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-20250235-CBA1-EN
Issue date	06.06.2025
Valid to	05.06.2030

'LinCrete' Glass-Fibre Reinforced Concrete

Lindner Group

Institut Bauen und Umwelt e.V.

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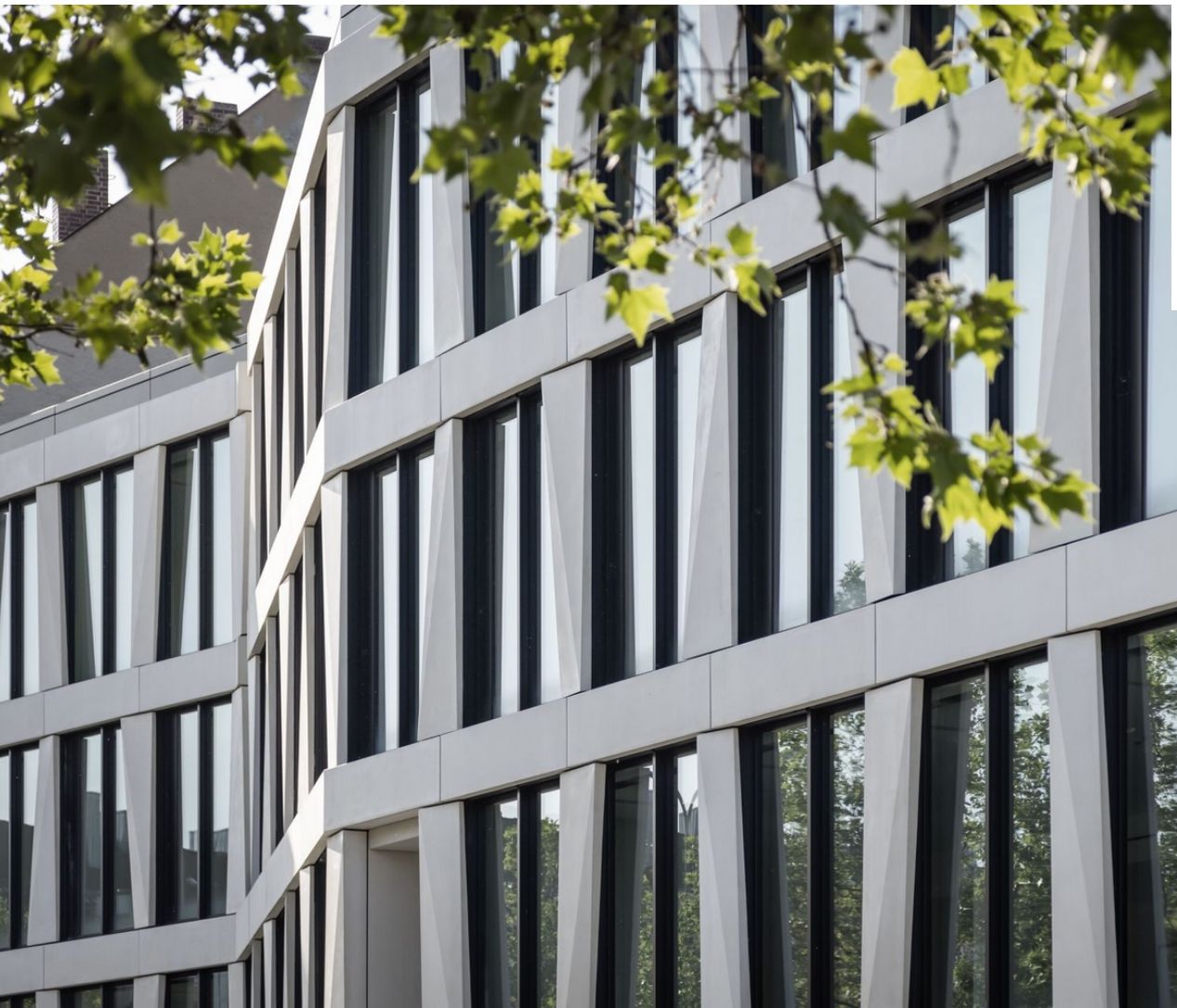


General Information

Lindner Group

Programme holder

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

Declaration number

EPD-LIN-20250235-CBA1-EN

This declaration is based on the product category rules:

Fibre cement / Fibre concrete, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

06.06.2025

Valid to

05.06.2030

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

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

'LinCrete' Glass-Fibre Reinforced Concrete

Owner of the declaration

Lindner Group
Bahnhofstraße 5
94424 Arnstorf
Germany

Declared product / declared unit

1 tonne of 'LinCrete' Glass-Fibre Reinforced Concrete.

