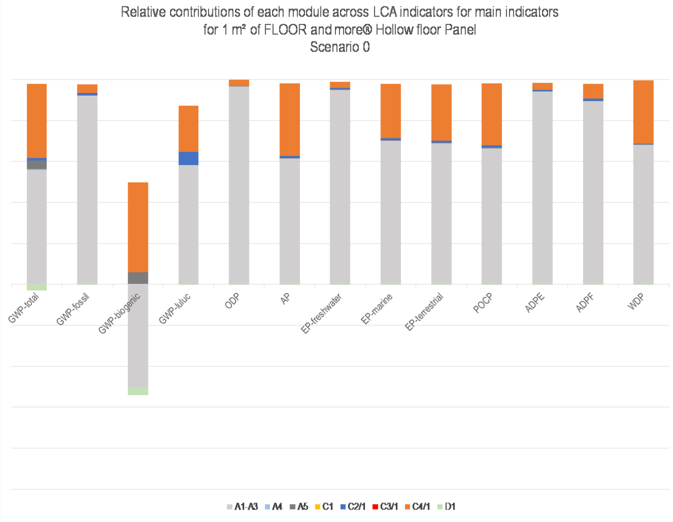
In Scenario 1, the product is recycled in our own recycling facility. The recycling processes are accounted for under C3/1, which results in a higher total GWP compared to Scenario 0 due to energy consumption and emissions during recycling operations. Additionally, there is a negligible impact recorded in stage C4/1, due to disposal waste.

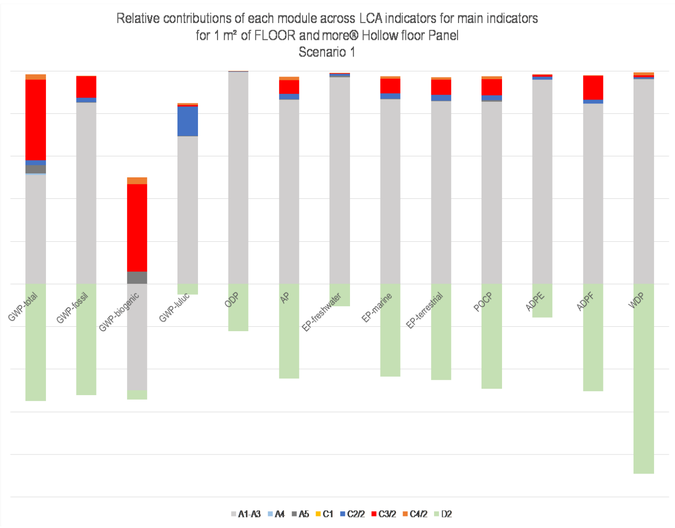
In Scenario 2, the product is prepared for reuse through precise cutting and milling of the edges and other relevant processes. These activities fall under stages C1(cutting during dismantling) & C3/2(cutting and milling), leading to a negligible contribution to the Total GWP in C4/2(waste generated during dismantling and cutting), which cannot be recycled and sent to landfill.

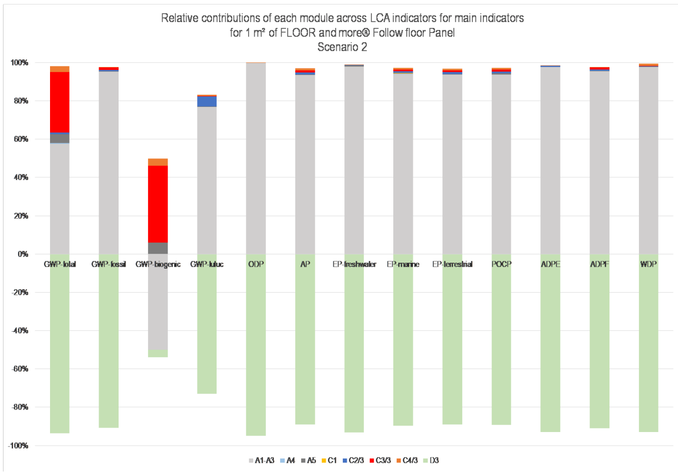
In stage D of the life cycle assessment, the benefits of recycling/reuse for Sc.1 & 2 become clearly apparent when compared with benefits for Sc.0.

