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-20240490-CBB1-EN
Issue date	11/06/2025
Valid to	10/06/2030

Refurbished Raised floor panel Lindner LOOP prime and LOOP aurum

Lindner Group

Institut Bauen und Umwelt e.V.

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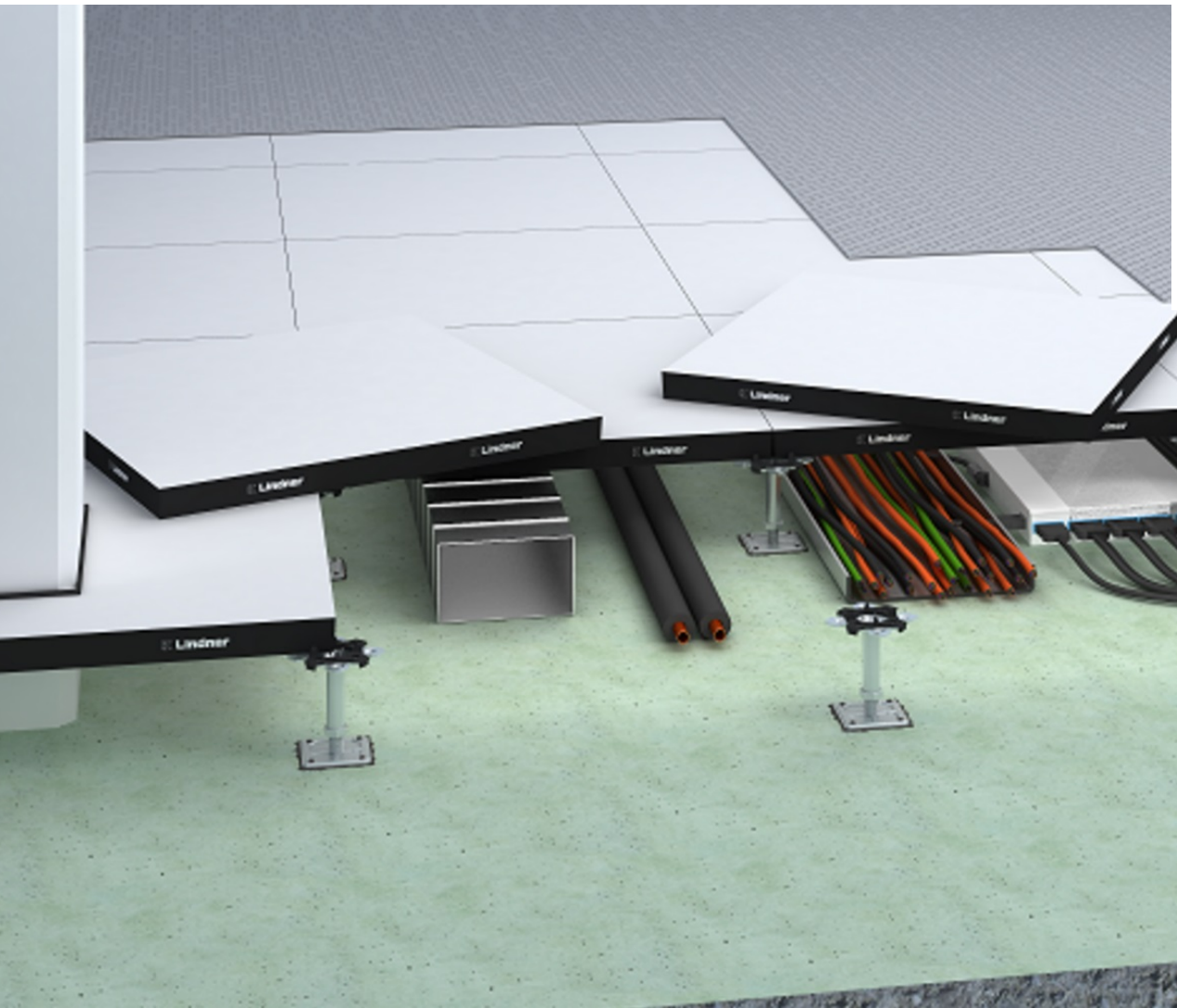


General Information

Lindner Group

Programme holder

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

Declaration number

EPD-LIN-20240490-CBB1-EN

This declaration is based on the product category rules:

