Environmental Product Declaration
according to ISO 14025 and EN 15804

MRPI
milieu relevante product informatie

This declaration is for:
Spenner CEM III/B 42,5 N-LHSR (Erwitte)

Provided by:
Spenner Zement

spenner

Nationale **Milieu**DATABASE

ECO PLATFORM
EPD
EN 15804 VERIFIED

PROGRAM OPERATOR
Stichting MRPI®
Kingsfordweg 151
1043GR
Amsterdam

COMPANY INFORMATION

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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

PRODUCT
Spenner CEM III/B 42,5 N-LHSR (Erwitte)

MRPI® REGISTRATION
1.1.00092.2019

EPD REGISTRATION
00001074

DATE OF ISSUE
16-12-2019

EXPIRY DATE
16-12-2024

DECLARED UNIT/FUNCTIONAL UNIT
tonne

DESCRIPTION OF PRODUCT
Blast furnace slag cement

MORE INFORMATION
https://spenner-zement.de/produkte/zement/port
landhuettenzement-cem-iib-s-525-n/

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: Spenner CEM III/B 42,5 N-LHSR

A cement mix, with Ground Granulated Blastfurnace Slag (GGBS) being its largest ingredient, followed by Portland cement. Sold in bulk quantities. The production processes needed to come to this product are grinding and mixing. The clinker that is used for the Portland cement is self produced. For this, mining, transport, breaking, drying and calcination has been performed. The GGBS is also self produced at a different production facility in Duisburg. For its production, drying and grinding had to be performed.

This product is an intermediate product for making cementitious-bound materials.

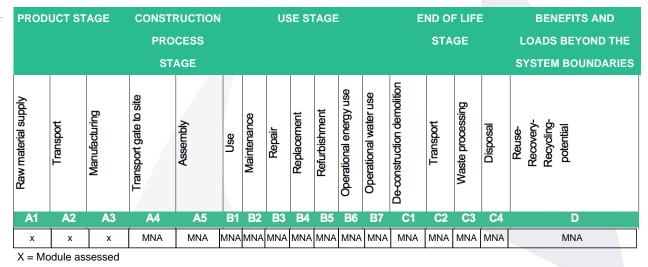| COMPONENT (> 1%)	[kg / %]
Anhydrite	5.41%
Iron sulfate	0.25%
Gypsum	0.62%
GGBS (Ground Granulated Blastfurnace Slag)	65.30%
Clinker	27.88%
BASF GA 1150 (grinding additive)	0.04%
Limestone	0.10%
Fly ash	0.40%

(*) > 1% van total mass

SCOPE AND TYPE

This product is produced in Erwitte (Germany). It 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

MNA = Module not assessed

REPRESENTATIVENESS

Not applicable as this is an environmental product declaration for a specific product from a specific manufacturer on 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.	2.55 E -1	2.57 E -5	1.27 E -1	3.82 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ADPF	MJ	8.88 E +2	1.39 E +2	2.29 E +2	1.26 E +3	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
GWP	kg CO2-eq.	2.56 E +2	9.03 E +0	1.90 E +1	2.85 E +2	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ODP	kg CFC11-eq.	3.58 E -6	1.66 E -6	1.33 E -6	6.58 E -6	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
POCP	kg ethene-eq.	2.71 E -2	5.33 E -3	3.27 E -3	3.57 E -2	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
AP	kg SO2-eq.	3.25 E -1	3.91 E -2	1.60 E -1	5.25 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
EP	kg (PO4)3--eq.	8.59 E -2	7.82 E -3	3.38 E -2	1.28 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
Toxicity indicators (Dutch market)																			
HTP	kg DCB-eq.	1.24 E +1	3.61 E +0	3.21 E +0	1.93 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
FAETP	kg DCB-eq.	2.75 E -1	1.06 E -1	6.12 E -2	4.42 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
MAETP	kg DCB-eq.	1.15 E +4	3.82 E +2	7.31 E +3	1.92 E +4	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
TETP	kg DCB-eq.	2.21 E -1	1.28 E -2	1.12 E -1	3.47 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ECI	Euro	1.74 E +1	1.07 E +0	2.97 E +0	2.14 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

ECI = Environmental Cost Indicator

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	1.03 E +2	1.90 E +0	1.20 E +2	2.24 E +2	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	1.03 E +2	1.90 E +0	1.20 E +2	2.24 E +2	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRE	MJ	8.74 E +2	1.49 E +2	3.35 E +2	1.36 E +3	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	8.74 E +2	1.49 E +2	3.35 E +2	1.36 E +3	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	3.25 E -1	2.67 E -2	8.94 E -2	4.42 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	1.09 E -2	1.03 E -3	2.92 E -3	1.49 E -2	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
NHWD	kg	4.02 E +0	8.54 E +0	1.16 E +0	1.37 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
RWD	kg	2.07 E -3	9.40 E -4	1.79 E -3	4.80 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 Spenner Erwitte account.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

A1. Raw materials supply
For all purchased materials, relevant EcoInvent records have been selected.
For modelling reasons, the clinker produced by Spenner and used to make the various types of cement is used as an input product in the LCA of the cement products. Therefore, all impacts allocated to the clinker (purchased materials, incoming transport and processes) are allocated to the A1 section of the cement products.
The use of GBS (Granulated Blastfurnace Slag) is free of burden. 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.

A2. Transport of raw materials to manufacturer
All incoming transports of the purchased materials are done by truck. Truck transport from the Erwitte production facility to the Duisburg production facility and vice versa are modelled as one-way transports, since these trucks always carry full loads from one plant to the other.

A3. Manufacturing
This module covers the manufacturing of the cement product and includes all processes linked to production such as grinding and internal transportation. Use of electricity, fuels and auxiliary materials related to these processes are properly allocated.

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