Scope:

LinCrete is a glass-fibre reinforced concrete (GFRC) material used for façade and interior finishing applications. These prefabricated GFRC panels are produced with alkali-resistant glass fibres, enhancing tensile strength, impact resistance, and resilience, and have an approximate density of 2,100 kg/m³. The panels are manufactured in custom dimensions, typically up to 6,000 x 3,000 mm, with a thickness determined by specific project requirements.
The scope of this core EPD focuses exclusively on the declaration of GFRC panels and excludes substructures components.
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. Niels Jungbluth,
(Independent verifier)

Product

Product description/Product definition

'LinCrete' glass-fibre reinforced concrete (GFRC) products are made of architectural concrete with fine crafted surfaces. The reinforcement of the fine-grained concrete consists of alkali-resistant glass fibres (AR glass) that are capable of withstanding the highly alkaline environment in the cementitious mix and therefore provide a durable material that also resists severe exterior conditions. The product is produced as thin-walled non-load-bearing elements in a material thickness range of typically a minimum of 12 and up to 30 mm with customisable geometrical shapes, colours and surfaces.

For the use and application of the product the respective national provisions at the place of use apply. 'LinCrete' GFRC products are produced in accordance with the standard DIN EN 1169, which is, up to the date of creating this document, a not harmonized standard. Among other standards that apply, 'LinCrete' GFRC is tested according to DIN EN 1170 and classified according to DIN EN 15191. Furthermore, the GFRC elements are produced according to the manufacturer's specification of GRCA Full Membership (The International Glassfibre Reinforced Concrete Association - https://www.grca.online/).

Application

'LinCrete' GFRC elements serve as a cladding material for curtain wall systems resp. back-ventilated façade systems, suspended ceilings, wall coverings, partition and raised floor systems that are mounted to substructure systems made of metal or wood or load-bearing concrete structures. Furthermore, furniture and planting products can be integrated in the above-mentioned building products.

Technical Data

The following technical performance data applies:

Constructional data

Name	Value	Unit
Thermal conductivity	0.8 - 1	W/(mK)
Calculation value for thermal conductivity	0.8	W/(mK)
Water vapour diffusion resistance factor acc. to DIN V 4108-4, EN ISO 12572	50 - 200 µ	-
Swelling (air-dry to water-saturated)	0.2 - 0.5	mm/m
Sound absorption (based on a perforated panel with 14 % open area and mineral wool backing)	Up to αw=60 and NRC=70	%
Gross density	2000 - 2500	kg/m^3
Compressive strength	40 - 80	N/mm^2
Tensile strength	6 - 15	N/mm^2
Flexural strength	8 - 40	N/mm^2
Modulus of elasticity	10000 - 30000	N/mm^2
Moisture content at 23 °C, 80% humidity	7 - 10	M.-%
Coefficient of thermal expansion	8 - 12	$10^{-6}K^{-1}$
Chemical resistance	Resistant to many ph neutral or light alkaline agents	-
Ageing resistance	According to tests of EN 12467	-
Permanent temperature resistance	-40 to +70	°C

Extraordinary Effects

Fire

The fire behaviour of LinCrete GFRC elements, including acoustic tissue and mineral wool backing, has been tested according to EN 13501-1 and classified as a non-combustible material. It is rated as A2 for building material class, s1 for smoke gas development, and d0 for burning droplets.

Water

LinCrete GFRC behaves similarly to standard precast concrete when exposed to water, with no expected environmental consequences. Hardened concrete is classified as "inert" and does not have a water hazard class.

Mechanical destruction

Under excessive mechanical loading, GFRC cladding may exhibit brittle fracture behaviour, leading to chipping and the formation of sharp edges. Torn edges may expose the embedded glass fibres, but there are no known environmental hazards associated with their release.

The resistance of sprayed GFRC to mechanical loads is tested and rated according to DIN EN 12467 as Class 4. Additionally, it meets the requirements of GFRC Grade 8/18 (LOP = Level of Proportionality; MOR = Modulus of Rupture) as per DIN EN 15191.

