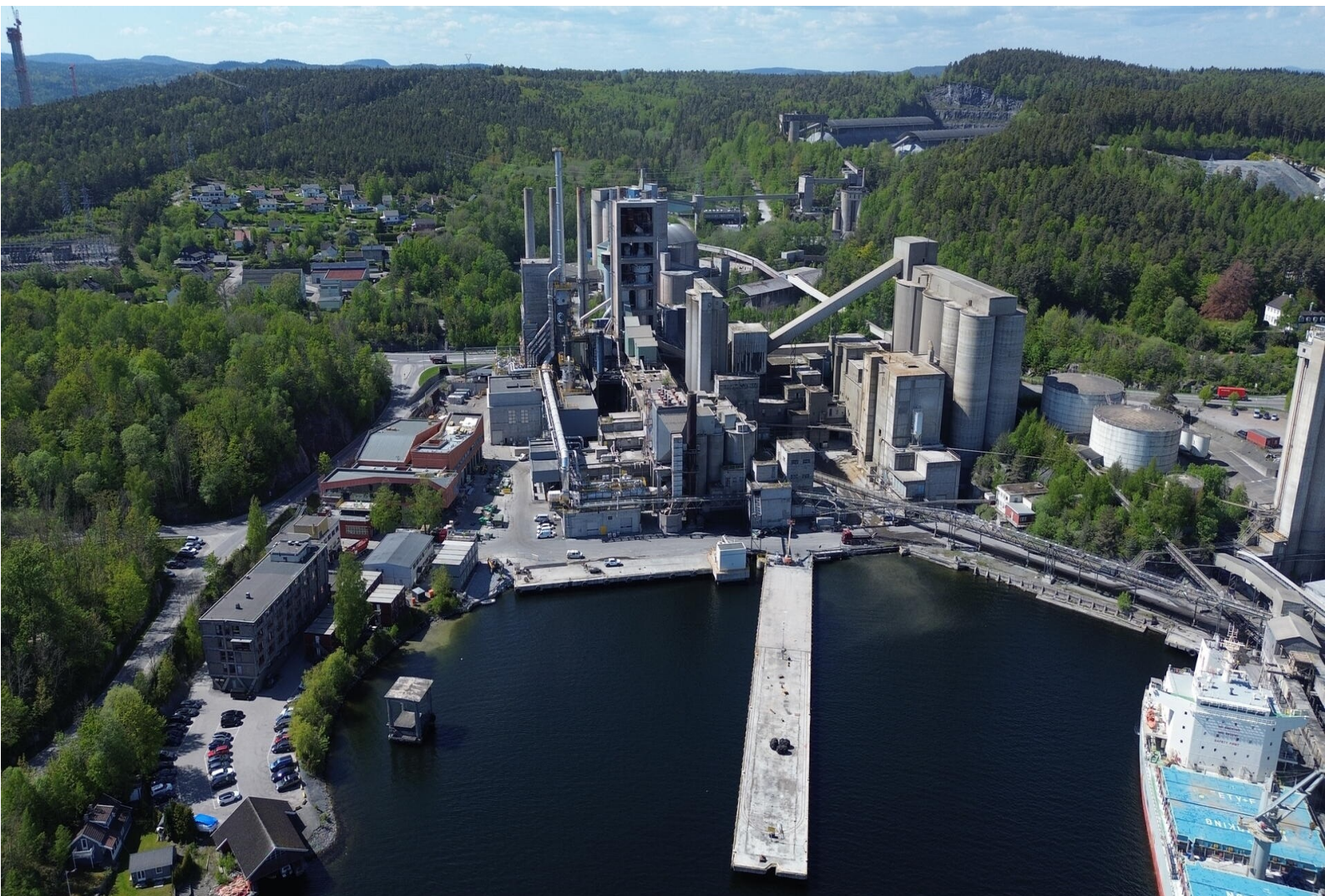


Prospective Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

evoBuild Low carbon Anleggsement, CEM I 52,5 N



EPD-Global

Owner of the declaration

Heidelberg Materials Sement Norge AS

Product

evoBuild Low carbon Anleggsement, CEM I 52,5 N

Declared unit

1 tonne

This declaration is based on Product Category Rules

EN 15804:2012+A2:2019 serves as core PCR

EN 16908:2017 Cement and building lime

Program operator

EPD-Global

Declaration number

NEPD-12343-12398

Registration number

NEPD-12343-12398

Issue date

15.09.2025

Valid to

15.09.2026

EPD software:

LCA.no EPD generator ID: 1036472

General information

Product

evoBuild Low carbon Anleggsement, CEM I 52,5 N

Program operator

EPD-Global
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
web: www.epd-global.no

Declaration number

NEPD-12343-12398

This declaration is based on Product Category Rules

EN 15804:2012+A2:2019 serves as core PCR
EN 16908:2017 Cement and building lime

Statement of liability

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

Declared unit with option

1 tonne evoBuild Low carbon Anleggsement, CEM I 52,5 N
A1-A3, A4

Verification

Independent verification of the declaration and data, according to ISO14025:2010

Third party verifier

Martin Erlandsson, CarbonZero AB

Owner of the declaration

Heidelberg Materials Sement Norge AS
Contact person: Vetle Houg
e-mail: vetle.houg@heidelbergmaterials.com

Manufacturer

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0283 Oslo, Norway
Contact person: Vetle Houg
e-mail: vetle.houg@heidelbergmaterials.com
Phone:

Place of production

Pr. Site Heidelberg Materials - Brevik
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3950 Brevik, Norway

Management system

ISO 14001, ISO 9001

Organisation no

934 949 145

Issue date

15.09.2025

Valid to

15.09.2026

Year of study

2024

Comparability

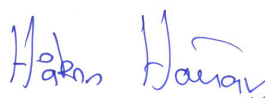
EPDs of construction products may not be comparable if they do not comply with EN 15804 and are seen in a building context.

The EPD has been worked out by:

Mie Vold, LCA.no AS

Camilla Emilie Ruud

Approved



Håkon Hauan
Managing Director of EPD-Norway

Product

Product description

Cement is a hydraulic binder and is used in the production of e.g. concrete and mortar. It comprises a blend of finely ground, non-metallic inorganic substances. Upon mixing with water, a cement suspension (cement paste) is formed, which hardens and sets both in air and under water through hydration reactions, resulting in a permanently solid structure.

The declared product is a cement in accordance with EN 197-1. For its marketability within the EU/EFTA (excluding Switzerland), Regulation (EU) No. 305/2011 (CPR) is applicable. The product necessitates a Declaration of Performance in accordance with EN 197-2:2020, Cement – Part 2: Assessment and verification of constancy of performance. The relevant national regulations apply to its use.

The declared product is a low-alkali cement with high final strength.

Product specification

The declared product is evoBuild Low carbon Anleggsement, a CEM I 52,5 N conforming to the EN 197 standard. Under the global evoBuild brand, Heidelberg Materials delivers products designed with a strong emphasis on sustainable resource use and significantly reduced CO2 emissions.

evoBuild Low carbon Anleggsement is produced at Heidelberg Materials' Brevik cement plant, home to the world's first full-scale carbon capture installation in the cement industry. This innovative technology removes CO2 directly from the flue gas during production - without altering the product's technical performance.

Performance data of the product are in accordance with the declaration of performance with respect to its essential characteristics according to EN 197-1.

No packaging material is included. The A4 transportation is to a silo.

Materials	Value	Unit
Clinker	95-100	%
Minor constituent	0-5	%
Gypsum	0-7	%

Technical data

CEM I 52,5 N

Further information is available at <https://www.sement.heidelbergmaterials.no/en>

Market

Anleggsement, CEM I is only sold outside of Norway

Reference service life, product

No reference service life is declared as cement is an intermediate building product. A reference service life could be declared for downstream products such as ready-mix concrete, precast concrete, screed, plasters, masonry mortars or other building products in which cement is used.

Reference service life, building or construction works

For cement the reference service life of the building is not relevant.

LCA Calculation rules

Declared unit

1 tonne evoBuild Low carbon Anleggsement, CEM I 52,5 N

Cut-off criteria

All major raw materials and all the essential energy are included. The production processes for raw materials and energy flows with very small amounts (less than 1%) may not be included. These cut-off criteria do not apply for hazardous materials and substances. It is assumed that there will be no leakage of CO2 from storage over 100 years, but losses in transport chain that is accounted for.

