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

Concrete - 118 C25/30 XC4, XF1

Registration number:	EPD-Kiwa-EE-165874-EN
Issue date:	26-03-2024
Valid until:	26-03-2029
Declaration owner:	Lauter Sand Kies Beton GmbH & Co. KG
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

Concrete - 118 C25/30 XC4, XF1

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-165874-EN

1.3 VALIDITY

Issue date: 26-03-2024

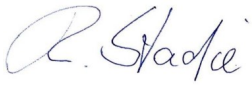
Valid until: 26-03-2029

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: Lauter Sand Kies Beton GmbH & Co. KG

Address: Haunstetter Straße 5, 86399 Bobingen, Germany

E-mail: Info@lauter-beton.de

Website: www.lauter-beton.de

Production location: Lauter Sand Kies Beton GmbH & Co. KG

Address production location: Haunstetter Straße 5, 86399 Bobingen, Germany
Mercedesring 10, 86156 Gersthofen, 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 15804:2012+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: General Product Category Rules, Version 2.1, 2022-02-14
PCR B: EN 16757 Sustainability of construction works – Environmental product declarations – Product Category Rules for concrete and concrete elements; German version EN 16757:2017

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.

1 General information

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: v3.16 (2024-02-12)

** 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 'Concrete - 118 C25/30 XC4, XF1' with the calculation identifier ReTHiNK-65874.

2 Product

2.1 PRODUCT DESCRIPTION

The product is a Lauter concrete of grade 118, strength class C25/30, F3, maximum grain size 16 mm, exposure classes XC4 XF1 and moisture class WF, hereinafter referred to as C25/30. The declared product is unreinforced concrete that is delivered to the construction site as ready-mixed concrete. For reinforced components, the proportion of reinforcing steel must be taken into account separately. For the use of ready-mixed concrete, the respective national regulations apply at the place of use, in Germany, for example, the building regulations of the federal states and the technical provisions based on these regulations.

Component	Share
Aggregates	~ 80%
Cement	~ 12%
Water	~ 7%
Additives and admixtures	< 1%

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

Concrete is a widely used building material in the construction industry. It is used in building construction, primarily for ceilings, walls, stairs, foundations, columns and beams, in civil engineering for components in contact with the ground, foundations, floor slabs and bored piles and for e.g. bridges.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

The limit values for the concrete composition are defined in accordance with the EN 206-1/1045-2 standard. The respective exposure classes/environmental conditions are taken into account in order to achieve an expected service life of at least 50 years. The concrete analysed here complies with this standard, which is why a minimum service life of 50 years is assumed.

USED RSL (YR) IN THIS LCA CALCULATION:

50

2.4 TECHNICAL DATA

The product complies with EN 206-1/1045-2, according to which the following technical data can generally be assumed for concrete of strength class C25/30:

- Compressive strength: 25/30 N/mm²
- Bulk density: 2000 - 2600 kg/m³
- Modulus of elasticity: ~ 31000 N/mm²
- Splitting tensile strength: ~ 2.6 N/mm².

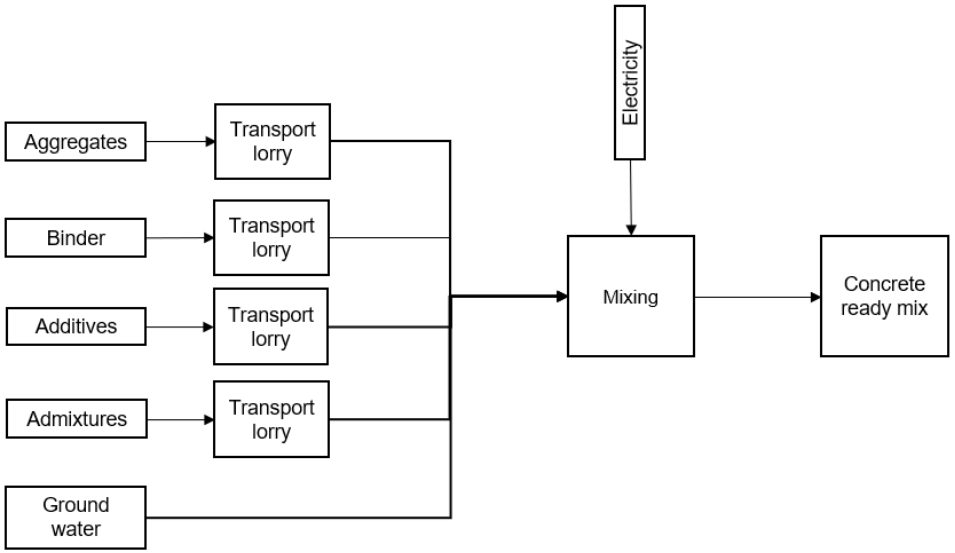
2.5 SUBSTANCES OF VERY HIGH CONCERN

The product does not contain any substances from the "Candidate List of Substances of Very High Concern for authorisation" (SVHC).