Base materials/Ancillary materials

	Each materiality in final product	
	Mass (kg)	Portion (%)
Sand	448,23	44,82%
Cement	372,28	37,23%
Glass fibre	49,34	4,93%
Admixture	54,69	5,47%
Color	3,09	0,31%
Coating	4,40	0,44%
Water	67,96	6,80%
Sum	1000,00	100,00%

Based on PCR part B, the main constituents of the product are indicated as both mass kg and percentages to enable the user of this core EPD to understand the composition of the final product in delivery status (dU= 1000 kg).

'LinCrete' GFRC products are produced in accordance with DIN EN ISO 9001:2015. Environmental and health & safety measures are addressed by adhering to the national environment and health regulations as well as to the respective company policies for environment and safety management. Lindner as the product manufacturer of 'LinCrete' GFRC applies the following laws and duties as a downstream-user:

- Introduction of steps for risk reduction
- Disclosure duty
- Creation of security reports / integration into the European safety data sheet

As a downstream-user and manufacturer of products the Lindner Group has no obligation to register, but it is being checked with new order if any of the suppliers involved need to register.

The products do not contain any substances of concern (SVHC) in a concentration > 0.1 percent by mass (according to Article 33 REACH).

We confirm that we will not use any substances contained in the lists (Authorization List - Annex XIV, Restriction list - Annex XVII). In addition, the prohibitions for use and production are strictly followed, especially for asbestos, PCB, PCP, bio-persistent fibres (certain glass fibres and rock wool) and further materials listed in the regulation of hazardous material and chemicals.

Declaration regarding the use of hazardous substances:

1) This product/article at least one partial article contains substances listed in the candidate list (date: 27.06.2024) exceeding 0.1 percentage by mass: No
Although the product has no obligation to be listed under REACH, a safety data sheet for 'LinCrete' GFRC products is available upon request.

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

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

Reference service life

The material and technical characteristics of 'LinCrete' GRC products as façade cladding remain effective for a calculated duration of more than 50 years.
GFRC elements can be expected to remain durable for a minimum of 50 years according to the BBSR table, code no. 335 211, issue 02/2017, published by the German Federal Institute for Research on Building, Urban Affairs and Spatial Development.

LCA: Calculation rules

Declared Unit

The declared unit for LinCrete cladding is 1 tonne. Typically, large-sized LinCrete elements are manufactured and delivered according to project-specific requirements and technical or functional constraints

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	t
Gross density	2100	kg/m^3

System boundary

cradle to gate with options, modules C1–C4, and module D (A1–A3 + C + D and additional modules. The additional modules: A4 and A5
Specifically, the following processes were included in each module for the production of LinCrete:

• Raw material provision; including colour pigments and exposed aggregates (A1)
• Transport of raw materials, and consumables to the plant (A2)
• Production processes at the plant, including energy costs (electricity, thermal energy), water consumption, production of auxiliary (formwork) and packaging materials and disposal of residual substances including production waste, small portion of packaging material and formwork (A3)
• Transport from the factory gate to the construction site (A4)
• Disposal of packaging materials (A5)
• Dismantling LinCrete from the building (C1)
• Transportation to the disposal facility (C2)
• Module C3 is not relevant as LinCrete is sent directly to landfill (C3)
• Landfilling of 100% of LinCrete panels (C4)
• Reporting on the benefits and loads beyond the system boundary, including energy recovery from the disposal of materials (D)

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

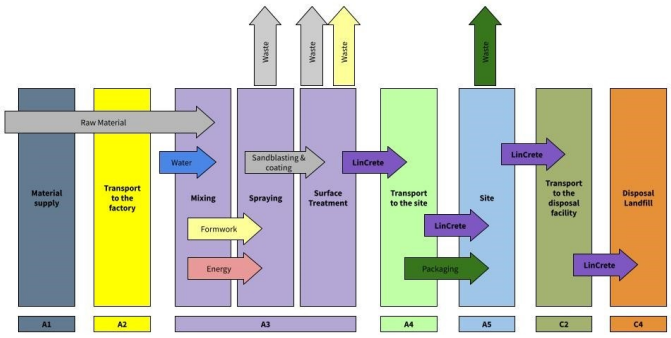
Here, the product itself doesn't contain any biobased materials, so there is no biogenic content for the product. However, under module A3, there is the input of formwork as auxiliary material at the factory gate, including plywood and laminated boards. The biogenic carbon content in the accompanying packaging includes timber, chipboard, and cardboard.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	36.88	kg C