In scenario 1, Recycling substantially mitigates total-GWP during the product's end-of-life stage by facilitating the recovery and reintegration of materials into the production cycle. This process reduces the necessity for extracting and processing new raw materials, which are significant contributors to the carbon footprint seen in the initial life cycle stages (A1-A3). By reducing the demand for raw material extraction, recycling prcesses effectively diminish the associated energy consumption while producing raw materials leading to a lower environmental impact, offering at the same time a sustainable alternative to traditional landfilling methods.

Considering scenario 2, reusing offers the most significant reduction in total-GWP during the end-of-life phase, as it extends the lifecycle of existing product components. This strategy eliminates the need for producing new products entirely, thereby considerably reducing the emissions associated both with raw material extraction/production and the manufacturing process. By maintaining the functionality of components, reusing minimizes resource consumption and environmental impact, aligning with sustainable lifecycle management principles. This scenario demonstrates that reusing is not only environmentally favorable during the disposal phase but also plays a crucial role in reducing emissions tied to both ends of the product lifecycle—significantly influencing raw material sourcing and manufacturing.







GWP Fossil & GWP Biogenic

In Scenario 0, The GWP emissions caused by fossil sources value (15.39 kg CO_2e) more than twice the GWP biog. which will be added with a minus value (6.32 kg CO_2e), due to strong carbon dioxide sequestration from materials. The content of biog. Carbon will be released to an extent of 6% in module A5 and 44% under C4 in landfill.Modules C2, and C3 show stability with minimal emissions. The landfill module (Module C4) results in a 44% increase in biogenic emissions from carbon dioxide release during decomposition and an 4% contribution to the total GWP fossil emissions.The potential benefits and burdens beyond the system boundary for (Module D) offer minimal benefits, because the product is landfilled.

In Scenario 1, both fossil and biogenic emissions demonstrate the environmental benefits of recycling throughout the product lifecycle. During production (A1-A3), fossil emissions account for 85%, highlighting energy demands, while biogenic GWP emissions contribute with a minus-50%, and effective carbon storage. Recycling the panel reduces GWP fossil emissions compared to Scenario 1. Module C3/1 contributes to GWP fossil emissions with a 10% share, the majority of the rest will be due to balancing the stored carbon from A1.Waste processing in Module C4/1 has minimal fossil impact.Beyond the system boundary, in module D/1 significant environmental benefits are achieved with a 52% share in GWP fossil emissions, highlighting the effectiveness of recycling practices.

In Scenario 2, which focuses on reuse, both GWP fossil and biogenic emissions are significantly reduced across the product's lifecycle. Production (A1-A3) accounts for 95% of fossil emissions due to intensive energy use. Modules C1 and C3/2 contribute with only 1% to GWP fossil emissions, but due to carbon release declared under C3/2 , the GWP biogenic emissions have a share of 40%. Module C4/2 is minimal.Significant environmental benefits are to be found as well under module D3: GWP fossil emissions reduction by -91% and biogenic emissions by -4%, which may be attributed to the benefits of extending the lifecycle of products and avoiding the energy consumption associated with new production. This significantly underscores the carbon-saving advantages of reuse strategies in minimizing the overall carbon footprint increases biogenic emissions by 40% due to carbon release in reuse. Module C4/2 has no fossil impact but adds 4% in biogenic emissions. Module D/2 effectively mitigates emissions, reducing fossil emissions by -91% and biogenic emissions by -4%, which may be attributed to the benefits of extending the lifecycle of products and avoiding the energy consumption associated with new production. This significantly underscores the carbon-saving advantages of reuse strategies in minimizing the overall carbon footprint.