System floors, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

11/06/2025

Valid to

10/06/2030

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

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

Refurbished Raised floor panel Lindner LOOP prime and LOOP aurum

Owner of the declaration

Lindner Group
Bahnhofstraße 29
94424 Arnstorf
Germany

Declared product / declared unit

1 m² of refurbished raised floor panel LOOP prime/LOOP aurum

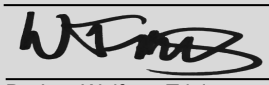
Scope:

This EPD relates to the refurbishment, transport, and disposal of a representative raised floor panel, Lindner LOOP Prime and LOOP Aurum. The results are valid for all LOOP Prime and Aurum panels with a thickness between 32 and 39 mm.
The collected data refers to the year 2023. The production facilities are located in Arnstorf and Dettelbach, Germany.
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



Dr.-Ing. Wolfram Trinius,
(Independent verifier)

Product

Product description/Product definition

The declared product Lindner raised access floor panel, type LOOP prime/LOOP aurum is a refurbished gypsum fibreboard, which is an essential component of the raised access floor system type LOOP prime/LOOP aurum. The declared product has a thickness of 39 mm and bulk density of 1.500 kg/m³. As a worst-case representative, this product covers a range with the thickness between 32 mm and 39 mm. The refurbished raised access floor panels are manufactured in the dimensions 595 x 595 mm as standard. LOOP prime is produced with edge bands on the sides, LOOP aurum is produced without the edge trim. 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.

Application

The raised access floor panels made of gypsum fiber are primarily used in public, commercial, and private buildings. In combination with additional components, the raised floor system type LOOP Prime/LOOP creates cavities or installation spaces beneath them.

Technical Data

LOOP Prime and LOOP Aurum are two lines of refurbished NORTEC raised floor panels made from calcium sulfate. The NORTEC panels are available through conventional sales or a buy-back guarantee. In the conventional sales model, clients purchase the product and have two disposal options at the end of the building's life cycle: they can either dispose of the panels according to local regulations with a waste disposal company or return the product directly to the manufacturer.

Additionally, a buy-back guarantee and rental option are available. When the client no longer requires the NORTEC product, they can return it to the factory for refurbishment.

The dismantling of the raised floor panels for refurbishment can be performed by Lindner or a trained company, with the primary goal of preventing damage to the product during the dismantling process. The dismantled and delivered calcium sulfate panels are checked for their technical properties after delivery.

In response to the principles of circular economy and resource scarcity, Lindner has committed to refurbishing the raised floor panels and reintroducing them to the market. The high density of the NORTEC panels, at 1500 kg/m³, facilitates refurbishment without compromising the integrity of the product.

Once the NORTEC panels are returned to the Lindner factory, they undergo a refurbishment process and are subsequently rebranded as LOOP raised floor panels. The top of the board and the side edge bands are milled off. In a further process, edge bands are attached to the sides of the LOOP Prime panels, while the LOOP Aurum remains without edge banding.

More information can be found here: https://www.lindner-group.com/en/expertise/green-building-circular-construction/reused-products-reusable-products

Name	Value	Unit
System construction (total, FF)	148 - 164	mm
Layer thickness base courese (from - to)	32 - 39	m
Substructure (from - to)	0 - 0	mm
Weight per system component	50 - 59	kg
Density of the base course	-	kg/m^3
Point load Statics (EN 12825 / EN 13213)	2 - 0	kN
Fire protection (EN 13501/DIN 4102) building material class	A1, A2	-
Fire protection (EN 13501/DIN 4102) Fire resistance	REI30, REI60 F30/F60	-
Electrostatics (DIN EN 1081)	10	Ω
Noise protection (EN ISO 140-8 / EN ISO140-3 / EN ISO 10848-2 / EN ISO 11654)	48 - 0	dB
Formaldehyde emissions acc. to EN 717-1	2	µg/m^3

For raised access floors, installation must be carried out by trained personnel.

There is no change in the material properties during the utilization phase. All technical values remain unchanged. Further instructions can be found in the installation guidelines.

Based on current knowledge, no health hazards or causes of impairments are expected to occur in the case of appropriate applications for raised access floors according to *DIN EN 12825: 2002-04*, Raised Floors.

LOOP raised floor panels are intended for indoor installation and should generally not come into contact with water. Short exposure to moisture will not damage the system panels, provided that they can dry completely afterwards. However, exposure of the raised floor system to larger amounts of water over an extended period will not lead to the leaching of substances that may pollute watercourses.