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

Technical scenario information



Simplified illustration of the modeled life cycle

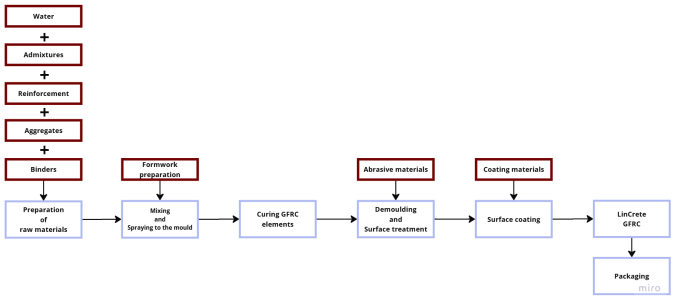
Production stage (A1-A3)

Module A1 covers the extraction, processing, and transportation of raw materials used in LinCrete production, as well as the electricity required for these processes. All upstream environmental impacts associated with raw materials are included. The primary raw materials for LinCrete claddings include:

- Sand: Ensuring high-quality quartz sand;
- Cement: Both white and grey cement are used, meeting standardized specifications for concrete production;
- Glass fibres: Alkali-resistant glass fibres are incorporated to enhance tensile strength and durability;
- Water: Process water, compliant with DIN EN 1008 standards, is used in the concrete mixture.

In addition to these primary materials, additives such as silica dust, metakaolin, superplasticizers, hardeners, and set accelerators are incorporated to optimize the workability, strength, and durability of LinCrete. For further processes, materials for sandblasting and coating are also included. These materials are sourced from certified suppliers to ensure consistent quality and performance. Depending on project-specific requirements, additional exposed aggregates and colour pigments may be consumed to meet customized design and functional needs.
Module A2 covers the transportation of raw materials, and an average distance of 100 km is assumed for raw material. Internal transport within the plant is carried out using forklifts, and the energy consumption from forklift is provided by diesel.

Module A3 covers the production phase. The first step in producing LinCrete GFRC products, after preparing the raw materials, is the preparation of moulds according to the project-specific design. The workshop is covered with PE foil to maintain a controlled environment. These moulds are supported by plywood or laminated boards and secured with screws. Ideally, the moulds are designed for multiple uses.



Production process

The facing layer is then sprayed into the mould using a spray gun. Between each GFRC layer, the correct curing time, depending on factors such as temperature, humidity, and the use of plasticizers, must be observed to prevent delamination. During the spraying process, over-sprayed material is collected, dried, and powdered for reuse within the same production process. This material contributes approximately 93.6 kg out of the total input of raw material. While this is reused material, it is classified as internally recycled and does not qualify as secondary material since it is not sourced from external waste streams.

The manufacturing process includes the energy used for production activities, which is sourced from the German national electricity mix, utilizing the residual power grid mix for Germany.

Waste disposal in A3 includes the disposal of construction rubble to landfill, abrasive material waste (from surface treatment)[1] to designated special landfills due to its unique composition, wooden remnants from formwork and a small portion of packaging waste to incineration, and metal scraps to recycling.

The product is primarily packed using timber-screwed frames, with the packaging design tailored to the shape of the GFRC elements, or on standard Euro pallets. To protect the product from environmental conditions, sliding covers are applied. Additional materials such as chipboards, cardboard for edge protection, Styrofoam, polypropylene (PP), and adhesive tapes may also be used. The packaging contains biogenic carbon.

Construction stage (A4-A5)

Module A4 covers the transportation of the packed product from the factory gate to the construction site. A transport scenario assumes a distance of 100 km in order to be scalable. This includes all aspects of transportation from the factory to the installation location.

Module A5 includes only the environmental impacts associated with the disposal of packaging for the GFRC panels. All packaging materials are transported for incineration, except for Euro pallets, which are reused locally.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	1.25	kg/DU
Transport distance	100	km
Capacity utilisation (including empty runs)	70	%
Total weight of the transported good (packed)	1104.19	kg

End of life (C1-C4)

The end-of-life scenario for LinCrete façade claddings assumes that it takes place after a minimum service life of 50 years. At the end of their lifecycle, the façade elements are deconstructed or demolished and transported directly to landfill sites for final disposal.

