

Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804

MB 2K [eco]

Registration number: EPD-Kiwa-EE-128756-EN
Issue date: 08-12-2023
Valid until: 08-12-2028
Declaration owner: Remmers GmbH
Publisher: Kiwa-Ecobility Experts
Program operator: Kiwa-Ecobility Experts
Status: verified



1 General information

1.1 PRODUCT

MB 2K [eco]

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-128756-EN

1.3 VALIDITY

Issue date: 08-12-2023

Valid until: 08-12-2028

1.4 PROGRAM OPERATOR

Kiwa-Ecobility Experts
 Voltastraße 5
 13355 Berlin
 DE



Frank Huppertz

(Head of Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Manufacturer: Remmers GmbH

Address: Bernhard-Remmers-Straße 13, 49624 Lönigen

E-mail: tfangmeyer@remmers.de

Website: <https://www.remmers.com/de>

Production location: Remmers GmbH

Address production location: Bernhard-Remmers-Straße 13, 49624 Lönigen

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 15804:2012+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)

Institut Bauen und Umwelt e.V (IBU) - Complementary Product Category Rule (c-PCR): Requirements on the EPD for Mineral factory-made mortar - 12/07/2023 v3

1 General information

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. For the evaluation of the comparability, the following aspects have to be considered in 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 EPDs programs may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2 (5.3 Comparability of EPD for construction products) and ISO 14025 (6.7.2 Requirements for comparability).

1.10 CALCULATION BASIS

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

LCA software*: Simapro 9.1

Characterization method: EN 15804 +A2 Method v1.0

LCA database profiles: EcoInvent version 3.6

Version database: v3.15 (2023-07-12)

** 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 'MB 2K [eco]' with the calculation identifier EPD-NIBE-20220711-28756.