Allocation

Allocation is carried out in accordance with the provisions of EN 15804. Incoming energy, water consumption, and in-house waste generation are distributed equally among all products using mass allocation as first choice. For co-products, with very low market value, like slag and fly ash, is economical allocation used. Additionally, where relevant, the processing and transportation of co-products are included in the analysis. Gross and net values are included in the result, where GWP from waste fuels are deducted in the net values. In this LCA study, the CO2 stored is allocated to clinker produced.

Data quality

This is a prospective P-EPD where the manufacturing data is based on a traditional cement production complemented with the CCS operation. Specific data for the manufacturing are provided by the manufacturer. The considered data from CCS are calculated based on design, considering capture rates valid in the first year of operations. Background data are derived from EPDs according to EN 15804 and the ecoinvent database using EF 3.1 CFs. The data quality of the raw materials in A1 is presented in the table below.

Note: LCA.no in source is used for data where only resource indicators are included in the dataset (secondary materials and co-products of low value).

Materials	Source	Data quality	Year
Additives	ecoinvent 3.10	Database	2023
Emissions and waste streams	LCA.no	Database	2024
Explosives	ecoinvent 3.10	Database	2023
Gypsum	ecoinvent 3.10	Database	2023
Limestone	LCA.no	Database	2024
Materials	LCA.no	Database	2024
Others	LCA.no	Database	2024
Raw materials, Mineral	Supplier	Project EPD	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

Type of the EPD: cradle to gate (A1 – A3) with option A4.

The applied system boundaries cover the production of cement including carbon capture and storage up to the finished product at the factory gate.

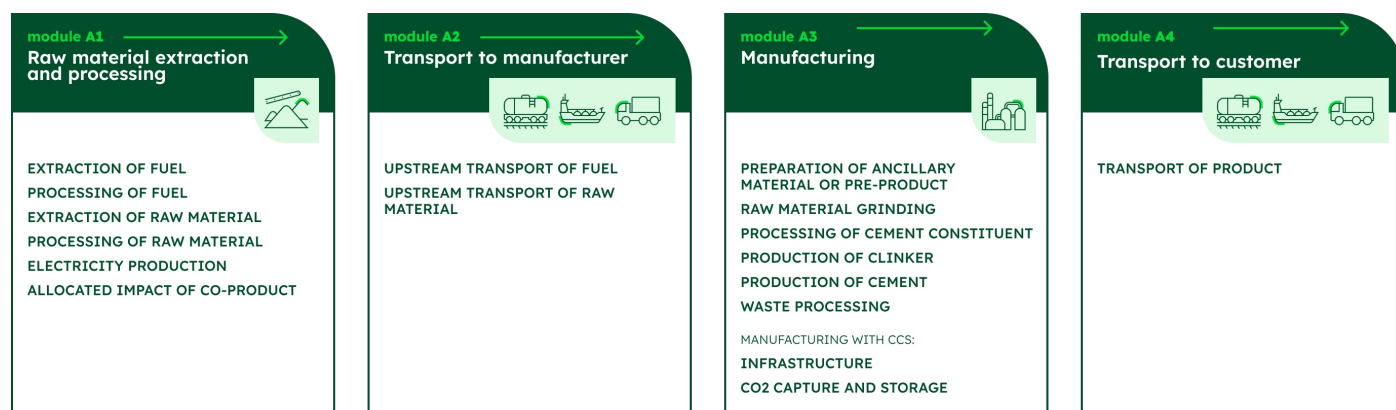
The product stage includes:

- Module A1: Extraction and processing of raw materials
- Module A2: Transport of raw materials to the factory gate
- Module A3: Clinker and cement production including carbon capture and storage

The construction process stage includes:

- Module A4: Transport

The impact of the carbon capture and storage (CCS) process is detailed in the table titled "Additional environmental impacts CCS", located in the "Additional Environmental Information" section.



Additional technical information

No further technical information are relevant.

