Environmental Product Declaration

according to ISO 14025 and EN 15804

This declaration is for:

Geotechnical binder 95-5

Provided by:

Ecocem France

program operator

Stichting MRPI®

publisher

Stichting MRPI®

www.mrpi.nl

MRPI® registration

1.1.00070.2019

EPD registration

00001001

date of first issue

15-10-2019

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PROGRAM OPERATOR

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PRODUCT

Geotechnical binder 95-5

MRPI® REGISTRATION

1.1.00070.2019

EPD REGISTRATION

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DATE OF ISSUE

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DECLARED UNIT/FUNCTIONAL UNIT

tonne

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **Niels Jonkers, Ecochain.**
The LCA study has been done by **Pieter Stadhouders, EcoReview.**
The certificate is based on an LCA-dossier according to ISO14025 and NEN-EN15804+A1. It is verified according to the 'EPD-MRPI verification protocol May 2017'. EPD's of construction products may not be comparable if they do not comply with NEN-EN15804+A1. Declaration of SVHC that are listed on the 'Candidate List of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

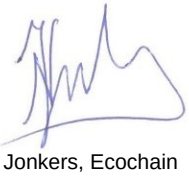
VISUAL PRODUCT

DESCRIPTION OF PRODUCT

Eco2cem is Ground Granulated Blastfurnace Slag (GGBS). It is a latent hydraulic material, used as a substitue for cementitious-bound materials.

MORE INFORMATION

www.ecocem.fr

DEMONSTRATION OF VERIFICATION
CEN standard EN15804 serves as the core PCR[a]
Independent verification of the declaration and data, according to EN ISO 14025:2010: internal: external: X
(where appropriate[b]) Third party verifier:  Niels Jonkers, Ecochain
[a] Product Category Rules [b] Optional for B-to-B communication, mandatory for B-to-C communication (see EN ISO 14025:2010, 9.4).

DETAILED PRODUCT DESCRIPTION

Product name: Ecocem Geotechnical Binder 95:5 (Fos sur Mer)

Geotechnical Binder 95:5 is a mix of GGBS and Portland cement.
Granulated Blastfurnace Slag (a rest product of steel production) is dried and ground to make a powder. This is called Ground Granulated Blastfurnace Slag (GGBS). It is an intermediate product that is a constituent binder for cementitious-bound materials.

COMPONENT (> 1%)	
Ecocem GGBS	95.00%
Portland cement	5.00%

(*) > 1% van total mass

SCOPE AND TYPE

The GGBS is produced in Fos sur Mer (France). Subsequently it is mixed at the same production location with purchased Portland Cement. The mix is applied as an intermediate product for cementitious-bound materials.
Analysis has been done using the Ecochain software. Ecoinvent V3.4 was used for the analysis.
It is an intermediate product and therefore end-of-life scenarios are not clear. The specific EPD only covers A1-A3.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
x	x	x	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA

X = Module assessed

REPRESENTATIVENESS

Not applicable as this is a specific product from a specific location.

ENVIRONMENTAL IMPACT per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADPE	kg Sb-eq.	1.70 E -1	9.54 E -4	8.38 E -7	1.71 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ADPF	MJ	3.89 E +2	2.08 E +0	1.69 E +0	3.93 E +2	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
GWP	kg CO2-eq.	6.01 E +1	1.29 E -1	1.08 E -1	6.03 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ODP	kg CFC11-eq.	6.93 E -6	2.38 E -8	1.30 E -7	7.08 E -6	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
POCP	kg ethene-eq.	9.58 E -3	2.38 E -5	3.63 E -5	9.64 E -3	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
AP	kg SO2-eq.	1.79 E -1	6.58 E -4	5.94 E -4	1.80 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
EP	kg (PO4)3--eq.	1.92 E -2	1.28 E -4	1.11 E -4	1.94 E -2	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
Toxicity indicators (Dutch market)																			
HTP	kg DCB-eq.	6.20 E +0	5.54 E -2	9.47 E -2	6.35 E +0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
FAETP	kg DCB-eq.	1.92 E -1	1.97 E -3	2.27 E -3	1.96 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
MAETP	kg DCB-eq.	1.24 E +3	2.51 E +1	7.50 E +0	1.27 E +3	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
TETP	kg DCB-eq.	1.84 E -1	3.00 E -4	5.23 E -3	1.90 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA

