EPD (Environmental Product Declaration)[1]

Registrierungs-Nummer: EPD-Kiwa-EE-190647-EN
Programmhalter: Kiwa-Ecobility Experts
Gültig bis: 25-07-2030

Bisotherm®

NORMA**PLAN** HBL –

Leichtbeton Planhohlblöcke aus Naturbims

L x B x H in cm:
49,7 x **17,5** x 24,8
12 DF

L x B x H in cm:
49,7 x **24,0** x 24,8
16 DF

L x B x H in cm:
24,7 x **24,0** x 24,8
8 DF

L x B x H in cm:
24,7 x **30,0** x 24,8
10 DF

L x B x H in cm:
24,7 x **36,5** x 24,8
12 DF

[1] Dieses Deckblatt ist nicht Bestandteil der EPD und dient ausschließlich zu Informationszwecken in deutscher Sprache

Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804+A2:2019

Hollow block-Masonry bricks made of lightweight concrete from natural aggregates

Registration number:	EPD-Kiwa-EE-190647-EN
Issue date:	25-07-2025
Valid until:	25-07-2030
Declaration owner:	KLB Klimaleichtblock GmbH
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

Hollow block- Masonry bricks made of lightweight concrete from natural aggregates

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-190647-EN

1.3 VALIDITY

Issue date: 25-07-2025

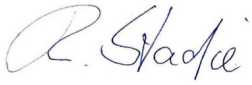
Valid until: 25-07-2030

1.4 PROGRAMME OPERATOR

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin
DE

Raoul Mancke

(Head of programme operations, Kiwa-Ecobility Experts)



Dr. Ronny Stadie

(Verification body, Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Manufacturer: KLB Klimaleichtblock GmbH

Address: Lohmannstraße 31, 56626 Andernach, Germany

E-mail: info@klb.de

Website: https://www.klb-klimaleichtblock.de

Production location 1: GERB. ZIEGLOWSKI GMBH & CO. KG
Address production location 1: Waldstarße 17, 56642, Kruft, Germany

Production location 2: Rünz und Hoffend GmbH CO. KG
Address production location 2: Brückenstr, 56220, Urmitz, Germany

Production location 3: Trasswerke Meurin Produktions- und Handelsgesellschaft mbH
Address production location 3: Meurinstr. 1, 56645 Nickenich, Germany

Production location 4: Bisotherm GmbH
Address production location 4: Eisenbahnstraße 12, 56218 Mülheim-Kärlich, Germany

1.6 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804+A2:2019 serves as the core PCR.

☐ Internal ☒ External

Lucas Pedro Berman, Senda

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The programme operator Kiwa-Ecobility Experts shall not be liable with respect to manufacturer data, life cycle assessment data and evidence.

1.8 PRODUCT CATEGORY RULES

Kiwa-Ecobility Experts (Kiwa-EE) – General Product Category Rules (2022-02-14)

DIN EN 16757 - Sustainability of construction works - Environmental product declarations - Product Category Rules for concrete and concrete elements; German version EN 16757:2022 (2023-03)

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804+A2:2019. For the evaluation of the comparability, the following aspects have to be considered in

1 General information

particular: PCR used, functional or declared unit, geographical reference, the definition of the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPD program operators may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2:2019 and ISO 14025.

1.10 CALCULATION BASIS

LCA method R<THINK: Ecobility Experts | EN15804+A2

LCA software*: Simapro 9.6

Characterization method: R<THINK characterization method (see references for more details)

LCA database profiles: ecoinvent (for version see references)

Version database: v3.19 (20250306)

** Simapro is used for calculating the characterized results of the Environmental profiles within R<THINK.*

1.11 LCA BACKGROUND REPORT

This EPD is generated on the basis of the LCA background report 'Hollow block- Masonry bricks made of lightweight concrete from natural aggregates' with the calculation identifier ReTHiNK-90647.