LCA Scenarios and additional technical information

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

Different distances can be deviated from this scenario by a proportional conversion, all transport distances from the plant to the different silos are published under <https://www.sement.heidelbergmaterials.no/no/Bruksbetingelser#ankertransport>

Transport from production place to user (A4)	Capacity utilisation, incl. return (%)	Distance (km)	Fuel/Energy Consumption	Unit	Value (l/t)
Transport Ship, Cement boat km HM 2016	50.0 %	100.00	0.005	l/tkm	0.50

LCA Results

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

Environmental impact				
	Indicator	Unit	A1-A3	A4
	GWP-total	kg CO ₂ -eq	2.72E+02	1.54E+00
	GWP-fossil	kg CO ₂ -eq	2.71E+02	1.54E+00
	GWP-biogenic	kg CO ₂ -eq	1.80E-01	3.14E-04
	GWP-luluc	kg CO ₂ -eq	3.17E-02	5.94E-04
	ODP	kg CFC11 -eq	2.67E-06	3.00E-07
	AP	mol H ⁺ -eq	1.31E+00	4.64E-02
	EP-FreshWater	kg P -eq	1.26E-02	4.30E-06
	EP-Marine	kg N -eq	3.56E-01	1.04E-02
	EP-Terrestrial	mol N -eq	4.14E+00	1.17E-01
	POCP	kg NMVOC -eq	1.06E+00	3.03E-02
	ADP-minerals&metals ¹	kg Sb-eq	2.37E-03	6.50E-06
	ADP-fossil ¹	MJ	1.76E+03	1.98E+01
	WDP ¹	m ³	2.84E+02	4.41E+00

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil; 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"

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

All legal classified waste used as fuel in the cement kiln are treated as having no economical value and is therefore interpreted as not fulfilling EoW. This is equal to the default setting used in the LCA results and referred to as net LCA results. The GWP indicators including the emissions from waste fuels (GWP, gross) are reported separately in this EPD under "Additional environmental information"

Since this is a prospective EPD, the results are inherently subject to uncertainty. While the LCI data for cement production without CCS are based on primary data from 2024, no operational data from the carbon capture facility or associated storage activities were available at the time of the study. The data used are derived from the design phase and performance requirements to the capture plant. These requirements include a minimum capture rate for a specific operational time which will be representative for the first year of operation.

Additionally, there is some uncertainty regarding the quantities and data related to the CCS infrastructure. However, as infrastructure contributes only a minor share to the overall results, its influence on the final outcomes is considered limited. Doubling the input used in the infrastructure calculation results in a reduction less than 1 kg of CO₂ considered as stored per tonne clinker..

Additional environmental impact indicators				
Indicator		Unit	A1-A3	A4
	PM	Disease incidence	9.34E-06	0.00E+00
	IRP ²	kgBq U235 -eq	2.79E+00	8.63E-02
	ETP-fw ¹	CTUe	2.24E+03	1.03E+01
	HTP-c ¹	CTUh	1.07E-07	0.00E+00
	HTP-nc ¹	CTUh	6.63E-07	0.00E+00
	SQP ¹	dimensionless	2.34E+02	2.53E+00

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 = $9.0 \cdot 10^{-3}$ = 0.009"

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	6.59E+02	9.78E-02
	PERM	MJ	0.00E+00	0.00E+00
	PERT	MJ	6.59E+02	9.78E-02
	PENRE	MJ	1.05E+03	1.98E+01
	PENRM	MJ	0.00E+00	0.00E+00
	PENRT	MJ	1.05E+03	1.98E+01
	SM	kg	2.28E-01	0.00E+00
	RSF	MJ	1.00E+03	3.76E-03
	NRSF	MJ	1.76E+03	2.57E-02
	FW	m ³	4.72E+00	5.59E-04

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"

End of life - Waste				
Indicator		Unit	A1-A3	A4
	HWD	kg	1.26E+01	6.35E-04
	NHWD	kg	6.65E+01	2.80E-02
	RWD	kg	1.58E-03	1.40E-04

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

"Reading example: 9.0 E-03 = $9.0 \cdot 10^{-3}$ = 0.009"

End of life - Output flow				
Indicator		Unit	A1-A3	A4
	CRU	kg	0.00E+00	0.00E+00
	MFR	kg	3.42E-02	0.00E+00
	MER	kg	1.75E-04	0.00E+00
	EEE	MJ	7.98E-04	0.00E+00
	EET	MJ	1.21E-02	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 = $9.0 \cdot 10^{-3}$ = 0.009"

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

Transparent reporting of energy

The EPD presents environmental impact categories in the main results tables using a specific methodological approach for accounting energy resources. To ensure transparency and support informed interpretation, the table below explains the implications of the chosen methodology. It illustrates the GWP-total for energy resources used in the manufacturing stage, comparing the location-based and market-based approaches. In this EPD the following approach was used in main result tables: Location-based approach.