2.6 DESCRIPTION PRODUCTION PROCESS

Production takes place in the ready-mix concrete plants 86399 Bobingen, Haunstetter Straße 5 and 86156 Gersthofen, Mercedesring 10. The raw materials cement, gravel and sand, additives and admixtures are transported to the concrete plant where they are mixed with water. Some of the water comes from the on-site well, while another part consists of recycled water. Immediately after mixing, the concrete is transported to the construction site, where it is processed or installed.

2 Product


Electricity
Aggregates
Transport lorry
Binder
Transport lorry
Additives
Transport lorry
Admixtures
Transport lorry
Ground water
Mixing
Concrete ready mix
A1
A2
A3

3 Calculation rules

3.1 DECLARED UNIT

m3

The declared unit is 1 m3 of concrete ready mix.

reference_unit: cubic meter (m3)

3.2 CONVERSION FACTORS

Description	Value	Unit
reference_unit	1	m3
weight_per_reference_unit	2355.400	kg
Conversion factor to 1 kg	0.000425	m3

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 Concrete - 118 C25/30 XC4, XF1 , a product of Lauter Sand Kies Beton GmbH & Co. KG. The data are representative for Germany. The scenarios included are currently in use and are representative for one of the most likely scenario alternatives. 100% scenarios can be given.

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.

Furthermore, excluded processes are:

- Manufacturing of equipment used in production, buildings or any other capital asset;
- Transportation of personnel to the plant;
- The transportation of personnel within the plant;
- Research and development activities;
- Long-term emissions.

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.

3.6 ALLOCATION

Allocation has not been applied in this LCA.

3.7 DATA COLLECTION & REFERENCE TIME PERIOD

All process-specific data was collected for the operating year 2023. The quantities of raw materials, consumables and supplies used and the energy consumption were recorded and averaged over the entire 2023 operating year.

3.8 ESTIMATES AND ASSUMPTIONS

Representative and average data for Germany was used for most inputs (raw materials and external inputs). For inputs for which there was no corresponding German data set, a data set for a neighbouring country (e.g. Switzerland or the Netherlands) or a regional data set (e.g. for the EU) was used. In a few cases, a global dataset was used. If data was provided by a manufacturer (e.g. an EPD), this was used as the data source. If no data was available, the data from Ecoinvent was used.

All specific transport distances of the source materials were recorded and taken into account.

The distances from the place of use to the respective waste treatment are taken from the LCA calculation software R<THiNK, which source for the distances is the National Environmental Database (National Environmental Database; NMD) of the Netherlands.

For demolition and movement in module C1, the assumptions from the Dutch NMD report (NMD = Nationale Milieudatabase) for concrete structures "LCA Rapportage categorie 3 data - Nationale Milieudatabase - Hoofdstuk 42 Betonconstructies" of 17 May 2023 were adopted. For this purpose, the respective weight of the various concrete products was divided by the processing quantity per hour of the excavator. The processing quantity for demolition is 9.8 t/h and 8.3 t/h for moving.

A waste scenario for concrete has been assumed for Germany. According to the circular economy for construction, only 6.2% of the construction waste generated was disposed of in 2018. The remaining material was properly recycled and/or reused. More information on this can be found at https://kreislaufwirtschaft-bau.de.

3 Calculation rules

For reasons of data protection, further assumptions are only explained in the background report which accompanies this EPD.

3.9 DATA QUALITY

All process-specific data was collected for the 2023 operating year and is therefore up-to-date. The data is based on the annual average. In order to ensure comparability of the results, only consistent background data of the Ecoinvent database V3.6 was used in the LCA (e.g., records on energy, transportation, and supplies), which refers to reference year 2019. The database is regularly reviewed and thus complies with the requirements of EN 15804 (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. The primary data were provided by Lauter Sand Kies Beton GmbH u. Co. KG.

3.10 GUARANTEES OF ORIGIN

In this EPD, the local based approach was considered for the LCA, therefore no guaranties of origin (GO) are needed.

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
Hydraulic excavator (average) [NMD generic]	0.240	hr
Hydraulic excavator (average) [NMD generic]	0.284	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]
Concrete Germany (6,2% landfill; 93,8% recycling)	Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
waste not applicable or evaporated (empty scenario) (NMD ID 26)	Lorry (Truck), unspecified (default) | market group for (GLO)	0	0	0	0	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.