The durability and functionality of the panel system will be impaired in the event of mechanical damage. Depending on the extent of the damaged areas, they can be repaired through replacement or new installation without compromising functionality.

Performance data of the product is provided in accordance with harmonized standards and based on provisions for harmonization.

Base materials/Ancillary materials

Name	Value	Unit
Fibre-reinforced calcium sulphate panel	99	%
Hot melt adhesive	<0,5	%
Edge trim	<0,5	%

This product contains substances listed in the *candidate list* (date: 12.07.2024) exceeding 0.1 percentage by mass: no.

Reference service life

A reference service life according to *ISO 15686* cannot be calculated for this product. The technical service life is therefore 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" from the Federal Office for Construction and

Regional Planning *(BBSR)*. The BNB assumes that raised floor systems and raised floor panels will have a service life of more than 50 years. The stated service life is contingent upon proper use, preservation, and care.

LCA: Calculation rules

Declared Unit

The declared unit is 1 m² refurbished calciumsulphate raised floor panel with a weight of 58.7 kg /m² and bulk density of 1500 kg/m3. The declared unit is a representative product with the top thickness in the range of product group, hence carrying the highest environmental impact, known as the worst case. The product LOOP prime and LOOP aurum, further on read as LOOP, are available in different heights of the floor panels, between 32mm and 39 mm.
The declared values for environmental impacts apply specifically to the 39 mm thickness. However, after calculating the weight deviations (kg/m²) for other thicknesses in the product range (which vary between 0.41% and 14.91%), the results of the Life Cycle Assessment (LCA) are strong and represent the entire product range. This means that to accurately reflect the environmental impacts for each specific thickness, mathematical calculations or conversions should be done.

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	m^2
Grammage (incl. subconstruction)	58.7	kg/m^2
Gross density	1500	kg/m^3
Layer thickness	0.039	m

The expenditures during the refurbishment remain the same, as the surface of 1 m² is being refurbished.

System boundary

In relation to the recorded phases of the life cycle in accordance with section 5.2 of *EN 15804+A2*, the declaration type corresponds:
cradle to gate with options, modules C1–C4, and module D (A1–A3 + C + D and additional modules A4 and A5).

The dismantling of the initial panel occurs mechanically. The dismantled and recovered calcium sulfate panel, NORTEC, is then brought back to the factory. The raised floor panel enters the system free of burden.

- A1, raw material supply, corresponds to the additional work involved in the selective dismantling of products for a reuse
- A2, corresponds to transport from the deconstruction site to the processing plant
- A3, refurbishment, corresponds to all benefits and burdens that can be allocated to the reprocessing process
- A3 manufacture of packaging
- A4 transport to the building site
- A5 installation in the building, This module does not include the materials for installation (glues and sealants). Module 5 includes only the environmental impact for the disposal of the packaging of the analysed product
- C1 deconstruction, demolition
- C2 transport to recovery/waste disposal
- C3 waste processing for reuse, recovery and/or recycling
- Module D, Reuse, recovery and/or recycling potentials, expressed as net impacts and benefits.

Geographic Representativeness

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

Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The LOOP raised floor panel consists of a mixture of calciumsulphat, secondary cellulose and water.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	2	kg C
Biogenic carbon content in accompanying packaging	0.53	kg C

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

The disassembled product is packed at the construction site (formerly C1 or the foreground system product) on the reusable wooden pallet and transported by truck to the Lindner production plant. For scaling reasons, the transport distance from the deconstruction site to the refurbishing location is modeled as 100 km.

Once the panels have arrived at the Lindner production plant, the recovered panels undergo quality assurance. Panels that do not fulfill the technical requirements will be rejected. After that, the panel is beveled or milled on the upper side and edges using special machines.

In the next step, all four side edges receive a layer of adhesive, onto which a brand-new edge trim for the LOOP Prime product line is applied. In the case of the LOOP Aurum product, there is no edge trim to be glued on the edges. The edge trim serves only as aesthetic purpose and not a functional one.

