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

NEODUR HE 3 green

Registration number:	EPD-Kiwa-EE-163392-EN
Issue date:	09-02-2024
Valid until:	09-02-2029
Declaration owner:	KORODUR Westphal Hartbeton GmbH & Co. KG
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

NEODUR HE 3 green

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-163392-EN

1.3 VALIDITY

Issue date: 09-02-2024

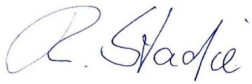
Valid until: 09-02-2029

1.4 PROGRAM 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: KORODUR Westphal Hartbeton GmbH & Co. KG

Address: Wernher-von-Braun-Straße 4, D-92224 Amberg

E-mail: info@korodur.de

Website: https://www.korodur.de/

Production location: KORODUR Westphal GmbH & Co. KG

Address production location: Hohensteinstraße 19, D-44866 Bochum

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

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

PCR B
Institut Bauen und Umwelt e.V. - Part B: Requirements on the EPD for Mineral factory-made mortar (2023-10-19)

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

1 General information

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 'NEODUR HE 3 green' with the calculation identifier ReTHiNK-63392.

2 Product

2.1 PRODUCT DESCRIPTION

NEODUR HE 3 green is a ready to use cementitious dry mortar for the production of industrial floors in dry-shake method according to DIN EN 13813 on the basis of KORODUR hard aggregates according to DIN 1100 (Group A) based on KORODUR 0/4.

For the placing on the market of the product in the European Union/ European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 (Construction Products Regulation: CPR) applies. The product needs a declaration of performance taking into consideration DIN EN 13813:2003-01, Screed material and floor screeds - Screed materials - Properties and requirements and the CE-marking. For the application and use the respective national provisions apply.

NEODUR HE 3 green is sold in 25 kg paper sacks or in 1 t BigBags. The composition of the product is shown in the following table:

Component	Value	Unit
Aggregates	71	M.-%
Binder	20	M.-%
Additive	9	M.-%

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

NEODUR HE 3 green is used for the production of heavy-duty industrial floors, e.g. car parks, industrial halls, assembly halls, aircraft hangars, workshops, high-bay warehouses and other industrial areas subjected to most severe stress. It can be used both indoors and outdoors.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

As the entire life cycle of the mortar NEODUR HE 3 green 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 NEODUR HE 3 green mortar is 25 years.

USED RSL (YR) IN THIS LCA CALCULATION:

25

2.4 TECHNICAL DATA

Technical data of the product in accordance with the declaration of performance with respect to its essential characteristics according to DIN EN 13813:2003-01, Screed material and floor screeds - Screed materials - Properties and requirements:

- **Quality:** CT-C70-F9-A6 (according to DIN EN 13813:2003-01)
- **Granulometry:** 0 - 3 mm
- **Colour:** Cement grey
- **Fire behavior:** A1
- **Release of corrosive substances:** CT
- **Wear resistance** abrasive wear acc. to Böhme acc. to DIN EN 13892-3: ≤ 5.0 $cm^3/50$ cm^2
- **Compressive strength** [N/mm^2] after 28 days, measured on defined prisms acc. to DIN EN 13892-2: C70
- **Flexural strength** [N/mm^2] after 28 days, measured on defined prisms acc. to DIN EN 13892-2: F9
- **Temperature** processing, ambient and sub-base temperature: ≥ 5 °C
- **Material consumption** per m^2: ca. 3-5 kg

2.5 SUBSTANCES OF VERY HIGH CONCERN

This product contains substances listed in the candidate list of substances of very high concern (date: 12.12.2023) exceeding 0.1 percentage by mass: **No**

This product contains other CMR substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: **No**