4 Scenarios and additional technical information

Waste Scenario	Region	Not removed (stays in work) [%]	Landfill [%]	Incineration [%]	Recycling [%]	Re-use [%]
Concrete Germany (6,2% landfill; 93,8% recycling)	DE	0	6.2	0	93.8	0
waste not applicable or evaporated (empty scenario) (NMD ID 26)	NL	0	0	0	0	0

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
Concrete Germany (6,2% landfill; 93,8% recycling)	0.000	140.083	0.000	2119.317	0.000
Total	**0.000**	**140.083**	**0.000**	**2119.317**	**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 Germany (6,2% landfill; 93,8% recycling)	2119.317	0.000
waste not applicable or evaporated (empty scenario) (NMD ID 26)	0.000	0.000
Total	**2119.317**	**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 CUBIC METER

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	A1	A2	A3	C1	C2	C3	C4	D
AP	mol H+ eqv.	4.97E-1	1.05E-1	2.47E-3	2.87E-1	9.39E-2	2.16E-2	7.00E-3	-1.84E-1
GWP-total	kg CO2 eqv.	1.26E+2	1.45E+1	1.00E+0	2.75E+1	1.62E+1	3.47E+0	7.39E-1	-2.47E+1
GWP-b	kg CO2 eqv.	1.32E-2	4.82E-2	4.38E-2	7.64E-3	7.47E-3	2.00E-2	1.46E-3	-5.16E-2
GWP-f	kg CO2 eqv.	1.26E+2	1.44E+1	9.55E-1	2.75E+1	1.62E+1	3.45E+0	7.38E-1	-2.46E+1
GWP-luluc	kg CO2 eqv.	1.40E-2	1.17E-2	9.14E-4	2.16E-3	5.93E-3	6.57E-4	2.06E-4	-1.84E-2
EP-m	kg N eqv.	3.01E-3	3.70E-2	4.31E-4	1.27E-1	3.31E-2	8.60E-3	2.41E-3	-5.58E-2
EP-fw	kg P eqv.	2.09E-2	3.99E-4	1.67E-4	9.99E-5	1.63E-4	1.07E-4	8.26E-6	-5.39E-4
EP-T	mol N eqv.	7.69E-1	4.09E-1	6.24E-3	1.39E+0	3.65E-1	9.56E-2	2.66E-2	-6.27E-1
ODP	kg CFC 11 eqv.	3.16E-6	2.53E-6	4.11E-8	5.93E-6	3.57E-6	4.47E-7	3.04E-7	-4.11E-6
POCP	kg NMVOC eqv.	2.21E-1	1.13E-1	1.66E-3	3.82E-1	1.04E-1	2.61E-2	7.72E-3	-1.77E-1
ADP-f	MJ	6.19E+2	2.15E+2	1.21E+1	3.78E+2	2.44E+2	4.63E+1	2.06E+1	-3.39E+2
ADP-mm	kg Sb-eqv.	2.08E-4	2.29E-4	7.56E-6	4.21E-5	4.10E-4	9.73E-6	6.75E-6	-7.85E-4
WDP	m3 world eqv.	5.68E+0	1.38E+0	4.62E-2	5.06E-1	8.74E-1	2.10E-1	9.24E-1	-1.29E+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	5.01E+1	2.12E+2	9.15E+0	2.28E+2	2.18E+2	3.75E+1	1.34E+1	-4.06E+2
PM	disease incidence	4.46E-6	1.18E-6	1.12E-8	7.61E-6	1.46E-6	4.77E-7	1.36E-7	-2.47E-6
HTP-c	CTUh	2.29E-7	1.04E-8	2.23E-10	7.96E-9	7.06E-9	8.90E-10	3.10E-10	-1.86E-8
HTP-nc	CTUh	3.94E-6	2.35E-7	8.31E-9	1.96E-7	2.38E-7	2.52E-8	9.51E-9	-4.32E-7
IR	kBq U235 eqv.	6.08E+3	1.06E+0	3.36E-2	1.62E+0	1.02E+0	1.47E-1	8.46E-2	-1.40E+0
SQP	Pt	4.24E+2	1.65E+2	1.04E+1	4.82E+1	2.12E+2	7.73E+0	4.32E+1	-3.07E+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	3.73E+1	1.12E+1	4.36E+0	2.04E+0	3.06E+0	2.63E+0	1.67E-1	-1.18E+1
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
PERT	MJ	3.73E+1	1.12E+1	4.36E+0	2.04E+0	3.06E+0	2.63E+0	1.67E-1	-1.18E+1
PENRE	MJ	6.42E+2	2.27E+2	1.25E+1	4.01E+2	2.59E+2	4.94E+1	2.19E+1	-3.60E+2
PENRM	MJ	0.00E+0	0.00E+0	5.83E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	MJ	6.42E+2	2.27E+2	1.31E+1	4.01E+2	2.59E+2	4.94E+1	2.19E+1	-3.60E+2
SM	Kg	9.63E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	MJ	1.60E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ	1.29E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	M3	3.21E-1	6.64E-2	4.44E-3	1.95E-2	2.97E-2	1.55E-2	2.20E-2	-3.02E+0

