Global Cement and Concrete Association

Environmental Data Sheet | Self-declaration

Self-declaration based on Environdec c-PCR-003 Concrete and concrete elements (EN 16757)

15344690_24

Manufacturer:	Waibel Beton Karlsruhe GmbH & Co. KG, Nordbeckenstraße 3a, 76189, Karlsruhe (DE)
Declared unit:	m³
Product identification:	15344690_24, Karlsruhe
Production site(s):	Werk Karlsruhe
Density:	2,328 kg/m³e
Reference service life:	-
Recycling rate at EoL:	0%
Scope:	A1-A3 + A4-A5 + B1-B7 + C1-C4 + D, cradle-to-grave
Methodology:	GCCA's Industry EPD Tool for Cement and Concrete (V4), International version
Date of issue:	2024-03-08 09:28
Comment:	This document is NOT a verified EPD but a self-declaration in EPD format. All information about goal and scope necessary for results interpretation by the EPD verifier are present in the latest version of the "LCA Model" report, available in GCCA's Industry EPD Tool. Materials incorporated to the product and packaging materials available in the tool are pre-defined. For a given material, for instance, the share of primary versus secondary cannot be specified. Any give material is either 'primary' or 'secondary, product' or 'secondary, co-product' or 'secondary, waste'. The indicator 'Use of secondary materials' is computed as 'secondary materials, product' + 'secondary, co-product' + 'secondary, waste'. 'Secondary materials, waste' coming into the system are considered as a waste stream and are accepted as such. Therefore, no impact from the former life is considered. 'Secondary materials, product' and 'secondary materials, co-products' however inherit the impact of pre-processing (processing from 'end-of-waste' state to 'fit-for-use' state), consistently with the requirements of EN15804. The PCR requires that the biogenic carbon content of the product and packaging should be reported in an EPD. It is mandatory when the biogenic carbon content exceeds 5% wt. (product or packaging). The latter is calculated and reported in the tool based on the default biogenic carbon content of input materials and is taken into account in the calculation of the GWP-bio indicator as per the requirements of the PCR. **It is the responsibility of the EPD owner to report the biogenic content of the product and packaging in the EPD.** The removals and emissions associated with biogenic carbon content of the product and packaging are taken into consideration in the calculation of the GWP-bio indicator, as per the PCR. The uptake of CO2 in A1-A3 (e.g. bio-based insulation materials in precast elements or bio-based packaging materials) and reemission in A5 (packaging end-of-life) or C3-C4 (product end-of-life). The tool does not calculate the 'Radioactive waste disposed' (RWD) indicator. This is due to the absence of any readily available data in LCA databases for the corresponding indicator. The latter is considered not to be significant for the sector. The 'Water deprivation potential' (WDP) indicator is characterized according to global characterization factors and not local ones. The results of the impact categories abiotic depletion of minerals and metals, land use, human toxicity (cancer), human toxicity, non-cancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes. The energy balancing as per PCR 2019:14 Construction Products v1.3.2 is performed according to Option B (see Annex 3 of the PCR). The following hypotheses apply to waste streams at the end-of-life: 1) The only materials sent to recycling are the concrete itself and the reinforcement steel when applicable. Other materials (e.g. insulation, void formers) are considered to be either incinerated (incinerable fraction) or landfilled (non-incinerable fraction). We assume the recycled materials are actually recycled and accounted for as recycled material. 2) The potential credits in module D therefore apply to i) the recycling of concrete at the end of life, ii) the recycling of reinforcing steel at the end of life and iii) the incineration with energy recovery of (a fraction of) packaging and/or product waste. This methodological choice is consistent with the reality of the cement and concrete industry. No allocation is applied in the GCCA tool. For instance, no allocation of impacts will be applied to excess electricity or excess heat which may result from the production of concrete or precast. Such situations are considered to be marginal and negligible when they take place. **The limitations and non-conformities above should be explicitly stated in any EPD report when applicable.**

GWP-GHG intensity of electricity: 4.5E-1 kg CO_2 eq./kWh

It is the responsibility of EPD owners to report this emission factor in the EPD report (mandatory).

GWP-GHG intensity of scraps:

no secondary material is used in this EPD

If the scrap inputs contribute more than 10% to the GWP-GHG results of modules A1-A3, the (weighted-average) GWP-GHG intensity of that scrap (in kg CO2 eq. /tonne) shall be declared in the EPD, as well as the percentage of scrap that was assumed to come with, and without, an environmental burden.