Transport from the gate to the site (A4)

Name	Value	Unit
Litres of fuel	0.137	l/100km
Transport distance	-	km
Gross density of products transported	1500	kg/m^3
Capacity utilisation volume factor	70	-

End of life (C1-C4)

For this study, three different scenarios for the disposal of the product after the use stage have been declared. All of them are

based on relevant technical information defined in EN 15804. The scenarios are realistic and representative for the manufacturer.:

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

Name	Value	Unit
Scenario 0. Collected separately Collection rate 100%	58.7	kg
Scenario 0. Waste fraction into landfill ≈ 3.3%	1.94	kg
Scenario 0. Panels for refurbishment and reuse ≈ 96.7%	56.76	kg
Scenario 1. Collected separately Collection rate 100%	58.7	kg
Scenario 1. Landfill 100%	58.7	kg
Scenario 2. Collected separately Collection rate 100%	58.7	kg
Scenario 2. Waste fraction into land,fill 2%	1.17	kg
Scenario 2. Panels for shredding and recycling 98%	57.53	kg

The default scenario 0 is refurbishment for reuse, the minimal expenditure for refurbishment will be booked under C3. Scenario 1 involves Landfilling which contributes minimal emission under C4/1, C3/1 will be declared zero. In contrast, for Scenario 2, the product undergoes shredding for recycling process, whose energy expenditure will be booked under C3/2.

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

For the product itself, no potentials for reuse and recycling have been recorded under Module D. The potentials beyond the system boundary in module D only involve credits gained from energy recovery through the incineration of packaging material.

Name	Value	Unit
Energy recovery - electrical energy - Scenario 0/1/2 - A3	0.147	MJ
Energy recovery - thermal energy - Scenario 0/1/2 - A5	0.265	MJ

LCA: Results

Environmental impacts are determined using characterization factors in accordance with the requirements outlined in Annex C of /DIN EN 15804/.

The following tables contain the results of the LCA for 1 m² of refurbished raised floor panel LOOP prime/LOOP aurum.

To our commitment to sustainability and efficiency, we have designated Scenario 0 (reuse) as our default scenario. This not only minimizes waste and reduces environmental impact but also optimizes resource utilization, ultimately contributing to a more sustainable operational model.

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 2 and 3, but not for Scenario 1. Due to the limitations of the tool, it wasn't possible to add different scenarios for C1, so the worst-case scenario, which involves C1 for ReUse, has been taken into account.

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: 58,7 kg 1 m² Lindner refurbished raised floor panel LOOP prime/LOOP aurum