2 Product

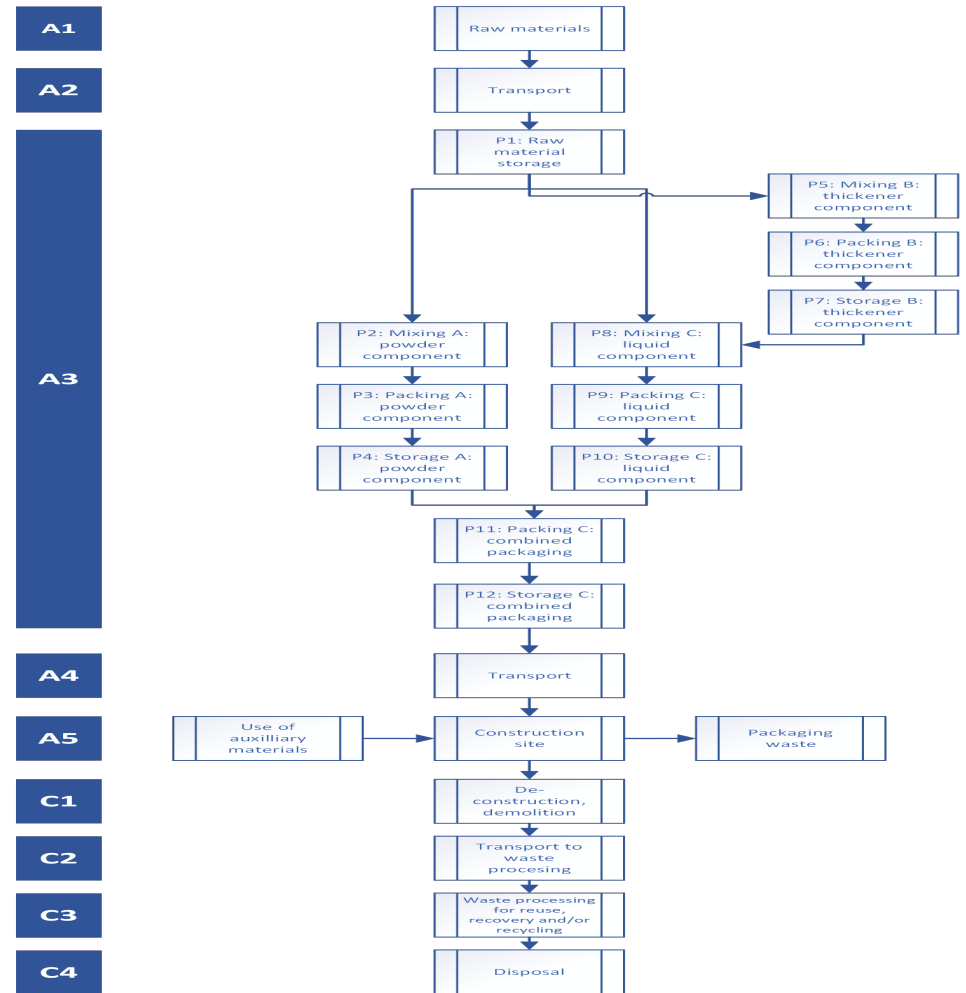
2.1 PRODUCT DESCRIPTION

MB 2K [eco] is a multifunctional building waterproofing system based on an innovative technology that enables the first-time use of a polymer dispersion based on renewable raw materials in a high-quality reactive waterproofing system.

MB 2K [eco] is manufactured at the Lönningen site by Remmers GmbH.

MB 2K [eco] is characterized by the following properties, among others:

- Very low emission (GEV Emicode EC 1Plus)
- Fast drying and cross-linking after 24 h (at 5 °C and 90% relative humidity)
- Certified radon-tight
- High adhesive tensile strength
- Highly flexible, expandable and crack-bridging
- Can be painted and plastered over
- Can be applied by slurry, brush, spatula or spray
- Very good adhesion even on non-mineral substrates (e.g. plastics, metals, etc.)



2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

MB 2K [eco] offers the typical areas of application for reactive waterproofing kits as listed below:

2 Product

- New and old building waterproofing
- Mineral substrates
- Soil moisture and non-pressing water
- Accumulating seeping water and pressing water-inclusive construction joint waterproofing for concrete building components
- Non-pressing water on the earth-covered ceiling
- Splash water-/Socket waterproofing
- Sealing in and under Walls
- Water pressing from the inside in tank constructions
- Base and base point waterproofing
- Adhesive bridge on old bitumen

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

Lifespan was specified by the manufacturer. This value is also in accordance with the service life provided by nachhaltigesbauen.de for waterproofing in contact with the ground.

USED RSL (YR) IN THIS LCA CALCULATION:

30

2.4 TECHNICAL DATA

Product basis: Polymer binder based on renewable and biomass-balanced raw materials, cement, additives, special fillers.

Crack bridging: 2 mm according to DIN EN 1062 Part 7 (at 4 mm dry layer thickness)

Layer thickness: 1.2 mm wet layer thickness results in approx. 1 mm dry layer thickness

Water impermeability: Tested up to 10 m water column (on concrete substrates)

Fire behaviour: Class E (DIN EN 13501-1)

Drying time: Approx. 24 h for 4 mm layer

Fresh mortar density: Approx. 1.15 kg/l

Consistency after mixing: Pasty

2.5 SUBSTANCES OF VERY HIGH CONCERN

No SVHC or any substances classified as cancerogenic, mutagenic, or with reproductive toxicity (CMR) are intentionally added to the production of Remmers MB 2K [eco]. It can thus be guaranteed that the concentration of any SVHC or CMR-Substance in the product will be far below 0.1%.

Nonetheless, MB 2K [eco] is a dangerous product according to CLP regulations. This classification is due to <0.002% of the in can preservative MIT in the liquid component and the presence of cement in the powder component. No other dangerous substances contribute to the product classification under CLP regulation. The dangerous properties of both liquid as well as powder components can safely be mitigated by standard workplace personal protection equipment. Once mixed, applied, and cured, MB 2K [eco] has proven to emit only minimal and uncritical amounts of volatile organic compounds into indoor and outdoor air, with proven evidence through certification by Eimcode ECI PLUS.