2 Product

2.1 PRODUCT DESCRIPTION

This is a specific EPD for the non-reinforced components of different formats and sizes made of lightweight aggregate concrete block (LAC block) with porous structure. LAC blocks are composed of natural aggregates, water and hydraulic binders (cement).

Composition of product is available in the following table:

Materail	Value	Unit
Cement	10	%
Washed pumice	22	%
Pumice sand	10	%
Pit pumice	40	%
Lava grain	10	%
Fly ash	1	%
Water	4	%
Other (Recycled material)	3	%
Total	100	%

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

The product is used as versatile building materials for masonry, including monolithic, load-bearing, and non-load-bearing exterior walls.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

As the entire life cycle of the product is not considered in the scope of the study, the specification of the reference service life (RSL) is voluntary. According to the information from the manufacturer, the RSL of the product is 80 years.

USED RSL (YR) IN THIS LCA CALCULATION:

80

2.4 TECHNICAL DATA

Technical data of the product is available in the following table:

Technical Property	Values/Classes
Format	Hollow Block
Strength Classes (MPa)	1.6-48
Bulk Density Classes (kg/m³)	400-2200
Performance Values	As per DIN EN 771-3:2015-11 (According to the Declaration of Performance based on the essential characteristics)
General Building Authority Approval	Z-17.1-262, -766, -797, - 842,Z-17.1-844

2.5 SUBSTANCES OF VERY HIGH CONCERN

No substance present in the product with a contribution of more than 0.1 % of the total weight is present on the "List of Potentially Hazardous Substances" (SVHC) that are candidates for authorisation under REACH legislation.

2.6 DESCRIPTION PRODUCTION PROCESS

The manufacturing operations are carried out across four production locations, each contributing equally to production (25%). These locations include:

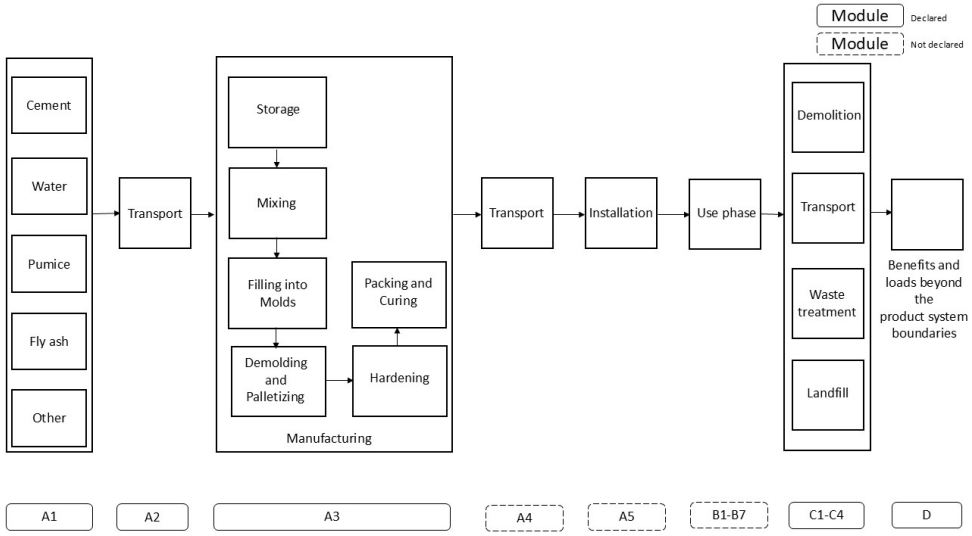
1. **Rünz und Hoffend GmbH Co. KG**, located at Brückenstr. 56220, Urmitz, Germany
2. **GEBR. ZIEGLOWSKI GMBH & CO. KG**, located at Waldstraße 17, 56642 Kruft, Germany
3. **Trasswerke Meurin Produktions- und Handelsgesellschaft mbH**, located at Meurinstr. 1, 56645 Nickenich, Germany
4. **Bisotherm GmbH**, located at Eisenbahnstraße 12, 56218 Mülheim-Kärlich, Germany