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	1.43E+00	4.88E-01	1.24E-01	3.46E-02	4.77E-01	4.77E-01	4.77E-01	8.14E-01	0	1.56E+00	4.6E-02	8.42E-01	2.64E-02	-7.03E-02	-7.03E-02	-7.03E-02
GWP-fossil	kg CO_2 eq	1.4E+00	4.87E-01	1.79E-03	3.46E-02	4.77E-01	4.77E-01	4.77E-01	8.14E-01	0	1.56E+00	4.69E-02	8.69E-01	2.69E-02	-6.97E-02	-6.97E-02	-6.97E-02
GWP-biogenic	kg CO_2 eq	1.83E-02	-2.19E-03	1.22E-01	4.13E-06	-2.15E-03	-2.15E-03	-2.15E-03	9.7E-05	0	1.46E-03	-1.12E-03	-2.99E-02	-6.41E-04	-5.6E-04	-5.6E-04	-5.6E-04
GWP-luluc	kg CO_2 eq	3.64E-03	2.93E-03	4.11E-07	5.1E-06	2.87E-03	2.87E-03	2.87E-03	1.2E-04	0	1.51E-04	1.95E-04	2.74E-03	1.12E-04	-6.96E-06	-6.96E-06	-6.96E-06
ODP	kg CFC11 eq	6.18E-13	1.21E-13	1.05E-14	2.07E-15	1.18E-13	1.18E-13	1.18E-13	4.86E-14	0	1.05E-13	8.23E-14	2.27E-12	4.77E-14	-9.78E-13	-9.78E-13	-9.78E-13
AP	mol H^+ eq	1.87E-03	6.52E-04	1.73E-05	4.13E-05	6.38E-04	6.38E-04	6.38E-04	9.71E-04	0	1.43E-03	2.4E-04	6.25E-03	1.38E-04	-7.49E-05	-7.49E-05	-7.49E-05
EP-freshwater	kg P eq	1.6E-06	1.15E-06	2.96E-09	3.49E-09	1.13E-06	1.13E-06	1.13E-06	8.21E-08	0	1.43E-07	1.01E-07	1.78E-06	5.82E-08	-2.16E-07	-2.16E-07	-2.16E-07
EP-marine	kg N eq	6.62E-04	2.44E-04	4.97E-06	1.37E-05	2.38E-04	2.38E-04	2.38E-04	3.23E-04	0	5.29E-04	6.46E-05	1.62E-03	3.71E-05	-2.72E-05	-2.72E-05	-2.72E-05
EP-terrestrial	mol N eq	7.41E-03	2.88E-03	7.17E-05	1.49E-04	2.82E-03	2.82E-03	2.82E-03	3.51E-03	0	5.79E-03	7.18E-04	1.78E-02	4.12E-04	-2.88E-04	-2.88E-04	-2.88E-04
POCP	kg NMVOC eq	1.98E-03	5.78E-04	1.37E-05	3.79E-05	5.66E-04	5.66E-04	5.66E-04	8.91E-04	0	1.47E-03	1.9E-04	4.88E-03	1.09E-04	-6.92E-05	-6.92E-05	-6.92E-05
ADPE	kg Sb eq	4.67E-08	3.54E-08	9.8E-11	1.45E-10	3.47E-08	3.47E-08	3.47E-08	3.41E-09	0	1.13E-08	2.63E-09	4.09E-08	1.51E-09	-6.86E-09	-6.86E-09	-6.86E-09
ADPF	MJ	2.16E+01	6.66E+00	2.65E-02	5.16E-01	6.51E+00	6.51E+00	6.51E+00	1.21E+01	0	2.47E+01	6.36E-01	1.17E+01	3.65E-01	-1.08E+00	-1.08E+00	-1.08E+00
WDP	m^3 world eq deprived	2.79E-02	2.57E-03	1.16E-02	1.97E-04	2.51E-03	2.51E-03	2.51E-03	4.62E-03	0	5.32E-03	3.46E-03	9.66E-02	1.98E-03	-1.05E-03	-1.05E-03	-1.05E-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: 58,7 kg 1 m² Lindner refurbished raised floor panel LOOP prime/LOOP aurum

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	-2.51E+01	4.46E-01	2.7E+01	1.96E-03	4.37E-01	4.37E-01	4.37E-01	4.62E-02	0	1.01E-01	8.19E-02	1.92E+00	4.71E-02	-4.75E-01	-4.75E-01	-4.75E-01
PERM	MJ	2.7E+01	0	-2.7E+01	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	1.89E+00	4.46E-01	6.61E-03	1.96E-03	4.37E-01	4.37E-01	4.37E-01	4.62E-02	0	1.01E-01	8.19E-02	1.92E+00	4.71E-02	-4.75E-01	-4.75E-01	-4.75E-01
PENRE	MJ	1.6E+01	6.67E+00	2.65E-02	5.17E-01	6.53E+00	6.53E+00	6.53E+00	1.21E+01	0	2.47E+01	6.2E+00	1.73E+01	5.93E+00	-1.08E+00	-1.08E+00	-1.08E+00
PENRM	MJ	5.56E+00	0	0	0	0	0	0	0	0	0	-5.56E+00	-5.56E+00	-5.56E+00	0	0	0
PENRT	MJ	2.16E+01	6.67E+00	2.65E-02	5.17E-01	6.53E+00	6.53E+00	6.53E+00	1.21E+01	0	2.47E+01	6.37E-01	1.17E+01	3.65E-01	-1.08E+00	-1.08E+00	-1.08E+00
SM	kg	6.17E+01	0	0	0	0	0	0	0	0	0	0	0	0	1.2E+02	6E+01	1.2E+02
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	2.82E-03	3.97E-04	2.73E-04	7.78E-05	3.89E-04	3.89E-04	3.89E-04	1.83E-03	0	1.94E-03	1.17E-04	2.96E-03	6.7E-05	-1.68E-04	-1.68E-04	-1.68E-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: 58,7 kg 1 m² Lindner refurbished raised floor panel LOOP prime/LOOP aurum