2.6 DESCRIPTION PRODUCTION PROCESS

For the production of the liquid and powder components, the respective raw materials are mixed according to a weight ratio based on the product formulation and separately filled into foil bags. The components packed in foil bags are in turn filled into polypropylene containers according to the packaging variant. Further commissioning takes place on Euro pallets.

2.7 CONSTRUCTION DESCRIPTION

The 2-component material is freshly mixed on site with a suitable stirrer according to the description.

The mixed material is applied to the surface to be sealed, e.g. with a flat trowel or by spraying, in 2 layers of 2 mm dry film thickness each. The second layer is only applied after the first layer can no longer be damaged by the application.

3 Calculation rules

3.1 DECLARED UNIT

Kg

Declared unit is 1 kg of MB 2K [eco] installed and, with an estimated useful life of at least 30 years. The technical lifespan of the raw materials in the product aligns with the overall product lifespan. The reference service life of the product corresponds to the estimated lifetime of the building in which the product is utilized.

reference_unit: kilogram (kg)

3.2 CONVERSION FACTORS

Description	Value	Unit
reference_unit	1	kg
Conversion factor to 1 kg	1.004264	kg

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options, modules C1-C4 and module D LCA. 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	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN15804 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 MB 2K [eco], a product of Remmers GmbH. The results of this EPD are representative for Germany.

3.5 CUT-OFF CRITERIA

In the Life cycle assessment the following cut-off criteria are applied:

PRODUCT STAGE (A1-A3)

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

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 (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.

3 Calculation rules

3.6 ALLOCATION

The electricity and heating used to produce MB 2K [eco] at its production site are calculated based on the overall energy consumption for all products at the site. These values are then adjusted to reflect only the energy used specifically for manufacturing MB 2K [eco]. The resulting energy consumption is presented per kilogram of the product. The production process adheres to the modularity principle, and as MB 2K [eco] is a mortar, there are no additional by-products to consider.

3.7 DATA COLLECTION & REFERENCE TIME PERIOD

All data was collected for 2022.

3.8 ESTIMATES AND ASSUMPTIONS

When a building or construction is demolished, the waterproofing kits within it are also removed. As a result, the energy used for the removal of the waterproofing kits is considered to be insignificant, and it is assumed that the environmental impact of this process is negligible.

The delineation of system boundaries for the LCA is determined by two key principles: 1) the modularity principle and 2) the polluter pays principle.

Excluded are the manufacturing of capital equipment, construction undertakings, and infrastructure development, along with the maintenance and operation of capital equipment. Additionally, activities related to personnel, as well as energy and water consumption associated with company management and sales, are also excluded.

4 Scenarios and additional technical information

4.1 TRANSPORT TO CONSTRUCTION SITE (A4)

For the transport from production place to assembly/user, the following scenario is assumed for module A4 of this EPD.

	Value and unit
Vehicle type used for transport	Lorry (Truck), unspecified (default) market group for (GLO)
Fuel type and consumption of vehicle	not available
Distance	520 km
Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.2 ASSEMBLY (A5)

The following information describes the scenarios for flows entering the system and flows leaving the system at module A5.

FLOWS ENTERING THE SYSTEM

For flows entering the system at A5 the following scenario is assumed for module A5.

	Value	Unit
<i>Energy consumption for installation/assembly</i>		
Electricity (DE) - low voltage (max 1kV)	0.003	kWh

FLOWS LEAVING THE SYSTEM

The following output flows leaving the system at module A5 are assumed.

Description	Value	Unit
Output materials as result of loss during construction	3	%
Output materials as result of waste processing of materials used for installation/assembly at the building site	0.000	kg
Output materials as result of waste processing of used packaging	0.087	kg

4.3 DE-CONSTRUCTION, DEMOLITION (C1)

No inputs are needed for the product at the de-construction / demolition phase

4 Scenarios and additional technical information

4.4 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]
Coatings (coatings) in civil constructions (NMD ID 17)	Lorry (Truck), unspecified (default) market group for (GLO)	0	100	150	50	0
concrete (i.a. elements, brickwork, reinforced concrete) (NMD ID 9)	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	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