7. Requisite evidence

7.1 Formaldehyde
No formaldehyde is used in the manufacturing of this product.

7.2 MDI
No MDI adhesive systems are used in the manufacture of this product.

7.3 Testing pretreatment of substances used
The declared product does not contain "recycled wood" in its basic materials. Therefore, there is no basis for testing according to the Recycled Wood Regulation (AltholzVO).

7.4 Toxicity of Combustion Gases
The product is non-flammable, making the assessment of the toxicity of combustion gases irrelevant. A toxicological investigation has been conducted.

7.5 VOC Emissions
The specified hollow floor panel was evaluated as a component of the FLOOR and more® hollow floor system.
The testing was documented in Test Report No. 392-2023-00051301_A_EN_rev3, dated April 24, 2023. The assessment was carried out by Eurofins Product Testing A/S, located at Smedeskovvej 38, DK-8464 Galten, Denmark.

Indoor Air Comfort (IAC) Overview (28 days)

Name	Value	Unit
TVOC (C6 - C16)	6.6	µg/m^3
Sum SVOC (C16 - C22)	< 5	µg/m^3
R (dimensionless)	0.021	-
VOC without NIK	6.6	µg/m^3
Carcinogenic Substances	-	µg/m^3

Result:
The tested product meets, among other requirements, the standards for the Indoor Air Comfort® Gold certification.

8. References

Standards

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.

EN 12825
DIN EN 12825:2002-04, Raised Floors.

EN 13213
EN 13213:2001, Hollow floors.

EN 13501-1
DIN EN 13501-1:2019-05, Classification of construction products and types into their fire behavior.

DIN EN 12825
DIN EN 12825:2002-04, Raised Floors, specifying the terminology, requirements, and test methods for raised access flooring systems used in construction.

EN ISO 14025
EN ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.
EN ISO 14044:2006
EN ISO 14044:2006, Environmental management — Life cycle assessment — Requirements and guidelines.

EN ISO 9001
EN ISO 9001, Quality management systems — Requirements.

EN ISO 50001
EN ISO 50001, Energy management systems — Requirements with guidance for use.
ISO 15686
ISO 15686, Buildings and constructed assets — Service life planning.

DIN SPEC 91484
Procedure to record building materials as a base to evaluate the potential for high-quality reutilization prior to demolition and renovation work.

DIN SPEC 91484
Procedure to record building materials as a basis to evaluate the potential for high-quality reutilization prior to demolition and renovation work.

Further References

LCA software GaBi
Sphera's LCA for Experts (GaBi) 10.7.1.28

LCA database
Sphera's LCA for Experts (GaBi) database 2023

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

AgBB 2021
Procedure for the health-related evaluation of emissions of volatile organic compounds from construction products.

Biocidal Products Regulation
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, Official Journal of the European Union, 2012.
European Waste Catalogue (EWC)
European Waste Catalogue. Code 17 08 02 for materials based on gypsum not classified under 17 08 01.

REACH Regulation
European Parliament and Council. (2006). Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH). Official Journal of the European Union, L396, 1-849.
EN PCR part A
Calculation Rules for the Life Cycle Assessment andRequirements on the Project Report according to EN15804+A2:2019 /IBU PART A/. Version 1.4.

EN PCR part B
PCR Guidance-Texts for Building-Related Products andServices From the range of Environmental ProductDeclarations of Institute Construction and Environment e.V.(IBU)- Requirements on the PD for System floors, v10, Lastamended: 30.04.2024.

Publisher

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

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Programme holder

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

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Author of the Life Cycle Assessment

Lindner Group
Bahnhofstraße 5
94424 Arnstorf
Germany

+49 872320 3809
green.building@lindner-group.com
www.lindner-group.com

Owner of the Declaration

Lindner Group
Bahnhofstraße 5
94424 Arnstorf
Germany

+49 872320 3809
green.building@lindner-group.com
www.lindner-group.com