Energy source	Data source	Amount	Unit	GWP-total [kg CO ₂ -eq/unit]	SUM [kg CO ₂ -eq]
Location based approach					
Electricity, Norway, medium voltage (kWh)	ecoinvent 3.10.1	162.70	kWh	0.02	3.25
Market based approach					
Electricity, Norway, medium voltage, residual mix (kWh)	ecoinvent 3.10.1	162.70	kWh	0.62	100.82

Dangerous substances

The product does not contain substances in a concentration above 0.1 mass percent, which are specified in the Candidate List of Substances of Very High Concern (SVHC) for Authorization.

Indoor environment

As a component of downstream materials, cement does not release any harmful substances to indoor environment.

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products (net)			
Indicator	Unit	A1-A3	A4
GWPIOBC	kg CO ₂ -eq	2.72E+02	1.54E+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. The results do not include emissions from the combustion of waste fuels (GWP, net).

Additional GWP indicators in accordance with cPCR and more transparent reporting related to CCS		
Indicator	Unit	A1-A3
GWP-total, gross	kg CO ₂ -eq	4.16E+02
GWP-fossil, gross	kg CO ₂ -eq	4.16E+02
GWP-biogenic, gross	kg CO ₂ -eq	1.80E-01
GWP-luluc, gross	kg CO ₂ -eq	3.17E-02
GWP-total, net	kg CO ₂ -eq	2.72E+02
GWP-fossil, net	kg CO ₂ -eq	2.71E+02
GWP-biogenic, net	kg CO ₂ -eq	1.80E-01
GWP-luluc, net	kg CO ₂ -eq	3.17E-02
CWRS	kg CO ₂ -eq	0.00E+00
CWNRS	kg CO ₂ -eq	1.45E+02
CC	kg CO ₂	4.41E+02
CCS	kg CO ₂	-2.77E+02

GWP-total, gross = Global Warming Potential total, gross (GWP-fossil, gross + GWP-biogenic, gross + GWP-luluc); GWP-fossil, gross = Global Warming Potential fossil, gross; GWP-biogenic, gross = Global Warming Potential biogenic, gross; GWP-luluc = Global Warming Potential land use and land use change; GWP-total, net = Global Warming Potential total, net (GWP-total, gross minus CWRS and CWNRS); CWRS = Emissions from combustion of waste from renewable sources; CWNRS = Emissions from combustion of waste from non-renewable sources; GWP-fossil, net = Global Warming Potential fossil, net (GWP-fossil, gross minus CWNRS); GWP-biogenic, net = Global Warming Potential biogenic, net, (GWP-biogenic, gross minus CWNRS); CC = Emissions from decarbonization of limestone in clinkering (process emissions, clinker), CCS - Amount of carbon reductions from carbon capture and storage considered in the main results of the EPD (incl. deduction for impacts from processes, transport and infrastructure)

Additional environmental impacts CCS

Indicator	Unit	I. A1-A3 Cement excl. direct emissions and CCS	II. A3 Direct emissions	III. Carbon capture and storage (CCS)	IV. evoBuild
GWP-total, gross	kg CO ₂ -eq	4.11E+01	6.52E+02	-2.77E+02	4.16E+02
GWP-total, net	kg CO ₂ -eq	4.11E+01	5.08E+02	-2.77E+02	2.72E+02

The EPD applies to evoBuild Carbon Captured Brevik. The table above provides a transparent breakdown by production modules. The cement is offered in three variants: * Grey cement: GWP A1-A3 is represented by the sum of columns I and II in the table. * evoBuild: GWP A1-A3 is represented by the sum of columns I, II, and III in the table. * evoZero: GWP A1-A3 is represented by column I in the table. The sale of these cements is subject to independent third-party assurance, which audits the deposit, withdrawal and allocation of emission reductions generated at the Brevik cement plant in Norway. For more information, please visit: www.evozero.com/assurance. Verified permanent storage of CO₂ is recorded as carbon reduction in the Heidelberg Materials carbon bank. When CCS-reduced cements are sold, carbon reductions are deducted from the carbon bank. Further information on the verification of carbon capture, carbon bank, and distribution of reduction on products can be found on our website.

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 NS-EN 197-2:2020 Cement - Part 2: Assessment and verification of constancy of performance
 EPD-Denmark,; EPD for fly ash- MD-20026-DA

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