Environmental Product Declaration

according to ISO 14025 and EN 15804

This declaration is for:

Ground Granulated Blastfurnace Slag (GGBS)

Provided by:

ECOCEM France SAS



program operator

Stichting MRPI®

publisher

Stichting MRPI®

www.mrpi.nl

MRPI® registration

1.1.00481.2023

date of first issue

01-12-2023

date of this issue

01-12-2023

expiry date

01-12-2028

COMPANY INFORMATION

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PRODUCT

Ground Granulated Blastfurnace Slag (GGBS)

DECLARED UNIT/FUNCTIONAL UNIT

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DESCRIPTION OF PRODUCT

Ground granulated blastfurnace slag (GGBS), is a latent hydraulic material and is normally used in combination with Portland cement or other types of activators.

VISUAL PRODUCT



MRPI® REGISTRATION

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MORE INFORMATION

www.ecocemglobal.com/fr

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **Niels Jonkers, PLUK sustainability.**
The LCA study has been done by **Stijn Mulder, EcoReview.**
The certificate is based on an LCA-dossier according to ISO14025 and EN15804+A2. It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2. 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.

PROGRAM OPERATOR

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ir. J-P den Hollander, Managing director MRPI®

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
Third party verifier: Niels Jonkers, PLUK sustainability
[a] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

Ecocem ggbs is a (latent) hydraulic binder made by finely grinding granulated blastfurnace slag (GGBS). Ecocem ggbs is an “intermediate” product, i.e., a constituent to produce concrete, mortars, grouts, coatings and other mixtures intented for construction and the manufacture of construction products.

Ecocem ground granulated slag is manufactured under a fully controlled process, by drying and fine grinding the raw material, granulated slag. This is a secondary material co-produced with pig iron by the blast furnaces.

It is used:

• In concrete mixes as a substitute for cements, as a type II pozzolanic or latent hydraulic additive or as a grain modifier;
• In the mix for cement surface preparations.
• With bentonite for producing special foundations, soil reinforcements, etc.
• As a base for hydraulic binders for roads or for road gravel.
• For treating agricultural materials (hemp, rapeseed, etc.) to improve their resistance to water penetration, mildew, and their reaction to fire.
• In combination with marine sediments.