Module C1 accounts for the environmental impacts of the processes required to dismantle the LinCrete elements at the end of their service life.

Module C2 includes fuel consumption, vehicle emissions, and the assumed transport distance of 50 km.

Module C3 is not relevant as LinCrete is sent directly to landfill without intermediate recycling, reuse, or recovery processes.

Module C4 accounts for the environmental impacts associated with landfilling of 100% of LinCrete panels.

Name	Value	Unit
Collected separately	1	t
Landfilling	1	t

** All dismantled and collected materials are sent to landfill.

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

Formwork components are considered part of the main product (not included in the Declared Unit but still critical for production), reaching their end-of-waste state in A3. This allows credits for thermal and electrical energy recovered from formwork and its auxiliary components in A3 to be allocated to Module D. However, loads and benefits from the incineration of packaging waste under A3 (as previously explained, 10% of packaging material is disposed of in A3) have not been allocated to this module.
In A5, thermal and electrical energy recovered from packaging materials is reported under Module D. It is assumed that 50% of wooden packaging structures, such as pallets, are reusable and therefore incur no environmental burden. The remaining 50% is sent for incineration and modelled with a correction factor. Additionally, cardboard and polymer-based packaging materials are incinerated in A5, and the recovered energy is credited under Module D.

Name	Value	Unit
Energy recovery, Formwork PU A3	0.088 kg	100%
Energy recovery, Formwork PE A3	1.96 kg	100%
Recycling, Formwork, screws A3	0.42 kg	100%
Energy recovery, Packaging PE and adhesive tapes A5	16.76 kg	100%
Energy recovery, Packaging- Wood A5	34.6 kg	100%
Energy recovery, Packaging, Cardboard A5	1.69 kg	100%
Recycling, Packaging, screw A5	4.26 kg	100%

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 tonne of 'LinCrete' glass-fibre-reinforced concrete, relating to the declared stages in the product's life.

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

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

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 tonne LinCrete

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	8.47E+02	4.35E+00	1.39E+02	0	3.94E+00	0	1.43E+01	2.51E+01
GWP-fossil	kg CO_2 eq	9.34E+02	4.34E+00	5.14E+01	0	3.93E+00	0	1.48E+01	-4.18E+01
GWP-biogenic	kg CO_2 eq	-8.64E+01	-1.97E-02	8.72E+01	0	-1.78E-02	0	-5.1E-01	6.69E+01
GWP-luluc	kg CO_2 eq	2.18E-01	2.61E-02	3.65E-03	0	2.37E-02	0	4.67E-02	-3.13E-02
ODP	kg CFC11 eq	2.08E-08	7.65E-13	6.88E-12	0	6.93E-13	0	3.82E-11	-2.44E-10
AP	mol H^+ eq	1.8E+00	4.7E-03	1.26E-02	0	4.26E-03	0	1.07E-01	-8.25E-02
EP-freshwater	kg P eq	2.22E-03	1.02E-05	3.38E-06	0	9.23E-06	0	3.03E-05	-7.06E-05
EP-marine	kg N eq	4.33E-01	1.62E-03	3.18E-03	0	1.47E-03	0	2.75E-02	-2.92E-02
EP-terrestrial	mol N eq	4.64E+00	1.97E-02	5.83E-02	0	1.78E-02	0	3.03E-01	-3.18E-01
POCP	kg NMVOC eq	1.25E+00	4.02E-03	8.35E-03	0	3.64E-03	0	8.31E-02	-8.63E-02
ADPE	kg Sb eq	6.46E-04	3.11E-07	9.14E-08	0	2.82E-07	0	6.94E-07	-2.66E-06
ADPF	MJ	9.42E+03	5.93E+01	1.92E+01	0	5.37E+01	0	2E+02	-6.45E+02
WDP	m^3 world eq deprived	8.18E+01	2.27E-02	5.6E+00	0	2.06E-02	0	1.65E+00	-2.44E+00

