epd-norge
Global program operatør

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

CemCut XCM 50



connovate®

The Norwegian EPD Foundation

Owner of the declaration:
Connovate Aps

Product:
CemCut XCM 50

Declared unit:
1 tonne

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 009:2021 Part B for Technical - Chemical products for building and construction industry

Program operator:
The Norwegian EPD Foundation

Declaration number:

Registration number:

Issue date:

Valid to:

EPD software:
LCAno EPD generator ID: 386154

General information

Product

CemCut XCM 50

Owner of the declaration:

Connovate Aps
Contact person: Karsten Bro
Phone: +45 30 95 00 30
e-mail: kb@connovate.com

Program operator:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
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Manufacturer:

Connovate Aps

Declaration number:

Place of production:

Connovate Aps
Silicavej 11
8000 Aarhus C, Denmark

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 009:2021 Part B for Technical - Chemical products for building and construction industry

Management system:

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:

33 37 80 92

Declared unit:

1 tonne CemCut XCM 50

Issue date:

Declared unit with option:

A1,A2,A3,A4

Valid to:

Year of study:

2023

Functional unit:

Not applicable.

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: Karsten Bro

Reviewer of company-specific input data and EPD: Charlotte Merlin - FORCE Technology

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. NEPDT73

Approved:

Third party verifier:

Linda Høibye, Life Cycle Assessment Consulting

(no signature required)

Product

Product description:

CemCut XCM 50 is a product developed and designed for easy documentation and production of reduced CO2 emission concrete according to the Danish Standard DS 206:2024.
CemCut XCM 50 is a range of materials which in combination works as a supplementary cementitious material. CemCut XCM 50 is able to substitute a major part of cement in concrete, while lowering the overall CO2 emission significantly.

Product specification

Materials	Value	Unit
Aggregates	5 - 95	%
Additions	5 - 95	%
Admixtures	0 - 10	%

Technical data:

All materials in CemCut XCM 50 are according to specifications in DS 206:2024 and DS/EN 206

More information available at : www.connovate.com

Market:

Denmark

Reference service life, product

Not relevant.

Reference service life, building

Not relevant.

LCA: Calculation rules

Declared unit:

1 tonne CemCut XCM 50

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. Effects of primary production of recycled materials is allocated to the main product in which the material was used. 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.
Data for power consumption is based on average data from 2023 and a conservative batch estimate for similar production.

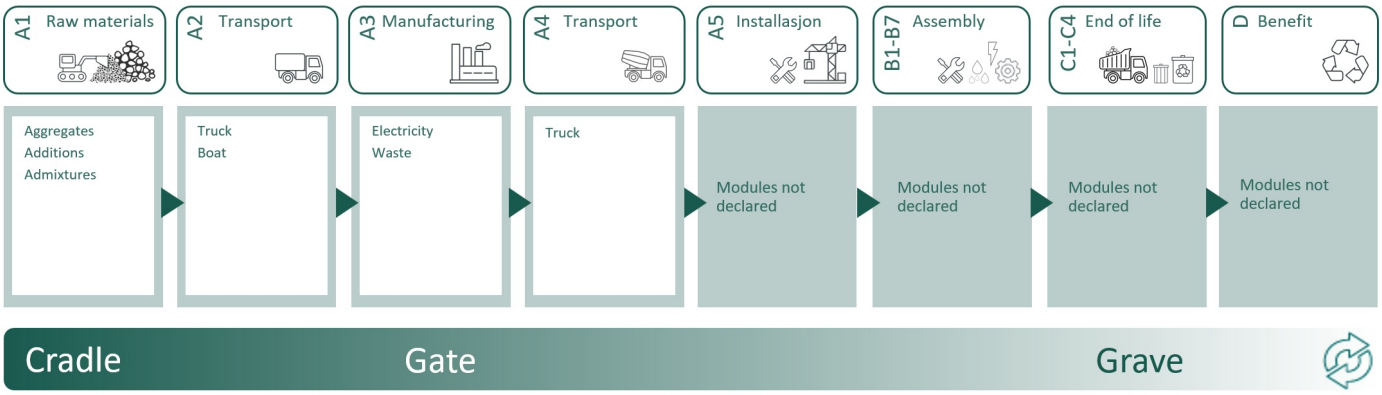
Materials	Source	Data quality	Year
Addition	ecoinvent 3.6	Database	2019
Additives	ecoinvent 3.6	Database	2019
Admixture	Supplier	EPD	2021
Aggregate	Supplier	EPD	2021
Aggregate	Supplier	EPD	2022

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:

The system includes modules A1-A3 and A4. This boundary contains all processes from raw material extraction to concrete production.