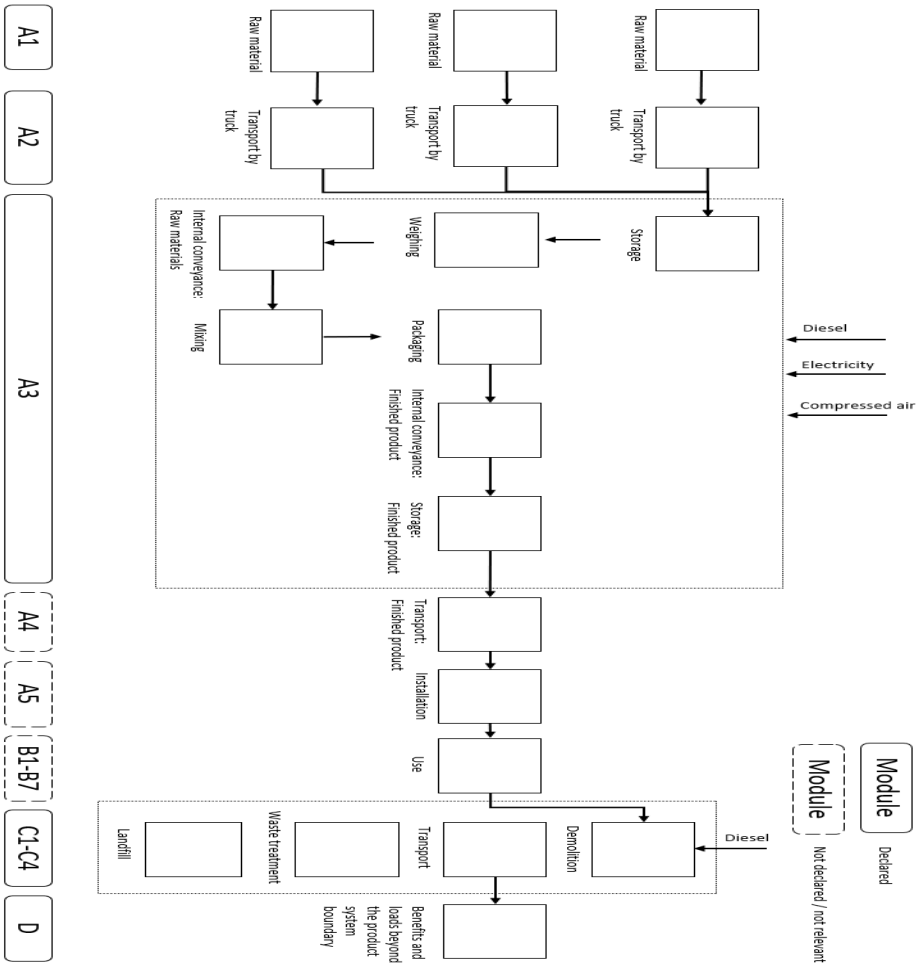
“Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012): **No**

2.6 DESCRIPTION PRODUCTION PROCESS

The dry mortar NEODUR HE 3 green is produced in the following steps: delivery of raw materials in silo trucks, filling the bulk or weighing hoppers, internal conveying of raw materials, mixing, packaging, internal conveying of the finished product and loading and shipping of the finished product.

The raw materials - aggregates, binders and additives - are stored in silos at the factory, dosed gravimetrically from the silos according to the recipe and mixed thoroughly. The mixture is then packaged and shipped as a prefabricated dry mortar. A simplified product flow chart of the product is shown in the following figure:

2 Product


A1
A2
A3
A4
A5
B1-B7
C1-C4
D
Raw material
Transport by truck
Storage
Weighing
Internal conveyance: Raw materials
Mixing
Packaging
Internal conveyance: Finished product
Storage: Finished product
Transport: Finished product
Installation
Use
Transport
Demolition
Waste treatment
Landfill
Benefits and loads beyond the product system boundary
Diesel
Electricity
Compressed air
Module
Declared
Module
Not declared / not relevant

3 Calculation rules

3.1 DECLARED UNIT

kg

1 kg mineral dry mortar for cementitious industrial floors

dry_bulk _density: 1.58 kg/m3

reference_unit: kilogram (kg)

3.2 CONVERSION FACTORS

Description	Value	Unit
reference_unit	1	kg
Conversion factor to 1 kg	1.000000	kg

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with 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	ND	ND	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

The input data are representative for NEODUR HE 3 green, a product of KORODUR Westphal Hartbeton GmbH & Co. KG. The data are representative for Germany.

3.5 CUT-OFF CRITERIA

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

3 Calculation rules

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.

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.

3.6 ALLOCATION

The energy consumption and the amount of packaging materials used are calculated based on the total consumption at the production site in 2022 (for all products manufactured) and are converted into the amount used solely for the production of NEODUR HE 3 green. The amount of electricity and packaging is given per kg of product manufactured.