Below is a summary of the manufacturing process:

- Cement is added to natural lightweight aggregates (pumice);
- Aggregates are stored in silos or in the open air, depending on type;
- Binder, fly ash and additives are stored in silos;
- Aggregates are dosed and premixed dry with binder;

2 Product

- The mixture is combined with water to form lightweight concrete;
- Recycled water from the factory's water treatment plant is used;
- Lightweight concrete mass is filled into steel block molds;
- Cores for slots or chambers are given to molds as needed;
- Blocks are compacted and released using load and vibration;
- Demolded bricks are loaded onto pallets;
- Bricks are transported to dry high-bay warehouse for hardening (24-36 hours);
- Bricks are packed for commissioning after reaching sufficient strength;
- Fully cured in weatherproof packaging for at least 28 days;
- Delivered to construction site.



3 Calculation rules

3.1 DECLARED UNIT

1 m³ Hollow block

In Life Cycle Assessment (LCA) calculations, 1 m³ of the hollow block- masonry bricks made of lightweight concrete from natural aggregates was defined as the declared unit.

Reference unit: cubic meter (m3)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	m3
Weight per reference unit	803.600	kg
Conversion factor to 1 kg	0.001244	m3

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with modules C1-C4 and module D EPD. The life cycle stages included are as shown below:

(X = module included, ND = module not declared)

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN 15804 contain the following:

Module A1 = Raw material supply	Module B5 = Refurbishment
Module A2 = Transport	Module B6 = Operational energy use
Module A3 = Manufacturing	Module B7 = Operational water use
Module A4 = Transport	Module C1 = De-construction / Demolition
Module A5 = Construction - Installation process	Module C2 = Transport
Module B1 = Use	Module C3 = Waste Processing
Module B2 = Maintenance	Module C4 = Disposal
Module B3 = Repair	Module D = Benefits and loads beyond the product system boundaries
Module B4 = Replacement	

3.4 REPRESENTATIVENESS

This EPD is representative for Hollow block- Masonry bricks made of lightweight concrete from natural aggregates, a product of KLB Klimaleichtblock GmbH. The results of this EPD are representative for European Union.

3.5 CUT-OFF CRITERIA

Product stage (A1-A3)

3 Calculation rules

All input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. production waste) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

Construction process stage (A4-A5)

All input flows (e.g. transportation to the construction site, additional raw material use for construction, installation energy (use)of energy use for assembly , etc.) and output flows (e.g. construction waste, packaging waste, etc.) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

Use stage (B1-B3)

All (known) input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. emissions to soil, air and water, construction waste, packaging waste, end-of-life waste, etc.) related to the building fabric are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

End of life stage (C1-C4)

All input flows (e.g. energy use for demolition or disassembly, transport to waste processing, etc.) and output flows (e.g. end-of-life waste processing of the product, etc.) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

Benefits and loads beyond the system boundary (Module D)

All benefits and loads beyond the system boundary resulting from reusable products, recyclable materials and/or useful energy carriers leaving the product system are considered in this LCA.

Excluded Elements from LCA Calculation:

The manufacture of equipment used in production, buildings or any other capital goods;

The transport of personnel to the plant;

The transportation of personnel within the plant;

Research and development activities;

Long-term emissions.

3.6 ALLOCATION

Allocations were avoided as far as possible. No by-products or co-products are produced during the manufacture of the analysed product. The energy requirements of production were allocated to the individual products on the basis of energy consumption measurements. Specific information on the allocations within the background data can be found in the documentation of the Ecoinvent datasets.

One of the materials used in this product is fly ash, which is originally a co-product. For this input, a supplier-EPD is used, which reflects the necessary allocation.

