epd-norge
Global program operatør

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

CEM II/B-M (S-LL) 52.5 N (Viridiscement)



The Norwegian EPD Foundation

Owner of the declaration:
SCHWENK Sverige AB

Product:
CEM II/B-M (S-LL) 52.5 N (Viridiscement)

Declared unit:
1 tonne

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A2:2019 serves as core PCR and EN 16908 is used as PCR Part B
EN 16908:2017 Cement and building lime

Program operator:
The Norwegian EPD Foundation

Declaration number:

Registration number:

Issue date:
22.12.2023

Valid to:

EPD Software:
LCA.no EPD generator ID: 175607

General information

Product

CEM II/B-M (S-LL) 52.5 N (Viridiscement)

Owner of the declaration:

SCHWENK Sverige AB
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Program operator:

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The Norwegian EPD Foundation
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Manufacturer:

SCHWENK Latvija SIA

Declaration number:

Place of production:

SCHWENK Latvija SIA
Plant Broceni
, Latvia

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR and EN 16908 is used as PCR Part B
EN 16908:2017 Cement and building lime

Management system:

ISO 9001 – certifikat 1689ISO 14001 – certifikat 1689MISO 27001 – certifikat 1689I

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Organisation no:

556089-9287

Declared unit:

1 tonne CEM II/B-M (S-LL) 52.5 N (Viridiscement)

Issue date:

22.12.2023

Declared unit with option:

A1-A3,A4

Valid to:

Year of study:

2023

Functional unit:

Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Norway, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools

Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD Norway.

Developer of EPD: Urs Mueller

Reviewer of company-specific input data and EPD: Lars Busterud

Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Martin Erlandsson, IVL, Swedish Environmental Rese

(no signature required)

Approved:

Håkon Hauan, Managing Director of EPD-Norway

Product

Product description:

Cement is a hydraulic binder for the production of concrete, dry mortars and for ground stabilisation.

Product specification

Portland composite cement with granulated blast furnace slag and limestone as clinker replacement.

Materials	Value	Unit
Clinker	65-79	%
Granulated blast furnace slag and limestone	21-35	%
Others	0-5	%

Technical data:

CEM II/B-M (S-LL) 52.5 N
Further technical information on www.schwenk.se, www.schwenk.lv and www.schwenk.fi

Market:

Latvia, Estonia, Finland, Sweden (sold as Viridiscement).

Reference service life, product

Depending on the area of use.

Reference service life, building or construction works

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LCA: Calculation rules

Declared unit:

1 tonne CEM II/B-M (S-LL) 52.5 N (Viridiscement)

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. The recycling process and transportation of the material is allocated to this analysis.

Data quality:

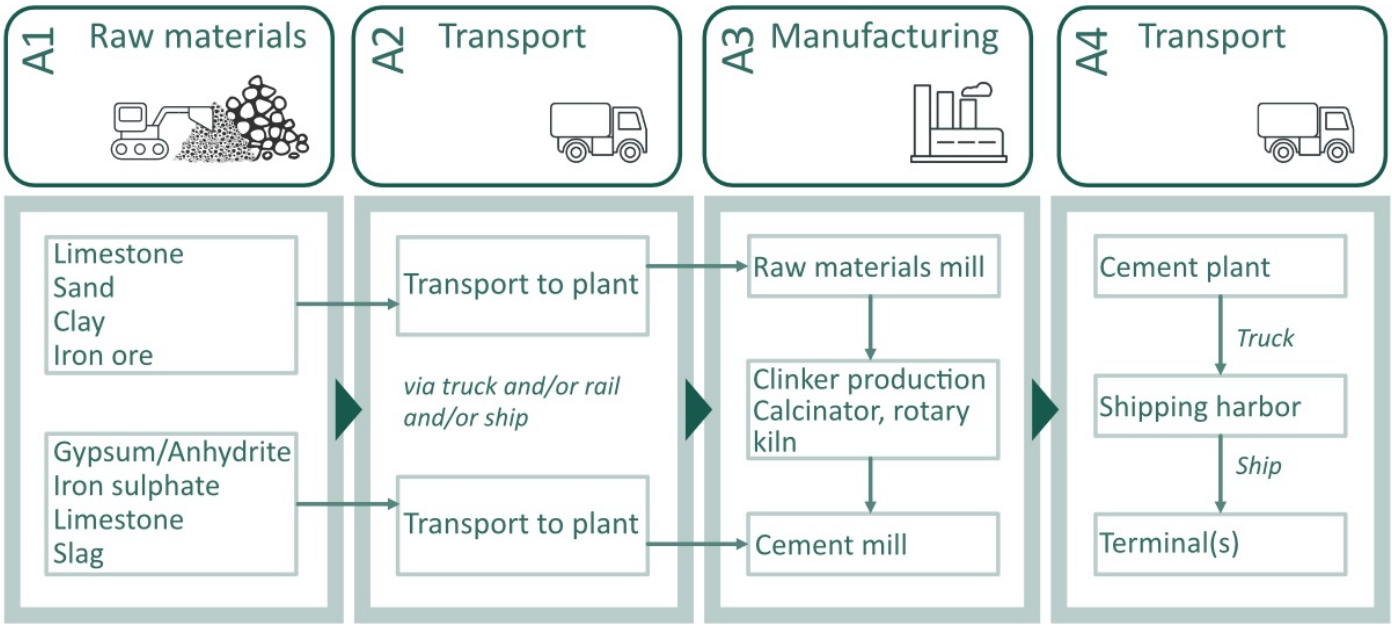
Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Additives	ecoinvent 3.6	Database	2019
Aggregate	ecoinvent 3.6	Database	2019
Aggregate	LCA.no	Database	2021
Raw materials, Mineral	LCA.no	Database	2021
SCM	LCA.no	Database	2021