No by-products are involved in the production of NEODUR HE 3 green.

3.7 DATA COLLECTION & REFERENCE TIME PERIOD

All process-specific data are collected for the reference year 2022.

3.8 ESTIMATES AND ASSUMPTIONS

For all raw materials used (raw materials, operating materials, packaging), the transportation distance was recorded, with the exception of the transport of forklift gas, which is estimated at 100 km with trucks of a non-specific type. A payload factor of 50% is used for all truck transports (suppliers, disposal transports and internal transports), which corresponds to a full delivery and empty return journey.

A dataset of standard EUR pallets is used for the IPPC pallets, as no specific information is available. The energy use for the demolition is estimated as 0.043 MJ diesel burned in machine per kg product.

The use of green electricity is included in the calculation of the environmental impact, which is based on the purchased residual electricity mix, refering to the market based approach. The proportion of the total electricity consumption covered by green electricity is 62%. For green electricity, 95% comes from the EEG (German Renewable Energy Sources Act). The remaining 5% relates to other renewable energy sources, which are also assumed to be sourced from the EEG in the calculation.

The NMD (Dutch Environmental Database) waste scenario for "concrete (i.a. elements, brickwork, reinforced concrete) (NMD ID 9)" is considered representative for the life cycle of the mortar and used in the calculation. 1% of the waste is deposited in a landfill, while 99% is recycled. The process "Waste concrete {Europe without Switzerland}| treatment of waste concrete, inert material landfill" is used for landfilling, whereby the dataset "Crushing, per kg stoney material [NMD, NL]" is used for recycling. The recycled waste is reused as benifits in the process "Gravel, round | gravel and sand quarry operation (RoW)".

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.

3.9 DATA QUALITY

All process-specific data are collected for the reference year 2022. The data are based on the annual average. Generic datasets from the EcoInvent database are used for the secondary data. This database is regularly maintained and meets the requirements of EN 15804+A2 (background data not older than 10 years). All consistent datasets contained in the EcoInvent database are documented and can be viewed in the online EcoInvent documentation. In the operating data survey all relevant process-specific data could be collected. The quality of the data can be thus considered as good.

The primary data are collected and provided by KORODUR Westphal Hartbeton GmbH & Co. KG. Most of the datasets selected in the LCA for raw materials refer to Germany as the geographical reference, while european datasets are predominantly used for packaging materials. For cement which serves as binder in the production, manufacturer data (EPDs) are used, which are based on the GaBi database.

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
Diesel, burned in machine (incl. emissions)	0.001	l

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]
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