3.7 DATA COLLECTION & REFERENCE PERIOD

All primary data were collected by KLB Klimaleichtblock GmbH for the period January – December 2024.

3.8 ESTIMATES AND ASSUMPTIONS

- A payload factor of 50 percent was used for all truck transports, which in fact corresponds to a full delivery and empty return trip. A data set for a non-specific truck was used.
- The demolition process for end-of-life products is assumed to be based on data from the National Milieudatabase (NMD) in the Netherlands. According to the NMD, a hydraulic excavator is capable of breaking 9.8 tons of concrete per hour and moving 8.3 tons of concrete per hour.
- The waste scenario for this LCA was determined based on NMD ID 9, which relates to concrete (i.a. elements, brickwork, reinforced concrete). According to this standard, the waste treatment process comprises 99% recycling and 1 % landfill.

3.9 DATA QUALITY

All primary data were collected by KLB Klimaleichtblock GmbH for the reference year of 2024.

3 Calculation rules

For the data, which the manufacturer does not influence, generic data was used. Secondary data were sourced from the regularly updated Ecoinvent database (version 3.6), aligning with EN 15804 standards to ensure background data not exceeding 10 years.

R<THINK EPD web application was used to model the life cycle for the production and disposal of the declared product systems. To ensure that the results are comparable, consistent background data from the international database Ecoinvent was used in the LCA (e.g., data records on energy, transport, auxiliary materials, and supplies). Almost all consistent data sets contained in the Ecoinvent database are documented and can be viewed online.

The scenarios included are currently in use and are representative for one of the most likely scenario alternatives.

According to the criteria of the "UN Environmental Global Guidance on LCA database development" mentioned in EN 15804+A2, the data quality for all three representativeness categories (geographical, technical and time) can be described as good.

3.10 POWER MIX

The electricity profile was modeled using the market-based method, aligned with the geographical reference area of Germany. It comprises 49.1% residual mix and 50.9% renewable energy, with the renewable portion consisting of 71% hydropower, 21% solar PV, and 8% onshore wind, based on supplier-specific data.

The electricity used has a Global Warming Potential (GWP-total) of 0.39 kg CO_2-eq per kilowatt-hour (kWh).

4 Scenarios and additional technical information

4.1 DE-CONSTRUCTION, DEMOLITION (C1)

The following information describes the scenario for demolition at end of life.

Description	Amount	Unit
(ei3.6) Hydraulic excavator (average) [NMD generic]	0.080	hr
(ei3.6) Hydraulic excavator (average) [NMD generic]	0.090	hr

4.2 TRANSPORT END-OF-LIFE (C2)

The following distances and transport conveyance are assumed for transportation during end of life for the different types of waste processing.

Waste Scenario	Transport conveyance	Not removed (stays in work) [km]	Landfill [km]	Incineration [km]	Recycling [km]	Re-use [km]
(ei3.6) concrete (i.a. elements, brickwork, reinforced concrete) (NMD ID 9)	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0

The transport conveyance(s) used in the scenario(s) for transport during end of life has the following characteristics.

	Value and unit
Vehicle type used for transport	(ei3.6) Lorry (Truck), unspecified (default) | market group for (GLO)
Fuel type and consumption of vehicle	not available
Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.3 END OF LIFE (C3, C4)

The scenario(s) assumed for end of life of the product are given in the following tables. First the assumed percentages per type of waste processing are displayed, followed by the assumed amounts.

Waste Scenario	Region	Not removed (stays in work) [%]	Landfill [%]	Incineration [%]	Recycling [%]	Re-use [%]
(ei3.6) concrete (i.a. elements, brickwork, reinforced concrete) (NMD ID 9)	NL	0	1	0	99	0

4 Scenarios and additional technical information

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
(ei3.6) concrete (i.a. elements, brickwork, reinforced concrete) (NMD ID 9)	0.000	8.036	0.000	795.564	0.000
Total	**0.000**	**8.036**	**0.000**	**795.564**	**0.000**

4.4 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

The presented Benefits and loads beyond the system boundary in this EPD are based on the following calculated Net output flows in kilograms and Energy recovery displayed in MJ Lower Heating Value.