ADPE = Abiotic Depletion Potential for non-fossil resources
ADPF = Abiotic Depletion Potential for fossil resources
GWP = Global Warming Potential
ODP = Depletion potential of the stratospheric ozone layer
POCP = Formation potential of tropospheric ozone photochemical oxidants
AP = Acidification Potential of land and water
EP = Eutrophication Potential

HTP = Human Toxicity Potential
FAETP = Fresh water aquatic ecotoxicity potential
MAETP = Marine aquatic ecotoxicity potential
TETP = Terrestrial ecotoxicity potential

RESOURCE USE per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	3.90 E +1	2.72 E -2	1.15 E +0	4.01 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PERM	MJ	0	0	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PERT	MJ	3.90 E +1	2.72 E -2	1.15 E +0	4.01 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRE	MJ	8.64 E +2	2.12 E +0	1.74 E +1	8.83 E +2	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRM	MJ	0	0	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRT	MJ	8.64 E +2	2.12 E +0	1.74 E +1	8.83 E +2	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
SM	kg	0	0	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
RSF	MJ	0	0	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
NRSF	MJ	0	0	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
FW	m3	3.30 E +1	1.15 E -4	3.89 E -3	3.30 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA

INA = Indicator Not Assessed
PERE = Use of renewable energy excluding renewable primary energy resources
PERM = Use of renewable energy resources used as raw materials
PERT = Total use of renewable primary energy resources
PENRE = Use of non-renewable primary energy resources excluding non-renewable 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
FW = Use of net fresh water

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	6.29 E -3	1.46 E -5	2.30 E -4	6.53 E -3	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
NHWD	kg	3.50 E +1	1.19 E -1	1.98 E -2	3.51 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
RWD	kg	6.06 E -3	1.34 E -5	2.26 E -4	6.30 E -3	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
CRU	kg	0	0	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
MFR	kg	0	0	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
MER	kg	0	0	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
EEE	MJ	0	0	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ETE	MJ	0	0	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA

INA = Indicator Not Assessed
HWD = Hazardous Waste Disposed
NHWD = Non Hazardous Waste Disposed
RWD = Radioactive Waste Disposed
CRU = Components for reuse
MFR = Materials for recycling
MER = Materials for energy recovery
EEE = Exported Electrical Energy
ETE = Exported Thermal Energy

CALCULATION RULES

Data quality

Data flows have been modeled as realistically as possible. Data quality assessment is based on the principle that the primary data used for processes occurring at the production site is selected in the first instance. Where this is not available, other reference data is selected from appropriate sources.

Data collection period

The dataset is representative for the production processes used in 2018.

Methodology and reproducibility

The process descriptions and quantities in this study are reproducible in accordance to the reference standards that have been used. The references of all sources, both primary and public sources and literature, have been documented. In addition, to facilitate the reproducibility of this LCA, a full set of data records has been generated which can be accessed via the EcoChain tool. This data portfolio contains a summary of all the data used in this LCA, and correspondingly, in Ecocem France EcoChain account.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

A1. Raw materials supply

This module considers the extraction and processing of GBS. The system boundary of the raw material production is determined between the blast furnace slag production and the quenching process. No emissions from the steel production are allocated onto the blast furnace slag. This approach is in accordance with CEN/TC 51 PCR for cement and building lime, 2015. The impacts related to the quenching of the blast furnace slag are allocated onto the Eco2cem production.

A2. Transport of raw materials to manufacturer

This includes the transport distance of the GBS to the manufacturing facility via road, boat and/or train.

A3. Manufacturing

This module covers the manufacturing of the Eco2cem and includes all processes linked to production such as drying, grinding and internal transportation. Use of electricity, fuels and auxiliary materials in eco2cem production is taken into account as well. Also the electricity for mixing Eco2cem with the purchased products to create the mixes has been taken into account.

DECLARATION OF SVHC

None of the substances contained in the product are listed in the “Candidate List of Substances of Very High Concern for authorisation”, or they do not exceed the threshold with the European Chemicals Agency.

REFERENCES

• EN 15804:2012+A1:2013 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products, of 11/2013.
• ISO 14040/14044 on Life Cycle Assessments.
• CEN/TC 51 PCR for cement and building lime, 2015

REMARKS

None