COMPONENT > 1% of total mass	[%]
Ground Blastfurnace Slag	100%

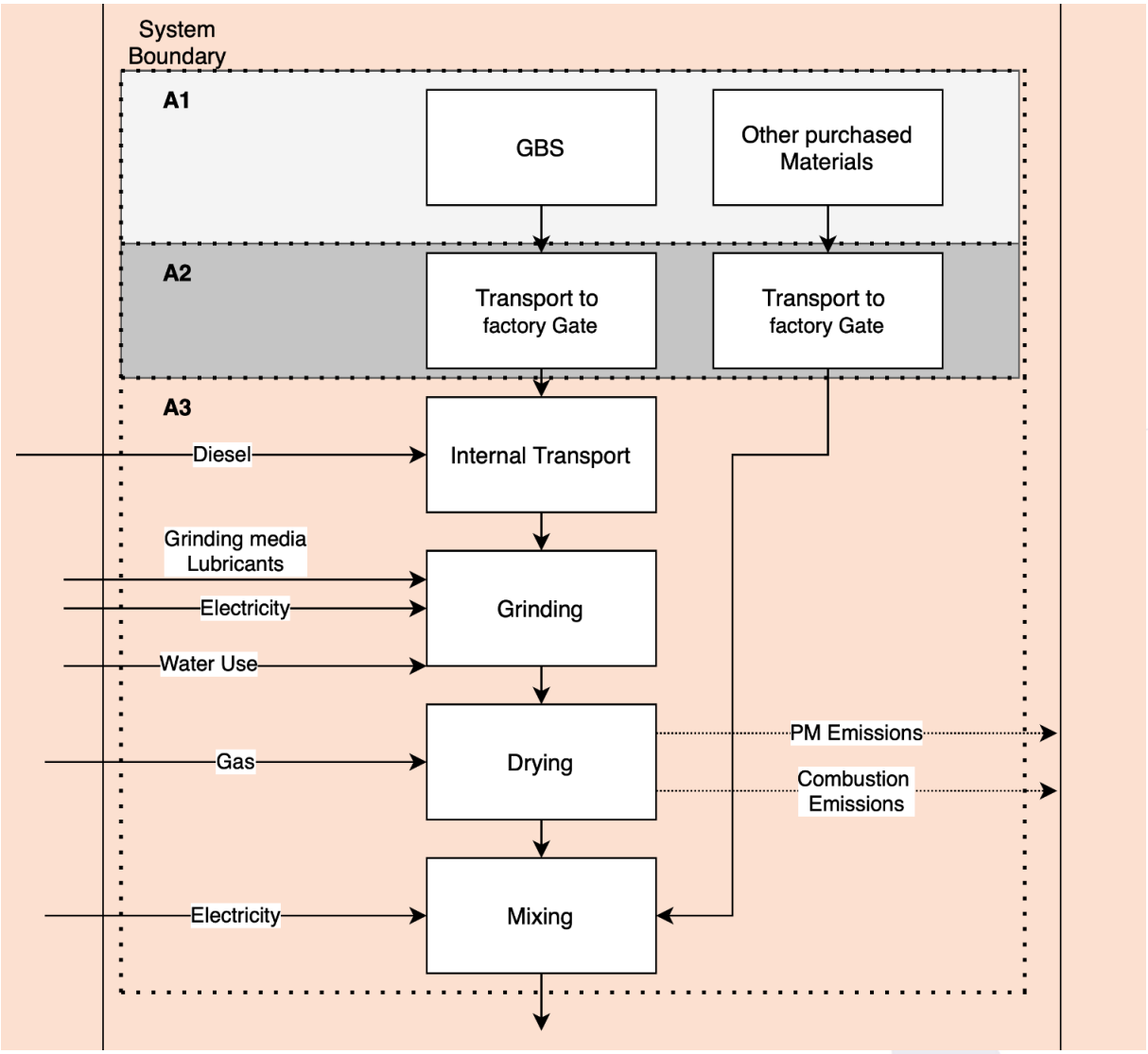
SCOPE AND TYPE

The type of this EPD is Cradle-to-Gate (A1-A3). All major steps from the extraction of natural resources to the factory gate are included in the environmental performance of the manufacturing phase, except those that are not relevant to the environmental performance of the product. The software SimaPro is used to perform the LCA. The background databases used is EcoInvent 3.6

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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

X = Modules Assessed

ND = Not Declared



LCA process diagram according to EN 15804 (7.2.1)

REPRESENTATIVENESS

This EPD is representative for the Ecocem Dunkirk production facility.

ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

	UNIT	A1	A2	A3	A1-A3
GWP-total	kg CO2 eq.	8.59E+1	3.15E-1	1.94E+1	1.06E+2
GWP-fossil	kg CO2 eq.	8.57E+1	3.15E-1	1.94E+1	1.05E+2
GWP-biogenic	kg CO2 eq.	1.86E-1	-2.16E-5	8.79E-3	1.95E-1
GWP-luluc	kg CO2 eq.	2.39E-2	2.09E-4	1.50E-3	2.56E-2
ODP	kg CFC11 eq.	2.17E-13	6.65E-8	2.90E-6	2.96E-6
AP	mol H+ eq.	1.72E-1	6.34E-3	2.42E-2	2.03E-1
EP-freshwater	kg P eq.	1.26E-4	1.92E-6	6.36E-5	1.92E-4
EP-marine	kg N eq.	3.87E-2	1.52E-3	8.55E-3	4.88E-2
EP-terrestrial	mol N eq.	4.19E-1	1.69E-2	9.11E-2	5.27E-1
POCP	kg NMVOC eq.	1.53E-1	4.51E-3	2.60E-2	1.84E-1
ADP-minerals & metals	kg Sb eq.	8.23E-6	4.91E-6	1.99E-5	3.30E-5
ADP-fossil	MJ, net calorific value	7.41E+2	4.33E+0	5.38E+2	1.28E+3
WDP	m3 world eq. deprived	4.58E+1	1.01E-2	3.10E+0	4.89E+1

GWP-total = Global Warming Potential total
GWP-fossil = Global Warming Potential fossil fuels
GWP-biogenic = Global Warming Potential biogenic
GWP-luluc = Global Warming Potential land use and land use change
ODP = Depletion potential of the stratospheric ozone layer
AP = Acidification Potential, Accumulated Exceedence
EP-freshwater = Eutrophication Potential, fraction of nutrients reaching freshwater end compartment
EP-marine = Eutrophication Potential, fraction of nutrients reaching marine end compartment
EP-terrestrial = Eutrophication Potential, Accumulated Exceedence
POCP = Formation potential of tropospheric ozone photochemical oxidants
ADP-minerals&metals = Abiotic Depletion Potential for non fossil resources [2]
ADP-fossil = Abiotic Depletion for fossil resources potential [2]
WDP = Water (user) deprivation potential, deprivation-weighted water consumption [2]

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 experience with the indicator.

ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

	UNIT	A1	A2	A3	A1-A3
PM	Disease incidence	1.46E-6	1.69E-8	3.94E-7	1.87E-6
IRP	kBq U235 eq.	6.58E+0	1.87E-2	4.51E+0	1.11E+1
ETP-fw	CTUe	2.86E+2	3.18E+0	9.24E+1	3.82E+2
HTP-c	CTUh	1.33E-7	1.81E-10	2.72E-9	1.36E-7
HTP-nc	CTUh	1.34E-6	3.18E-9	3.52E-8	1.38E-6
SQP	---	7.43E+1	1.93E+0	7.12E+0	8.34E+1

PM = Potential incidence of disease due to PM emissions
IRP = Potential Human exposure efficiency relative to U235 [1]
ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]
HTP-c = Potential Comparative Toxic Unit for humans [2]
HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]
SQP = Potential soil quality index [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 experience with the indicator.

RESOURCE USE per functional unit or declared unit (A1 / A2)

	UNIT	A1	A2	A3	A1-A3
PERE	MJ	8.01E+1	4.59E-2	4.01E+1	1.20E+2
PERM	MJ	0.00	0.00	0.00	0.00
PERT	MJ	8.01E+1	4.59E-2	4.01E+1	1.20E+2
PENRE	MJ	7.42E+2	4.60E+0	5.51E+2	1.30E+3
PENRM	MJ	0.00	0.00	0.00	0.00
PENRT	MJ	7.42E+2	4.60E+0	5.51E+2	1.30E+3
SM	kg	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	0.00
FW	m3	1.13E+0	3.62E-4	3.29E-1	1.46E+0

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 (A1 / A2)

	UNIT	A1	A2	A3	A1-A3
HWD	kg	1.74E-7	7.15E-6	2.12E-4	2.19E-4
NHWD	kg	4.55E-1	1.22E-1	6.96E-1	1.27E+0
RWD	kg	3.57E-2	2.97E-5	5.94E-3	4.17E-2
CRU	kg	0.00	0.00	0.00	0.00
MFR	kg	0.00	0.00	0.00	0.00
MER	kg	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.00	0.00
ETE	MJ	0.00	0.00	0.00	0.00

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

BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 / A2)

	UNIT	A1	A2	A3	A1-A3
BCCpr	kg C	0.00	0.00	0.00	0.00
BCCpa	kg C	0.00	0.00	0.00	0.00

BCCpr = Biogenic carbon content in product
BCCpa = Biogenic carbon content in packaging

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 2021.

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.

Allocation

Allocation of emissions from steel production to the purchased GBS are in accordance with the French regulations mentioned in the NF EN 15804+A2/CN and the economic allocation recommended by the French government (DHUP – Department of Housing, Urban Planning and Landscape).

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. Emissions from the steel production are allocated onto the blast furnace slag in accordance with the NF EN 15804+A2/CN and the economic allocation recommended by the French government (DHUP – Department of Housing, Urban Planning and Landscape). The impacts related to the quenching of the blast furnace slag are allocated onto the gbs production.

A2. Transport of raw materials to manufacturer

The transportation of the suppliers to Ecocem Dunkirk is done by truck or Ship.

A3. Manufacturing

The production consists of grinding and drying of Granulated Blastfurance Slag (GBS).

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

• Simapro 9.5.0.0.

• EN 15804: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products', EN 15804:2019+A2.

• ISO 14040: Environmental management - Life cycle assessment – Principles and Framework', International Organization for Standardization, ISO14040:2006.

• ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines', International Organization for Standardization, ISO14044:2006.

• ISO 14025: Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures', International Organization for Standardization, ISO14025:2006.

REMARKS

None