Additional technical information:

The product is delivered in bulk.

LCA: Scenarios and additional technical information

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

A scenario with a distance of 100 km was added in A4 to account for the Danish market.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tonnes, EURO 6 (km) - Europe	53,3 %	100	0,023	l/tkm	2,30

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	A2	A3	A4
	GWP-total	kg CO_2 -eq	5,96E+01	2,18E+01	7,02E+00	8,72E+00
	GWP-fossil	kg CO_2 -eq	6,08E+01	2,18E+01	6,94E+00	8,71E+00
	GWP-biogenic	kg CO_2 -eq	-1,33E+00	8,94E-03	7,42E-02	3,73E-03
	GWP-luluc	kg CO_2 -eq	8,66E-02	8,15E-03	9,28E-03	2,65E-03
	ODP	kg CFC11 -eq	2,76E-07	5,03E-06	2,44E-07	2,10E-06
	AP	mol H+ -eq	2,44E-01	1,72E-01	2,80E-02	2,80E-02
	EP-FreshWater	kg P -eq	4,97E-04	1,66E-04	5,64E-04	6,93E-05
	EP-Marine	kg N -eq	8,36E-02	4,82E-02	4,79E-03	6,14E-03
	EP-Terrestial	mol N -eq	7,62E-01	5,34E-01	6,79E-02	6,85E-02
	POCP	kg NMVOC -eq	1,98E-01	1,54E-01	1,45E-02	2,69E-02
	ADP-minerals&metals[1]	kg Sb-eq	2,99E+01	4,47E-04	6,23E-05	1,55E-04
	ADP-fossil[1]	MJ	1,02E+03	3,35E+02	8,99E+01	1,41E+02
	WDP[1]	m^3	3,10E+01	2,68E+02	1,39E+03	1,08E+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

Additional environmental impact indicators						
Indicator		Unit	A1	A2	A3	A4
	PM	Disease incidence	2,22E-07	1,76E-06	1,40E-07	8,00E-07
	IRP[2]	kgBq U235 -eq	1,80E-01	1,46E+00	4,39E-01	6,18E-01
	ETP-fw[1]	CTUe	4,00E+01	2,43E+02	1,59E+02	1,03E+02
	HTP-c[1]	CTUh	1,05E-09	0,00E+00	3,19E-09	0,00E+00
	HTP-nc[1]	CTUh	2,51E-08	2,60E-07	1,07E-07	1,00E-07
	SQP[1]	dimensionless	8,80E+01	3,04E+02	1,47E+02	1,62E+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	A2	A3	A4
	PERE	MJ	3,20E+02	4,31E+00	7,67E+01	1,78E+00
	PERM	MJ	2,46E-01	0,00E+00	0,00E+00	0,00E+00
	PERT	MJ	3,20E+02	4,31E+00	7,67E+01	1,78E+00
	PENRE	MJ	9,62E+02	3,35E+02	8,99E+01	1,41E+02
	PENRM	MJ	5,78E+01	0,00E+00	0,00E+00	0,00E+00
	PENRT	MJ	1,02E+03	3,35E+02	8,99E+01	1,41E+02
	SM	kg	1,05E+02	0,00E+00	0,00E+00	0,00E+00
	RSF	MJ	1,22E-02	1,50E-01	2,88E+00	6,23E-02
	NRSF	MJ	4,77E-02	5,73E-01	1,86E-02	2,09E-01
	FW	m^3	5,32E-01	3,60E-02	2,85E-01	1,61E-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	A2	A3	A4
	HWD	kg	2,84E-03	1,78E-02	2,60E-02	7,74E-03
	NHWD	kg	1,88E+01	2,23E+01	6,10E-01	1,23E+01
	RWD	kg	9,10E-02	2,29E-03	2,85E-04	9,66E-04

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	A2	A3	A4
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	MFR	kg	0,00E+00	0,00E+00	1,07E+00	0,00E+00
	MER	kg	0,00E+00	0,00E+00	1,37E+00	0,00E+00
	EEE	MJ	0,00E+00	0,00E+00	9,53E-01	0,00E+00
	EET	MJ	0,00E+00	0,00E+00	1,44E+01	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	Source	Amount	Unit
Electricity, Denmark (kWh)	ecoinvent 3.6	338,20	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	A2	A3	A4
GWPIOBC	kg CO_2 -eq	6,03E+01	2,18E+01	9,69E+00	8,72E+00

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.
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NPCR 009 Part B for Technical - Chemical products for building and construction industry, Ver. 3.0, 06.10.2021, EPD Norway.

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