Waste Scenario	Net output flow [kg]	Energy recovery [MJ]
(ei3.6) concrete (i.a. elements, brickwork, reinforced concrete) (NMD ID 9)	770.749	0.000
Total	**770.749**	**0.000**

5 Results

For the impact assessment long-term emissions (>100 years) are not considered. The results of the impact assessment are only relative statements that do not make any statements about end-points of the impact categories, exceedance of threshold values, safety margins or risks. The following tables show the results of the indicators of the impact assessment, of the use of resources as well as of waste and other output flows.

5.1 ENVIRONMENTAL IMPACT INDICATORS PER CUBIC METER

CORE ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	4.33E+1	1.75E+0	4.45E-1	4.55E+1	8.91E+0	5.48E+0	1.30E+0	4.24E-2	-3.35E+0
GWP-f	kg CO_2 eq.	4.28E+1	1.75E+0	4.42E-1	4.50E+1	8.91E+0	5.48E+0	1.29E+0	4.23E-2	-3.34E+0
GWP-b	kg CO_2 eq.	4.70E-1	6.98E-4	2.86E-3	4.74E-1	1.62E-3	2.21E-3	2.05E-3	2.67E-5	-8.53E-3
GWP-luluc	kg CO_2 eq.	1.03E-2	6.22E-4	9.12E-5	1.10E-2	7.02E-4	2.01E-3	2.46E-4	1.18E-5	-3.59E-3
ODP	kg CFC 11 eq.	1.92E-7	3.98E-7	1.09E-8	6.01E-7	1.92E-6	1.21E-6	1.68E-7	1.74E-8	-3.33E-7
AP	mol H+ eq.	6.05E-2	5.02E-3	9.96E-4	6.65E-2	9.32E-2	3.18E-2	8.12E-3	4.02E-4	-2.41E-2
EP-fw	kg P eq.	1.30E-2	1.39E-5	7.57E-5	1.31E-2	3.25E-5	5.52E-5	4.03E-5	4.74E-7	-1.23E-4
EP-m	kg N eq.	1.99E-2	9.95E-4	2.50E-4	2.11E-2	4.11E-2	1.12E-2	3.23E-3	1.38E-4	-6.90E-3
EP-T	mol N eq.	2.28E-1	1.11E-2	2.86E-3	2.42E-1	4.51E-1	1.23E-1	3.59E-2	1.52E-3	-8.01E-2
POCP	kg NMVOC eq.	5.75E-2	4.26E-3	8.06E-4	6.25E-2	1.24E-1	3.52E-2	9.76E-3	4.42E-4	-2.21E-2
ADP-mm	kg Sb-eq.	8.80E-6	4.83E-5	2.57E-6	5.97E-5	1.37E-5	1.39E-4	3.65E-6	3.87E-7	-1.66E-4
ADP-f	MJ	3.25E+1	2.65E+1	3.61E+0	6.26E+1	1.23E+2	8.26E+1	1.74E+1	1.18E+0	-4.16E+1
WDP	m3 world eq.	4.21E+0	7.49E-2	-1.95E-1	4.09E+0	1.64E-1	2.96E-1	7.88E-2	5.30E-2	-4.79E+1