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Core environmental impact indicators

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG	kg CO_2 eq.	1.57E2	6.56E0	1.16E0	1.65E2 **	1.02E1	1.34E1	0E0	0E0	0E0	0E0	0E0	0E0	0E0	8.99E0	8.69E0	0E0	1.28E1	0E0
GWP-tot	kg CO_2 eq.	8.27E0	6.56E0	1.16E0	1.6E1 *	1.02E1	8.92E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	8.99E0	8.69E0	0E0	1.28E1	0E0
GWP-fos	kg CO_2 eq.	8.25E0	6.56E0	1.16E0	1.6E1 *	1.02E1	8.92E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	8.99E0	8.68E0	0E0	1.28E1	0E0
GWP-bio	kg CO_2 eq.	1.79E-2	2.63E-3	5.59E-4	2.11E-2 *	4.14E-3	4.9E-3	0E0	0E0	0E0	0E0	0E0	0E0	0E0	1.6E-3	6.37E-3	0E0	8.44E-3	0E0
GWP-luc	kg CO_2 eq.	4.38E-3	2.33E-3	8.53E-4	7.56E-3	3.57E-3	3.65E-3	0E0	0E0	0E0	0E0	0E0	0E0	0E0	1.13E-3	5.17E-3	0E0	6.86E-3	0E0
ODP	kg CFC 11 eq.	1.76E-6	1.29E-6	9.72E-8	3.14E-6	2.02E-6	1.58E-6	0E0	0E0	0E0	0E0	0E0	0E0	0E0	1.62E-6	1.5E-6	0E0	4.16E-6	0E0
AP	mol H+ eq.	8.94E-2	2.17E-2	6.03E-3	1.17E-1	3.37E-2	8.09E-2	0E0	0E0	0E0	0E0	0E0	0E0	0E0	9.42E-2	4.06E-2	0E0	1.22E-1	0E0
EP-fw	kg P eq.	2.11E-3	5.09E-4	3.5E-4	2.97E-3	7.87E-4	1.27E-3	0E0	0E0	0E0	0E0	0E0	0E0	0E0	4.02E-4	1.19E-3	0E0	1.5E-3	0E0
EP-mar	kg N eq.	1.66E-4	4.41E-5	2.81E-5	2.38E-4	6.85E-5	6.45E-4	0E0	0E0	0E0	0E0	0E0	0E0	0E0	3.34E-5	8.8E-5	0E0	1.41E-4	0E0
EP-ter	mol N eq.	2.82E-1	4.88E-2	9.61E-3	3.41E-1	7.47E-2	3.26E-1	0E0	0E0	0E0	0E0	0E0	0E0	0E0	4.44E-1	1.13E-1	0E0	4.39E-1	0E0
POCP	kg NMVOC eq.	5.89E-2	1.95E-2	2.67E-3	8.11E-2	3.03E-2	9.05E-2	0E0	0E0	0E0	0E0	0E0	0E0	0E0	1.22E-1	3.74E-2	0E0	1.29E-1	0E0
ADPE	kg Sb eq.	4.61E-5	1.33E-5	1.15E-6	6.06E-5	1.97E-5	8.73E-6	0E0	0E0	0E0	0E0	0E0	0E0	0E0	2.66E-6	1.57E-5	0E0	1.39E-5	0E0
ADPF	MJ, net calorific value	1.67E2	1.06E2	1.54E1	2.88E2	1.67E2	1.4E2	0E0	0E0	0E0	0E0	0E0	0E0	0E0	1.3E2	1.33E2	0E0	3.56E2	0E0
WDP	m^3 world eq. deprived	1.24E1	7.83E-1	3.48E-1	1.35E1	1.23E0	-1.18E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	7.67E-1	1.15E0	0E0	1.72E1	0E0

*** The indicated values (gross values) include the greenhouse gas emissions from the incineration of secondary fuels at clinker production. The net GWP-tot (excluding the emissions from the incineration of secondary fuels at clinker production) is 1.6E1 kg CO2–eq. The net GWP-fos is 1.6E1 kg CO2-eq. The net GWP-bio is 2.11E-2 kg CO2-eq.**

**** The indicated values (gross values) include the greenhouse gas emissions from the incineration of secondary fuels at clinker production. The net GWP-GHG (excluding the emissions from the incineration of secondary fuels at clinker production) is 1.65E2 kg CO2–eq.**

It should be noted that the net/gross differentiation applies to GWP indicators only and is ignored for other indicators where gross is applied by default.

Core environmental impact indicators	• **GWP-GHG** (Global Warming Potential, GHG) • **GWP-tot** (Global Warming Potential, total) • **GWP-fos** (Global Warming Potential, fossil fuels) • **GWP-bio** (Global Warming Potential, biogenic) • **GWP-luc** (Global Warming Potential, land use and land use change) • **ODP** (Depletion potential of the stratospheric ozone layer) • **AP** (Acidification potential, Accumulated Exceedance) • **EP-fw** (Eutrophication potential, fraction of nutrients reaching freshwater end compartment) • **EP-mar** (Eutrophication potential, fraction of nutrients reaching marine end compartment) • **EP-ter** (Eutrophication potential, Accumulated Exceedance) • **POCP** (Formation potential of tropospheric ozone) • **ADPE** (Abiotic depletion potential for non- fossil resources) • **ADPF** (Abiotic depletion potential for fossil resources potential) • **WDP** (Water (user) deprivation potential, deprivation-weighted water consumption)