4.3 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 [%]
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]
concrete (i.a. elements, brickwork, reinforced concrete) (NMD ID 9)	0.000	0.010	0.000	0.990	0.000
Total	**0.000**	**0.010**	**0.000**	**0.990**	**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]
concrete (i.a. elements, brickwork, reinforced concrete) (NMD ID 9)	0.986	0.000
Total	**0.986**	**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	C1	C2	C3	C4	D
AP	mol H+ eqv.	4.31E-4	2.00E-5	4.60E-5	4.12E-5	3.95E-5	1.01E-5	5.00E-7	-2.99E-5
GWP-total	kg CO2 eqv.	1.58E-1	5.12E-3	4.51E-3	3.94E-3	6.82E-3	1.62E-3	5.28E-5	-4.16E-3
GWP-b	kg CO2 eqv.	2.60E-4	3.47E-6	-6.07E-3	1.10E-6	3.15E-6	9.32E-6	1.04E-7	-1.91E-5
GWP-f	kg CO2 eqv.	1.57E-1	5.12E-3	1.06E-2	3.94E-3	6.82E-3	1.61E-3	5.27E-5	-4.14E-3
GWP-luluc	kg CO2 eqv.	3.15E-5	1.64E-6	1.45E-5	3.10E-7	2.50E-6	3.06E-7	1.47E-8	-4.45E-6
EP-m	kg N eqv.	1.06E-4	5.44E-6	8.96E-6	1.82E-5	1.39E-5	4.02E-6	1.72E-7	-8.56E-6
EP-fw	kg P eqv.	1.03E-6	4.36E-8	1.17E-6	1.43E-8	6.87E-8	5.02E-8	5.90E-10	-1.53E-7
EP-T	mol N eqv.	1.30E-3	6.03E-5	1.19E-4	1.99E-4	1.54E-4	4.47E-5	1.90E-6	-9.93E-5
ODP	kg CFC 11 eqv.	7.80E-9	1.22E-9	9.81E-10	8.50E-10	1.50E-9	2.09E-10	2.17E-11	-4.13E-10
POCP	kg NMVOC eqv.	3.36E-4	2.04E-5	2.97E-5	5.48E-5	4.38E-5	1.21E-5	5.51E-7	-2.74E-5
ADP-f	MJ	1.26E+0	8.15E-2	1.79E-1	5.42E-2	1.03E-1	2.16E-2	1.47E-3	-5.16E-2
ADP-mm	kg Sb-eqv.	4.70E-7	1.01E-7	1.17E-7	6.04E-9	1.73E-7	4.54E-9	4.82E-10	-2.06E-7
WDP	m3 world eqv.	3.45E-2	2.71E-4	8.15E-3	7.26E-5	3.68E-4	9.80E-5	6.60E-5	-5.94E-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	C1	C2	C3	C4	D
ETP-fw	CTUe	1.85E+0	6.69E-2	1.97E-1	3.27E-2	9.17E-2	1.75E-2	9.55E-4	-8.33E-2
PM	disease incidence	3.83E-9	4.52E-10	5.58E-10	1.09E-9	6.13E-10	2.23E-10	9.72E-12	-5.15E-10
HTP-c	CTUh	1.62E-10	1.77E-12	5.55E-12	1.14E-12	2.97E-12	4.16E-13	2.21E-14	-3.08E-12
HTP-nc	CTUh	3.85E-9	7.32E-11	1.08E-10	2.81E-11	1.00E-10	1.18E-11	6.79E-13	-8.69E-11
IR	kBq U235 eqv.	4.15E-3	3.53E-4	5.41E-4	2.32E-4	4.31E-4	6.86E-5	6.04E-6	-2.08E-4
SQP	Pt	1.10E+0	8.76E-2	9.50E-1	6.92E-3	8.91E-2	3.61E-3	3.09E-3	-6.66E-2

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
ILCD type / level 2	AAcidification 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

5 Results

ILCD classification	Indicator	Disclaimer
	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	C1	C2	C3	C4	D
PERE	MJ	6.85E-2	1.02E-3	1.30E-1	2.93E-4	1.29E-3	1.23E-3	1.19E-5	-3.58E-3
PERM	MJ	0.00E+0	0.00E+0	5.83E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	6.85E-2	1.02E-3	1.88E-1	2.93E-4	1.29E-3	1.23E-3	1.19E-5	-3.58E-3
PENRE	MJ	1.33E+0	8.66E-2	1.73E-1	5.76E-2	1.09E-1	2.31E-2	1.56E-3	-5.48E-2
PENRM	MJ	0.00E+0	0.00E+0	2.04E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	MJ	1.33E+0	8.66E-2	1.94E-1	5.76E-2	1.09E-1	2.31E-2	1.56E-3	-5.48E-2
SM	Kg	3.56E-3	0.00E+0	3.56E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	MJ	1.36E-1	0.00E+0	1.36E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ	2.04E-1	0.00E+0	2.04E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	M3	9.95E-4	9.44E-6	2.21E-4	2.79E-6	1.25E-5	7.23E-6	1.57E-6	-1.39E-3

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	C1	C2	C3	C4	D
HWD	Kg	1.22E-6	2.00E-7	2.39E-7	1.48E-7	2.60E-7	3.77E-8	2.20E-9	-1.04E-7
NHWD	Kg	3.07E-2	6.60E-3	1.28E-3	6.42E-5	6.52E-3	3.01E-3	1.00E-2	-5.60E-4
RWD	Kg	3.81E-5	5.51E-7	6.02E-7	3.76E-7	6.75E-7	9.71E-8	9.67E-9	-2.26E-7

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

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1	A2	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
MFR	Kg	0.00E+0	0.00E+0	9.90E-4	0.00E+0	0.00E+0	9.90E-1	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
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
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

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:

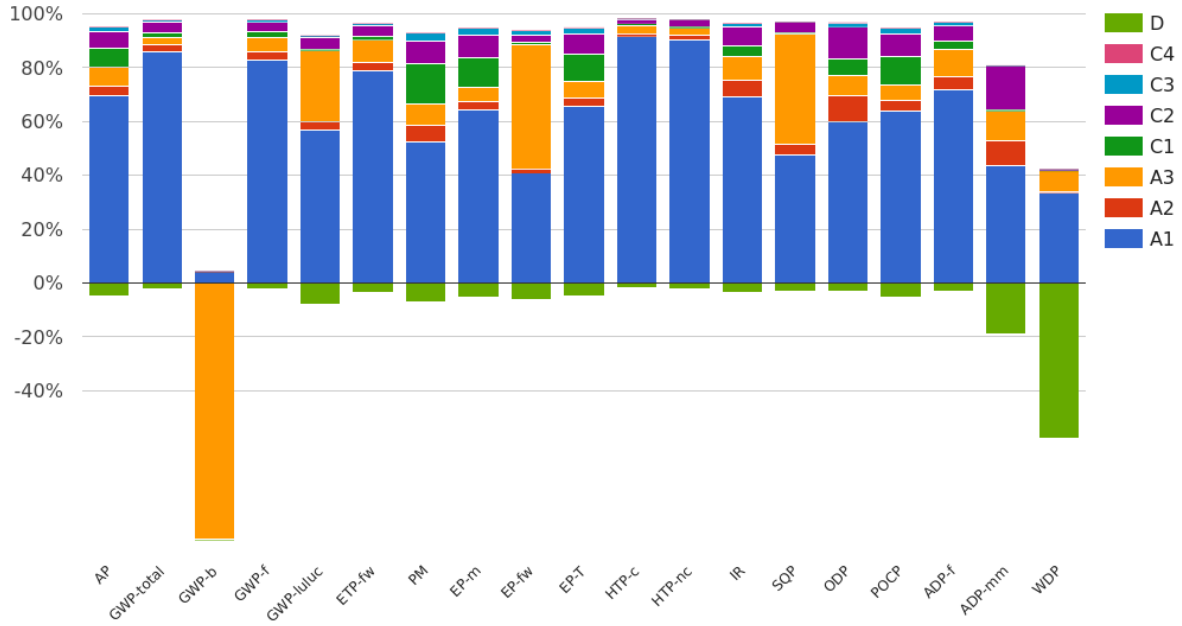
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	0.001866	kg C

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	0.00684	kg CO2 (biogenic)

6 Interpretation of results



In almost all impact categories, the environmental impact of NEODUR HE 3 green is predominantly determined by the extraction and processing of raw materials (Module A1). Within the impact category of global warming potential (GWP-total), the transportation of raw materials (Module A2) results in the second largest environmental impact after Module A1. Among the raw materials, the binder has the largest environmental impact, accounting for 67% of GWP-total, followed by the hard aggregate with 22%. The negative value of the global warming potential-biogenic (GWP-b) is primarily attributed to the packaging materials (Module A3) while the imbalance of GWP-b can be explained by the fact that waste processing of packaging (Module A5) is not declared in this EPD.

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

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

PCR B
Institut Bauen und Umwelt e.V. - Part B: Requirements on the EPD for Mineral factory-made mortar (2023-10-19)

DIN EN 13813
DIN EN 13813:2003-01: Screed material and floor screeds - Screed materials - Properties and requirements

DIN 1100-1
DIN 1100-1:2021-09: Hard aggregates for screed materials according to DIN EN 13813 - Part 1: Requirements and test methods

DIN EN 13892-3
DIN EN 13892-3:2015-03: Methods of test for screed materials - Part 3: Determination of wear resistance - Böhme

DIN EN 13892-2
DIN EN 13892-2:2003-02: Methods of test for screed materials - Part 2: Determination of flexural and compressive strength

DIN EN 206
DIN EN 206:2021-06: Concrete - Specification, performance, production and conformity

DIN 18202
DIN 18202:2019-07: Tolerances in building construction - Buildings

DIN EN 13670
DIN EN 13670:2011-03: Execution of concrete structures

7 References

DIN 1045-3
DIN 1045-3:2023-08: Concrete, reinforced and prestressed concrete structures - Part 3: Execution of structures

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