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	6.55E-07	1.12E-11	5.99E-13	2.63E-11	1.1E-11	1.1E-11	1.1E-11	6.17E-10	0	3.49E-09	9.3E-12	2.53E-10	5.28E-12	-3.76E-11	-3.76E-11	-3.76E-11
NHWD	kg	2.47E-01	9.98E-04	2.08E-03	1.35E-04	9.77E-04	9.76E-04	9.76E-04	3.18E-03	0	6.71E-03	2.05E+00	5.88E+01	1.18E+00	-6.24E-04	-6.24E-04	-6.24E-04
RWD	kg	1.04E-03	8.78E-06	1.5E-06	4.49E-05	8.59E-06	8.59E-06	8.59E-06	1.06E-03	0	1.09E-03	4.97E-06	1.32E-04	2.81E-06	-4.92E-05	-4.92E-05	-4.92E-05
CRU	kg	0	0	0	0	0	0	0	5.67E+01	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	0	5.75E+01	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	1.47E-01	0	1.47E-01	0	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	2.65E-01	0	2.65E-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: 58,7 kg 1 m² Lindner refurbished raised floor panel LOOP prime/LOOP aurum

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	3.1E-08	5.34E-09	1.16E-10	4.02E-10	5.23E-09	5.23E-09	5.23E-09	9.44E-09	0	1.23E-08	2.86E-09	7.69E-08	1.64E-09	-5.52E-10	-5.52E-10	-5.52E-10
IR	kBq U235 eq	8.24E-02	9.4E-04	2.4E-04	3.48E-03	9.2E-04	9.2E-04	9.2E-04	8.17E-02	0	8.45E-02	5.72E-04	1.5E-02	3.19E-04	-5.2E-03	-5.2E-03	-5.2E-03
ETP-fw	CTUe	7.67E+00	4.86E+00	1.09E-02	5.63E-02	4.75E+00	4.75E+00	4.75E+00	1.32E+00	0	1.43E+00	3.87E-01	6.35E+00	2.22E-01	-1.94E-01	-1.94E-01	-1.94E-01
HTP-c	CTUh	2.71E-10	9.69E-11	1.12E-12	2.25E-12	9.48E-11	9.48E-11	9.48E-11	5.3E-11	0	1.43E-10	3.77E-11	9.86E-10	2.16E-11	-1.4E-11	-1.4E-11	-1.4E-11
HTP-nc	CTUh	9.22E-09	4.06E-09	6.19E-11	1.19E-10	3.97E-09	3.97E-09	3.97E-09	2.8E-09	0	7.29E-09	3.77E-09	1.04E-07	2.16E-09	-3.47E-10	-3.47E-10	-3.47E-10
SQP	SQP	1.98E+01	2.37E+00	8.08E-03	4.85E-03	2.32E+00	2.32E+00	2.32E+00	1.14E-01	0	1.53E-01	1.8E-01	2.96E+00	1.06E-01	-3.3E-01	-3.3E-01	-3.3E-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.

References

Standards and References

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

BBSR
Federal Institute for Research on Building, UrbanAffairs and Spatial Development (BBSR): Service lifesof construction components. Service lifes ofconstruction components for Life Cycle Assessmentsaccording to the assessment system for sustainableconstruction (BNB), in: Federal Ministry for theEnvironment, Nature Conservation, Building andNuclear Safety (ed.), 2017.

EN PCR part A
Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019 /IBU PART A/. Version 1.3.

EN PCR Teil A_Annex_ReUse
Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019, Version 1.3.

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

DIN EN 12825
DIN EN 12825:2002-04, Raised floors

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

DIN 4102-1
DIN 4102-1:1998-05, Fire behaviour of construction materials and components – Part 1: Construction materials; concepts, requirements and inspections

DIN EN 1081
DIN EN 1081:2021-01, Determination of electrical resistance for Resilient, laminate and modular multi-layer floor coverings

EN ISO 140-3
EN ISO 140-3, Measurement of airborne sound insulation of building elements-Specifications, requirements and test methods.

EN ISO 140-8
EN ISO 140-8, Standard relates to the measurement of sound insulation in buildings and of building elements

EN ISO 10848-2
EN ISO 10848-2, Standards for laboratory measurement of the flanking transmission of airborne and impact sound between adjoining rooms - common floor, ceiling, or adjoining walls

EN ISO 11654
EN ISO 11654, Standard Determination of acoustic absorption coefficient and the classification of acoustic absorbers

European Chemicals Agency(ECHA)
ECHA, guidance and compliance materials - ensure the safe use of chemicals - scientific and technical advice on EU chemical policies www.echa.europa.eu

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

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

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

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