GWP-total=Global Warming Potential total (GWP-total) | **GWP-f**=Global Warming Potential fossil fuels (GWP-fossil) | **GWP-b**=Global Warming Potential biogenic (GWP-biogenic) | **GWP-luluc**=Global Warming Potential land use and land use change (GWP-luluc) | **ODP**=Depletion potential of the stratosperic ozon layer (ODP) | **AP**=Acidification potential, Accumulated Exceedance (AP) | **EP-fw**=Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater) | **EP-m**=Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine) | **EP-T**=Eutrophication potential, Accumulated Exceedance (EP-terrestrial) | **POCP**=Formation potential of tropospheric ozone (POCP) | **ADP-mm**=Abiotic depletion potential for non fossil resources (ADP mm) | **ADP-f**=Abiotic depletion for fossil resources potential (ADP fossil) | **WDP**=Water (user) deprication potential, deprivation-weighted water consumption (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PM	disease incidence	7.10E-7	1.11E-7	7.74E-9	8.29E-7	2.47E-6	4.91E-7	1.79E-7	7.81E-9	-4.15E-7
IR	kBq U235 eq.	1.14E+0	1.16E-1	1.61E-2	1.27E+0	5.25E-1	3.46E-1	5.51E-2	4.85E-3	-1.68E-1
ETP-fw	CTUe	8.18E+1	2.13E+1	1.67E+0	1.05E+2	7.39E+1	7.37E+1	1.41E+1	7.67E-1	-6.72E+1
HTP-c	CTUh	2.49E-8	5.93E-10	2.00E-10	2.57E-8	2.58E-9	2.39E-9	3.34E-10	1.77E-11	-2.48E-9
HTP-nc	CTUh	2.21E-7	2.25E-8	4.33E-9	2.48E-7	6.34E-8	8.08E-8	9.45E-9	5.45E-10	-7.01E-8
SQP	Pt	1.30E+3	1.85E+1	7.82E+0	1.33E+3	1.56E+1	7.16E+1	2.90E+0	2.48E+0	-5.37E+1

PM=Potential incidence of disease due to PM emissions (PM) | **IR**=Potential Human exposure efficiency relative to U235 (IRP) | **ETP-fw**=Potential Comparative Toxic Unit for ecosystems (ETP-fw) | **HTP-c**=Potential Comparative Toxic Unit for humans (HTP-c) | **HTP-nc**=Potential Comparative Toxic Unit for humans (HTP-nc) | **SQP**=Potential soil quality idex (SQP)

CLASSIFICATION OF DISCLAIMERS TO THE DECLARATION OF CORE AND ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2

5 Results

ILCD classification	Indicator	Disclaimer
	Potential Soil quality index (SQP)	2

Disclaimer 1 – 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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

5.2 INDICATORS DESCRIBING RESOURCE USE AND ENVIRONMENTAL INFORMATION BASED ON LIFE CYCLE INVENTORY (LCI)

PARAMETERS DESCRIBING RESOURCE USE

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	4.60E+1	3.79E-1	1.30E+0	4.77E+1	6.63E-1	1.03E+0	9.89E-1	9.57E-3	-2.89E+0
PERM	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	4.60E+1	3.79E-1	1.30E+0	4.77E+1	6.63E-1	1.03E+0	9.89E-1	9.57E-3	-2.89E+0
PENRE	MJ	3.27E+2	2.81E+1	5.12E+0	3.60E+2	1.30E+2	8.77E+1	1.85E+1	1.26E+0	-4.42E+1
PENRM	MJ	7.76E-1	0.00E+0	3.88E-3	7.80E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	MJ	3.28E+2	2.81E+1	5.12E+0	3.61E+2	1.30E+2	8.77E+1	1.85E+1	1.26E+0	-4.42E+1
SM	Kg	2.48E+1	0.00E+0	7.08E-3	2.48E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	MJ	3.20E+1	0.00E+0	1.60E-1	3.22E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ	9.30E+1	0.00E+0	4.65E-1	9.35E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	m^3	5.15E-1	2.83E-3	-7.46E-4	5.17E-1	6.31E-3	1.01E-2	5.81E-3	1.26E-3	-1.12E+0