4.5 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 [%]
Coatings (coatings) in civil constructions (NMD ID 17)	NL	0	90	10	0	0
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]
Coatings (coatings) in civil constructions (NMD ID 17)	0.000	0.133	0.015	0.000	0.000
concrete (i.a. elements, brickwork, reinforced concrete) (NMD ID 9)	0.000	0.008	0.000	0.839	0.000
Total	0.000	0.142	0.015	0.839	0.000

4.6 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]
Coatings (coatings) in civil constructions (NMD ID 17)	0.000	0.000
concrete (i.a. elements, brickwork, reinforced concrete) (NMD ID 9)	0.839	0.000
Total	0.839	0.000

5 Results

For the impact assessment, the characterization factors of the LCIA method EN 15804 +A2 Method v1.0 are used. Long-term emissions (>100 years) are not considered in the impact assessment. 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 KILOGRAM

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
AP	mol H+ eqv.	4.82E-3	2.98E-4	4.46E-4	4.41E-4	2.55E-4	0.00E+0	4.57E-5	1.17E-5	1.25E-5	3.95E-5
GWP-total	kg CO2 eqv.	9.63E-1	5.14E-2	4.96E-2	7.61E-2	2.14E-1	0.00E+0	7.88E-3	3.68E-2	1.60E-2	-3.44E-3
GWP-b	kg CO2 eqv.	-3.64E-3	2.37E-5	-7.30E-2	3.51E-5	7.41E-2	0.00E+0	3.64E-6	9.35E-6	1.17E-5	-2.90E-5
GWP-f	kg CO2 eqv.	9.66E-1	5.14E-2	1.22E-1	7.60E-2	1.40E-1	0.00E+0	7.88E-3	3.68E-2	1.60E-2	-3.39E-3
GWP-luluc	kg CO2 eqv.	4.71E-4	1.88E-5	1.20E-4	2.79E-5	3.02E-5	0.00E+0	2.89E-6	3.23E-7	6.57E-7	-1.97E-5
EP-m	kg N eqv.	8.79E-4	1.05E-4	8.79E-5	1.55E-4	6.01E-5	0.00E+0	1.61E-5	4.80E-6	4.21E-6	-1.13E-5
EP-fw	kg P eqv.	9.65E-5	5.18E-7	6.20E-6	7.67E-7	3.71E-6	0.00E+0	7.95E-8	4.64E-8	2.49E-8	2.86E-7
EP-T	mol N eqv.	9.27E-3	1.16E-3	1.02E-3	1.71E-3	6.56E-4	0.00E+0	1.77E-4	5.33E-5	4.65E-5	-2.43E-4
ODP	kg CFC 11 eqv.	1.46E-7	1.13E-8	1.09E-8	1.68E-8	9.16E-9	0.00E+0	1.74E-9	2.10E-10	4.55E-10	-7.06E-9
POCP	kg NMVOC eqv.	4.01E-2	3.30E-4	1.11E-3	4.89E-4	1.33E-3	0.00E+0	5.07E-5	1.41E-5	1.68E-5	2.94E-5
ADP-f	MJ	2.54E+1	7.74E-1	2.56E+0	1.15E+0	1.03E+0	0.00E+0	1.19E-1	2.14E-2	3.45E-2	9.98E-1
ADP-mm	kg Sb-eqv.	1.37E-5	1.30E-6	1.12E-6	1.93E-6	7.35E-7	0.00E+0	2.00E-7	6.61E-9	1.55E-8	2.11E-7
WDP	m3 world eqv.	8.24E-1	2.77E-3	5.05E-2	4.10E-3	3.19E-2	0.00E+0	4.25E-4	-6.42E-5	1.49E-3	-1.97E-2