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

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 tonne LinCrete

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1.72E+03	3.83E+00	1.23E+03	0	3.47E+00	0	3.26E+01	-9.27E+02
PERM	MJ	1.23E+03	0	-1.23E+03	0	0	0	0	0
PERT	MJ	2.94E+03	3.83E+00	3.86E+00	0	3.47E+00	0	3.26E+01	-9.27E+02
PENRE	MJ	6.63E+03	5.93E+01	7.58E+02	0	5.37E+01	0	2.26E+03	-6.46E+02
PENRM	MJ	2.8E+03	0	-7.39E+02	0	0	0	-2.06E+03	0
PENRT	MJ	9.43E+03	5.93E+01	1.92E+01	0	5.37E+01	0	2E+02	-6.46E+02
SM	kg	5.97E-01	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m^3	2.57E+00	3.49E-03	1.32E-01	0	3.16E-03	0	5.05E-02	-1.24E-01

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 tonne LinCrete

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	1.11E-01	1.59E-10	1.85E-10	0	1.44E-10	0	4.36E-09	-2.53E-08
NHWD	kg	2.42E+02	8.65E-03	7E-01	0	7.83E-03	0	1E+03	-3.91E-01
RWD	kg	2.21E-01	6.2E-05	3.76E-04	0	5.62E-05	0	2.28E-03	-3.62E-02
CRU	kg	0	0	6.1E+01	0	0	0	0	0
MFR	kg	4.2E-01	0	4.26E+00	0	0	0	0	0

MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	4.19E+01	0	9.75E+01	0	0	0	0	0
EET	MJ	9.45E+01	0	2.23E+02	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:
1 tonne LinCrete

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	2.97E-05	3.25E-08	8.04E-08	0	2.94E-08	0	1.31E-06	-9.39E-06
IR	kBq U235 eq	2.08E+01	6.39E-03	4.18E-02	0	5.79E-03	0	2.64E-01	-5.81E+00
ETP-fw	CTUe	3.91E+03	4.46E+01	1.01E+01	0	4.04E+01	0	1.08E+02	-1.3E+02
HTP-c	CTUh	1.6E-07	8.8E-10	5.87E-10	0	7.97E-10	0	1.68E-08	-2.04E-08
HTP-nc	CTUh	7.35E-06	3.63E-08	1.77E-08	0	3.29E-08	0	1.77E-06	-1.77E-07
SQP	SQP	2.62E+04	2.11E+01	6.35E+00	0	1.91E+01	0	4.86E+01	-1E+04

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

EN 15804
EN 15804:2012+A1 2013, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

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

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

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

DIN EN 12467
DIN EN 12467:2018-07, Fiber Cement Panels — Product Specification and Test Methods

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

DIN EN 12878
DIN EN 12878:2014-07, Pigments for colouring cement — and/or lime-based construction materials - Requirements and test methods.

DIN EN 15422
DIN EN 15422:2008-06, Precast concrete products — Specification for glass fibres as reinforcement in mortar and concrete.

DIN EN 1170
Prefabricated concrete products — Test methods for glass fibre reinforced concrete.

EN 15191
DIN EN 15191:2010-04, Precast concrete products — Classification of glassfibre reinforced concrete performance

DIN EN 1169
DIN EN 1169: European Standard concerning the factory production control of prefabricated concrete products with glass fiber-reinforced concrete.

DIN 4108-4 | 2020-11
DIN 4108-4:2020-11, Thermal insulation and energy economy in buildings — Part 4: Hygrothermal design values.

ISO 12572
ISO 12572: Hygrothermal performance of building materials and products — Determination of water vapor transmission properties.

DIN EN 1008:2002-10
DIN EN 1008:2002-10, Mixing water for concrete - Specification for sampling, testing, and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete.

Further References
database GaBi 10.7 software
database GaBi 10.7 software/System developed by THINKSTEP (ServicePack 33).

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.

PCR part A
Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019, Version 1.4.

PCR Part B
Requirements on the Environmental Product Declaration (EPD) for fibre cement and fibre concrete products. Last amended: 01.08.2024, Version 11.

BBSR 2017
BBSR table, code no. 335 211, issue 02/2017, published by the German Federal Institute for Research on Building, Urban Affairs and Spatial Development.

REACH Regulation
Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH), Official Journal of the European Union, L396, 1-849.

Endnotes:
1. Infraserv GmbH & Co. Höchst KG. (2018). Datenblatt für Abfälle. https://www.industriepark-hoechst.com/media/standortportal/menue/powered-by/leistungen/dokumente_leistungen/entsorgung/entsorgungscenter/ab

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