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**=Net use of fresh water

5 Results

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	Kg	2.23E-1	6.93E-5	1.13E-3	2.25E-1	3.34E-4	2.09E-4	3.03E-5	1.77E-6	-8.42E-5
NHWD	Kg	6.27E+1	1.29E+0	4.03E-1	6.44E+1	1.45E-1	5.24E+0	2.42E+0	8.03E+0	-4.51E-1
RWD	Kg	3.80E-4	1.80E-4	1.65E-5	5.76E-4	8.51E-4	5.44E-4	7.81E-5	7.77E-6	-1.82E-4

HWD=Hazardous waste disposed | **NHWD**=Non-hazardous waste disposed | **RWD**=Radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbr.	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
CRU	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	Kg	0.00E+0	0.00E+0	3.71E+0	3.71E+0	0.00E+0	0.00E+0	7.96E+2	0.00E+0	0.00E+0
MER	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EET**=Exported Energy, Thermic | **EEE**=Exported Energy, Electric

5 Results

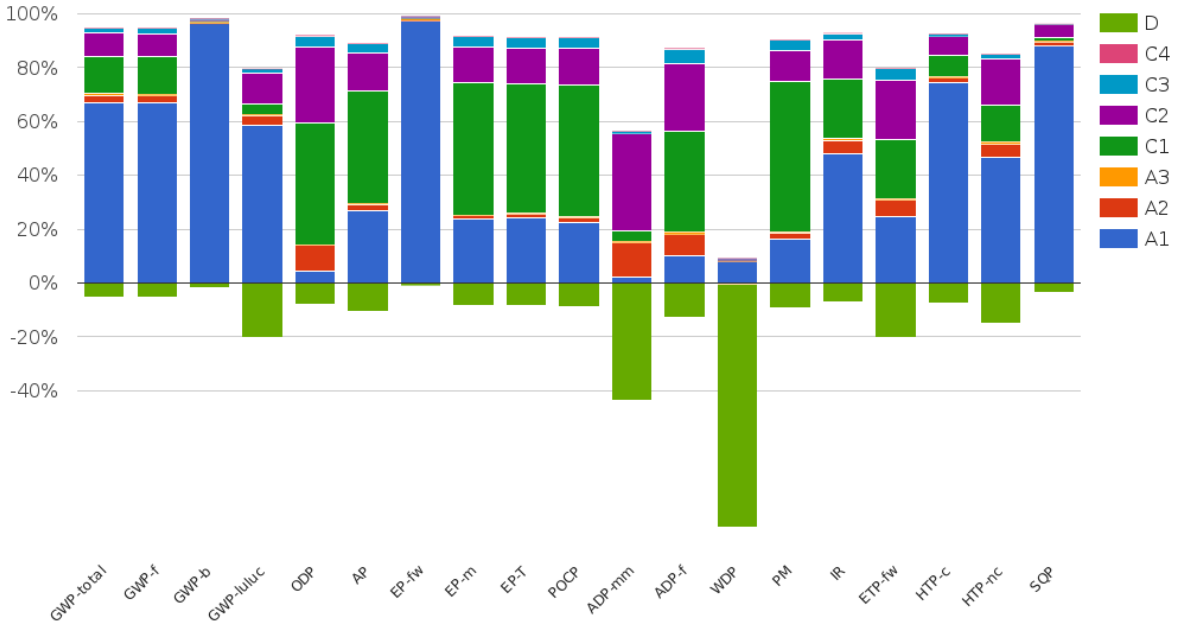
5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER CUBIC METER

BIOGENIC CARBON CONTENT

The following Information describes the biogenic carbon content in (the main parts of) the product at the factory gate per cubic meter:

Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	0	kg C

6 Interpretation of results



The figure illustrates the impact categories for 1 m³ of the hollow block- masonry bricks made of lightweight concrete from natural aggregates.

As depicted, the contribution of raw materials (A1) is notably higher, whereas transportation (A2) exhibits a comparatively minor impact.

For most indicators, Module D indicates environmental benefits beyond the system boundaries.

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Characterisation method Environmental Footprint 3.1.

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