AP=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15084+A2

Abbreviation	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
ETP-fw	CTUe	1.86E+1	6.91E-1	1.51E+0	1.02E+0	1.95E+0	0.00E+0	1.06E-1	2.44E-2	2.83E-2	-6.00E-1
PM	disease incidence	3.50E-8	4.62E-9	6.62E-7	6.84E-9	2.19E-8	0.00E+0	7.09E-10	2.14E-10	2.38E-10	-8.94E-12
HTP-c	CTUh	1.64E-9	2.24E-11	1.09E-10	3.32E-11	8.69E-11	0.00E+0	3.44E-12	4.58E-11	1.77E-12	-4.10E-12
HTP-nc	CTUh	1.31E-8	7.55E-10	1.24E-9	1.12E-9	9.67E-10	0.00E+0	1.16E-10	1.49E-10	2.41E-11	-1.22E-10
IR	kBq U235 eqv.	4.36E-2	3.25E-3	4.97E-3	4.80E-3	2.24E-3	0.00E+0	4.98E-4	6.45E-5	1.36E-4	3.27E-4
SQP	Pt	3.18E+0	6.72E-1	9.33E+0	9.94E-1	4.94E-1	0.00E+0	1.03E-1	4.30E-3	8.17E-2	-2.96E+0

ETP-fw=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation, human health (IR) | **SQP**=Land use (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
	AAcidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
ILCD type / level 2	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

5 Results

ILCD classification	Indicator	Disclaimer
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	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

Abbreviation	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	8.00E-1	9.70E-3	7.94E-1	1.44E-2	6.13E-2	0.00E+0	1.49E-3	1.13E-3	5.86E-4	-5.85E-1
PERM	MJ	9.15E-5	0.00E+0	6.19E-1	0.00E+0	1.86E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	8.00E-1	9.70E-3	1.41E+0	1.44E-2	7.99E-2	0.00E+0	1.49E-3	1.13E-3	5.86E-4	-5.85E-1
PENRE	MJ	2.66E+1	8.22E-1	1.33E+0	1.22E+0	1.05E+0	0.00E+0	1.26E-1	2.28E-2	3.66E-2	1.77E-1
PENRM	MJ	3.34E-1	0.00E+0	1.41E+0	0.00E+0	5.24E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.65E-1
PENRT	MJ	2.70E+1	8.22E-1	2.74E+0	1.22E+0	1.10E+0	0.00E+0	1.26E-1	2.28E-2	3.66E-2	1.04E+0
SM	Kg	1.20E-1	0.00E+0	2.90E-2	0.00E+0	4.46E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	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	0.00E+0
NRSF	MJ	1.21E-1	0.00E+0	1.21E-3	0.00E+0	3.66E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	M3	1.69E-2	9.43E-5	1.21E-3	1.40E-4	7.35E-4	0.00E+0	1.45E-5	8.85E-6	3.62E-5	-7.35E-4

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **SM**=use of secondary material | **RSF**=use of renewable secondary fuels | **NRSF**=use of non-renewable secondary fuels | **FW**=use of net fresh water

5 Results

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbreviation	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
HWD	Kg	2.80E-4	1.96E-6	4.89E-6	2.90E-6	8.96E-6	0.00E+0	3.01E-7	8.08E-8	5.28E-8	-1.09E-6
NHWD	Kg	6.94E-2	4.91E-2	1.64E-2	7.27E-2	2.36E-2	0.00E+0	7.54E-3	3.15E-3	1.42E-1	-3.91E-4
RWD	Kg	5.96E-5	5.09E-6	5.44E-6	7.53E-6	2.93E-6	0.00E+0	7.80E-7	9.08E-8	2.07E-7	-7.79E-9

HWD=hazardous waste disposed | NHWD=non hazardous waste disposed | RWD=radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
CRU	Kg	0.00E+0	0.00E+0	2.72E-3	0.00E+0	8.16E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	Kg	2.76E-5	0.00E+0	1.95E-3	0.00E+0	3.03E-2	0.00E+0	0.00E+0	8.39E-1	0.00E+0	0.00E+0
MER	Kg	6.01E-5	0.00E+0	6.01E-7	0.00E+0	1.82E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	MJ	5.22E-9	0.00E+0	7.83E-4	0.00E+0	1.58E-10	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.37E-1
EEE	MJ	0.00E+0	0.00E+0	4.55E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.12E-1