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Additional environmental impact indicators

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	1.12E-6	5.58E-7	1.44E-8	1.69E-6	8.87E-7	1.75E-6	0E0	0E0	0E0	0E0	0E0	0E0	0E0	2.45E-6	7.76E-7	0E0	2.28E-6	0E0
IRP	kBq U235 eq.	2.77E3	5.57E2	3.8E2	3.71E3	8.77E2	1.25E3	0E0	0E0	0E0	0E0	0E0	0E0	0E0	6.08E2	7.62E2	0E0	1.64E3	0E0
ETP	CTUe	5.54E0	2.2E1	1.92E-1	2.77E1	3.51E1	6.12E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	1.76E0	2.33E1	0E0	6.71E0	0E0
HTPC	CTUh	1.89E-7	4.39E-8	7.31E-9	2.4E-7	6.76E-8	1.95E-7	0E0	0E0	0E0	0E0	0E0	0E0	0E0	6.36E-8	1.01E-7	0E0	1.12E-7	0E0
HTPNC	CTUh	1.06E-6	1.19E-6	6.17E-8	2.32E-6	1.89E-6	9.41E-7	0E0	0E0	0E0	0E0	0E0	0E0	0E0	2.46E-7	1.4E-6	0E0	7.15E-7	0E0
SQP	dimensionless	2.24E2	1.83E2	1.49E1	4.22E2	2.95E2	8.07E1	0E0	0E0	0E0	0E0	0E0	0E0	0E0	7.71E0	2.17E2	0E0	6.63E2	0E0

Additional environmental impact indicators	• **PM** (Potential incidence of disease due to PM emissions) • **IRP** (Potential Human exposure efficiency relative to U235) • **ETP** (Potential Comparative Toxic Unit for ecosystems) • **HTPC** (Potential Comparative Toxic Unit for humans - cancer) • **HTPNC** (Potential Comparative Toxic Unit for humans - non-cancer) • **SQP** (Potential soil quality index)

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Parameters describing resource use

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ, net calorific value	1.13E1	1.52E0	3.52E0	1.64E1	2.39E0	7.61E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	7.59E-1	3.33E0	0E0	9.24E0	0E0
PERM	MJ, net calorific value	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
PERT	MJ, net calorific value	1.13E1	1.52E0	3.52E0	1.64E1	2.39E0	7.61E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	7.59E-1	3.33E0	0E0	9.24E0	0E0
PENRE	MJ, net calorific value	1.67E2	1.06E2	1.54E1	2.88E2	1.67E2	1.4E2	0E0	0E0	0E0	0E0	0E0	0E0	0E0	1.3E2	1.33E2	0E0	3.56E2	0E0
PENRM	MJ, net calorific value	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
PENRT	MJ, net calorific value	1.67E2	1.06E2	1.54E1	2.88E2	1.67E2	1.4E2	0E0	0E0	0E0	0E0	0E0	0E0	0E0	1.3E2	1.33E2	0E0	3.56E2	0E0
SM	kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
RSF	MJ, net calorific value	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
NRSF	MJ, net calorific value	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
NFW	m^3	2.83E0	2.33E-2	9.54E-3	2.86E0	3.67E-2	1.95E-1	0E0	0E0	0E0	0E0	0E0	0E0	0E0	1.99E-2	3.55E-2	0E0	4E-1	0E0

Parameters describing resource use	• **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 materials) • **RSF** (Use of renewable secondary fuels) • **NRSF** (Use of non-renewable secondary fuels) • **NFW** (Net use of fresh water)

Other environmental information describing waste categories

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
NHWD	kg	0E0	0E0	0E0	0E0	0E0	6.98E1	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	2.33E3	0E0
RWD	kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Other environmental information describing waste categories	• **HWD** (Hazardous waste disposed) • **NHWD** (Non-hazardous waste disposed) • **RWD** (Radioactive waste disposed)

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Environmental information describing output flows

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
MFR	kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
MER	kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
EE	MJ per energy carrier	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0

Environmental information describing output flows	• **CRU** (Components for re-use) • **MFR** (Materials for recycling) • **MER** (Materials for energy recovery) • **EE** (Exported energy)

Extra indicators

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CC	kg CO_2 eq.	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
CWRS	kg CO_2 eq.	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
GWP-prod	kg CO_2	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0
GWP-pack	kg CO_2	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0	0E0

Extra indicators	• **CC** (Emissions from calcination and removals from carbonation) • **CWRS** (Emissions from combustion of secondary fuels from renewable sources used in production processes) • **GWP-prod** (Removals and emissions associated with biogenic carbon content of the bio-based product) • **GWP-pack** (Removals and emissions associated with biogenic carbon content of the bio-based packaging)