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage			Construction installation stage	Use stage								End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	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	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

System boundary:



Additional technical information:

The A4-part (transport) in "LCA: Results" was calculated from Broceni, Latvia via Liepaja, Latvia to the terminal in Västerås, Sweden.
A4-results from Broceni, Latvia via Liepaja, Latvia to other terminals are as follows:
- to Landskrona, Sweden = 21 kgCO2eq per tcement
- to Surte, Sweden = 25 kgCO2eq per tcement
- to Gävle, Sweden = 18 kgCO2eq per tcement
- to Loviisa, Finland = 19 kgCO2eq per tcement
- to Naantali, Finland = 17 kgCO2eq per tcement

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Ship, Cement boat	50,0 %	409	0,005	l/tkm	2,05
Truck, over 32 tonnes, EURO 6	53,3 %	110	0,023	l/tkm	2,53

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact				
	Indicator	**Unit**	A1-A3	A4
	GWP-total	kg CO_2 -eq	5,24E+02	1,59E+01
	GWP-fossil	kg CO_2 -eq	5,23E+02	1,59E+01
	GWP-biogenic	kg CO_2 -eq	6,78E-01	5,39E-03
	GWP-luluc	kg CO_2 -eq	8,31E-02	5,35E-03
	ODP	kg CFC11 -eq	1,45E-05	3,54E-06
	AP	mol H+ -eq	1,54E+00	2,21E-01
	EP-FreshWater	kg P -eq	3,19E-03	9,38E-05
	EP-Marine	kg N -eq	5,72E-01	4,93E-02
	EP-Terrestial	mol N -eq	6,39E+00	5,54E-01
	POCP	kg NMVOC -eq	1,56E+00	1,54E-01
	ADP-minerals&metals[1]	kg Sb -eq	9,95E-04	1,97E-04
	ADP-fossil[1]	MJ	1,51E+03	2,37E+02
	WDP[1]	m^3	6,91E+04	1,37E+02

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 Exceedance; 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 Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

1. 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

Remarks to environmental impacts

The parameter GWP (A1-A3) includes 93 kgCO2-eq per tcement deriving from fossil and 93 kgCO2-eq per tcement from non-fossil components when combusting secondary (alternative) fuels for the production of cement clinker. In accordance with the "polluter pays" principle /EN 15804/, the emissions will be added to the production system that caused the waste.

However, in this EPD, the CO2 contribution from components of secondary (alternative) fuels has not been deducted.
This is to be able to compare calculated global warming from cement regardless of the status of the waste in different countries.

Additional environmental impact indicators				
Indicator		**Unit**	A1-A3	A4
	PM	Disease incidence	7,80E-06	8,80E-07
	IRP[2]	kgBq U235 -eq	5,59E+00	1,03E+00
	ETP-fw[1]	CTUe	1,67E+03	1,56E+02
	HTP-c[1]	CTUh	5,64E-08	0,00E+00
	HTP-nc[1]	CTUh	6,65E-07	1,10E-07
	SQP[1]	dimensionless	9,81E+02	1,89E+02

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

1. 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
2. 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.

Resource use				
Indicator		Unit	A1-A3	A4
	PERE	MJ	3,09E+02	2,36E+00
	PERM	MJ	0,00E+00	0,00E+00
	PERT	MJ	3,09E+02	2,36E+00
	PENRE	MJ	1,52E+03	2,37E+02
	PENRM	MJ	0,00E+00	0,00E+00
	PENRT	MJ	1,52E+03	2,37E+02
	SM	kg	2,25E+02	0,00E+00
	RSF	MJ	3,14E+02	8,39E-02
	NRSF	MJ	1,87E+03	3,35E-01
	FW	m^3	4,16E-01	2,00E-02

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; FW = Net use of fresh water

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

End of life - Waste

Indicator		Unit	A1-A3	A4
	HWD	kg	1,26E-01	1,11E-02
	NHWD	kg	1,12E+01	1,36E+01
	RWD	kg	6,10E-03	1,64E-03

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

End of life - Output flow

Indicator		Unit	A1-A3	A4
	CRU	kg	0,00E+00	0,00E+00
	MFR	kg	4,13E-03	0,00E+00
	MER	kg	1,67E-03	0,00E+00
	EEE	MJ	3,26E-04	0,00E+00
	EET	MJ	4,93E-03	0,00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

Biogenic Carbon Content

Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in accompanying packaging	kg C	0,00E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2

Additional requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Data source	Amount	Unit
Electricity, Latvia (kWh)	ecoinvent 3.6	542,92	g CO2-eq/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products			
Indicator	**Unit**	A1-A3	A4
GWPIOBC	kg CO_2 -eq	5,24E+02	1,59E+01

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Bibliography

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.
EN 15804:2012+A2:2019 Environmental product declaration - Core rules for the product category of construction products.
ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
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CEN PCR EN 16908:2017 Cement and building lime

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