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 KILOGRAM

BIOGENIC CARBON CONTENT

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

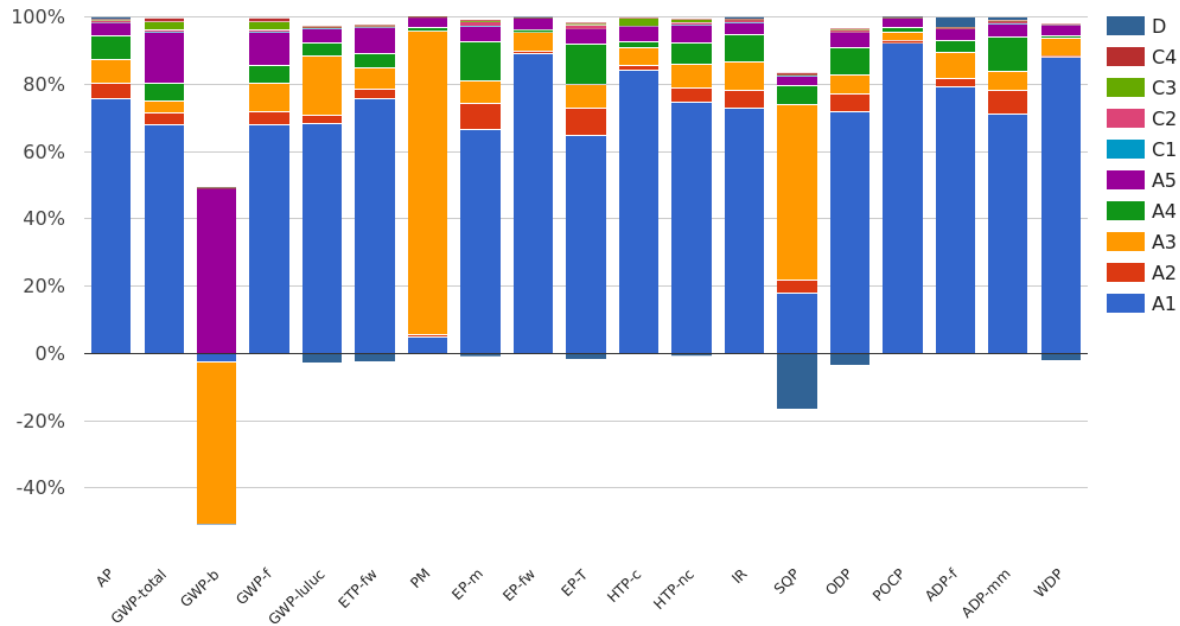
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	0.02009	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount of uptake of carbon dioxide is account in module A1 by the main parts of the product. Related uptake and release of carbon dioxide in downstream processes are not taken into account in this number although they do appear in the presented results.

Uptake Biogenic Carbon dioxide	Amount	Unit
Packaging	0.07366	kg CO2 (biogenic)

6 Interpretation of results



In general, Phase A1 is responsible for the greatest environmental impacts, and this is largely due to the use of chemicals in the product that imposes a significant environmental burden.

7 References

ISO 14040

ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework; EN ISO 14040:2006

ISO 14044

ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines; EN ISO 14040:2006

ISO 14025

ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804+A2

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

General PCR Ecobility Experts

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

Institut Bauen und Umwelt e.V (IBU)

Complementary Product Category Rule (c-PCR): Requirements on the EPD for Mineral factory-made mortar - 12/07/2023 v3

8 Contact information

Publisher	Operator	Owner of declaration
 <p>Kiwa-Ecobility Experts Voltastraße 5 13355 Berlin, DE</p>	 <p>Kiwa-Ecobility Experts Voltastraße 5 13355 Berlin, DE</p>	 <p>Remmers GmbH Bernhard-Remmers-Straße 13 49624 Lönigen, DE</p>
<p>E-mail: DE.Ecobility.Experts@kiwa.com</p> <p>Website: https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/</p>	<p>E-mail: DE.Ecobility.Experts@kiwa.com</p> <p>Website: https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/</p>	<p>E-mail: tfangmeyer@remmers.de</p> <p>Website: https://www.remmers.com/de</p>

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