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	8.41E-4	4.75E-4	1.25E-5	1.03E-3	6.19E-4	8.07E-5	3.08E-5	-1.72E-3
NHWD	Kg	2.07E-1	7.83E+0	5.73E-2	4.47E-1	1.55E+1	6.45E+0	1.40E+2	-1.21E+1
RWD	Kg	5.47E-5	1.36E-3	4.52E-5	2.62E-3	1.60E-3	2.08E-4	1.35E-4	-1.95E-3

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	1.98E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.12E+3	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	1.81E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	MJ	0.00E+0	0.00E+0	1.05E-1	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

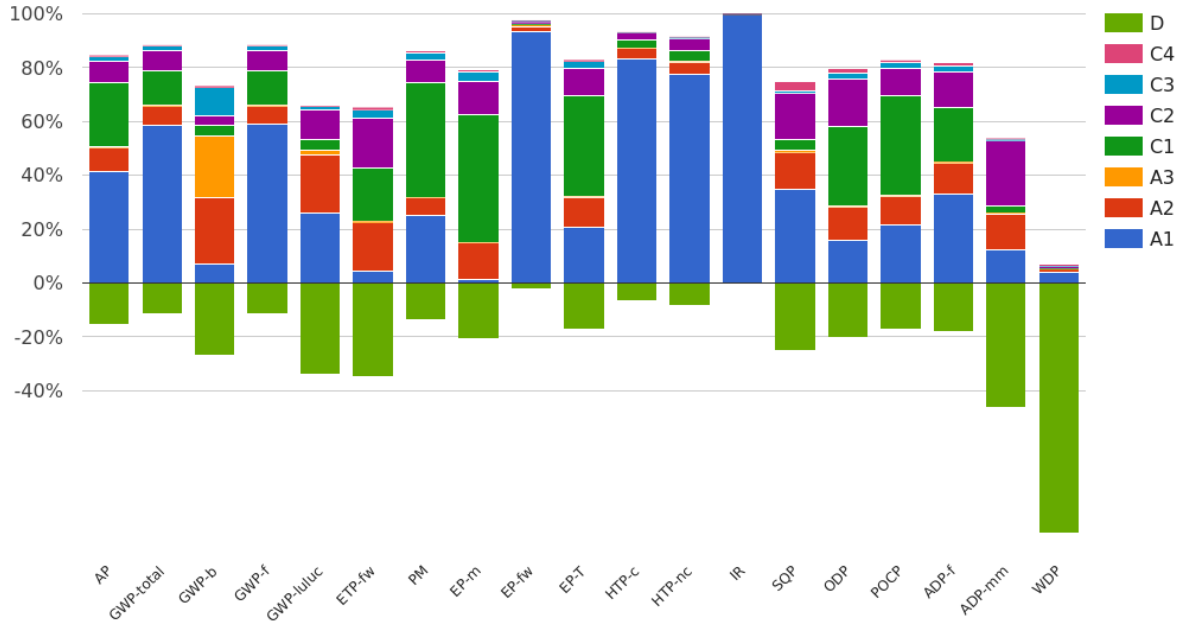
5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER CUBIC METER

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 Raw material supply (A1), and De-construction / Demolition (C1) predominate in almost all of the environmental impact categories analysed. For example, around 70 % of CO2 emissions (GWP-total) are attributable to raw material supply, while the C1 module accounts for around 15 % of the GWP. Manufacturing (A3) plays a subordinate role in the GWP. Cement accounts for approx. 99 % of the total GWP in the raw material supply (A1) and transport (A2) module.

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

EN 16757
EN 16757 Sustainability of construction works – Environmental product declarations – Product Category Rules for concrete and concrete elements; German version EN 16757:2017

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

8 Contact information

Publisher	Operator	Owner of declaration

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin, DE

E-mail:
DE.Ecobility.Experts@kiwa.com
Website:
https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin, DE

E-mail:
DE.Ecobility.Experts@kiwa.com
Website:
https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/

Lauter Sand Kies Beton GmbH & Co. KG
Haunstetter Straße 5
86399 Bobingen, DE

E-mail:
Info@lauter-beton.de
Website:
www.lauter-beton.de

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