

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804+A2



Südbayerisches Portland-Zementwerk, Gebr. Wiesböck & Co. GmbH CEM I 42,5 N



Owner of the declaration

Südbayerisches Portland-Zementwerk,
Gebr. Wiesböck & Co. GmbH
Sinning 1
83101 Rohrdorf
Germany

Product

CEM I 42,5 N

Declared product / Declared unit

1 t

This declaration is based on Product Category Rules

EN 15804:2012 + A2:2019,
NPCR Part A:2021 ,
EN 16908:2017+A1:2022

Program operator:

EPD Global
Majorstuen P.O. Box 5250
N-0303 Oslo
Norway

Declaration number

NEPD-12011-12011-2

Registration number

NEPD-12011-12011-2

Issue date

04.08.2026

Valid to

03.08.2031

EPD Software

Emidat Platform v1.0.0

General Information

Product

CEM I 42,5 N

Program Operator

EPD Global
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Norway
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Email: post@epd-norge.no

Declaration Number

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EN 15804:2012 + A2:2019,
NPCR Part A:2021 ,
EN 16908:2017+A1:2022

Statements

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

Declared unit

1 t

General information on verification of EPD from EPD tools

Independent verification of data, other environmental information and the declaration according to ISO 14025:2011-10, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD Global'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 Global, and iii) the process is reviewed annually by an independent third-party verifier. See Appendix G of EPD Global's General Programme Instructions for further information on EPD tools.

Verification

Independent third-party verification based on the verification of the EPD tool, background data and test-EPD in accordance with EPD Global's procedures and guidelines for verification and approval of EPD tools. Third-party verifier: Charlotte Merlin, FORCE Technology

Owner of the declaration

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Manufacturer

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Sinning 1
83101 Rohrdorf, Germany

Place of production

Rohrdorf, Germany

Management system

-

Issue date

04.08.2026

Valid to

03.08.2031

Year of study

2024

Comparability

EPDs of construction products may not be comparable if they do not comply with EN 15804 and are not seen in a building context. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database (including primary and secondary data).

Development and verification of EPD

The declaration was created using the Emidat EPD tool v1.0, developed by Emidat GmbH which is third-party verified and approved as a Reference Flow Tool with internal review under administration and surveillance by EPD Global under provisions stated in general information on verification of EPD from EPD tools.

Developer of EPD: Daniel Wimmer

Reviewer of company-specific input data and EPD: Michael Hartmaier

Approved



Håkon Hauan, The Norwegian EPD Foundation

Product

Product description

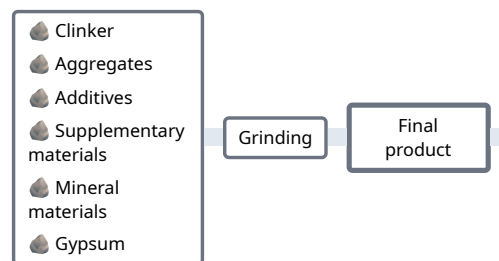
Cement is a hydraulic binder. It consists of a fine powder made from a mixture of limestone, clay, and other minerals that are heated at high temperatures in a kiln. The process, known as calcination, transforms the raw materials into clinker, which is then ground into a fine powder to produce cement.

No packaging was included for the modeled product.

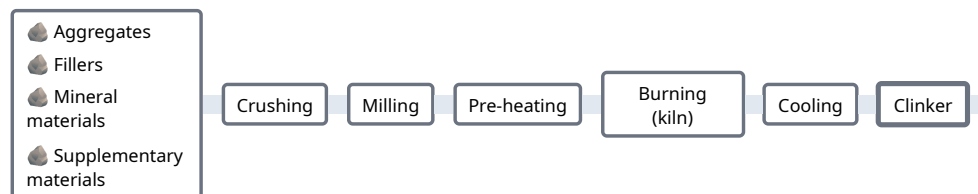
Application description

Cement is the key ingredient in concrete. When mixed with water and aggregates such as sand and gravel, it forms a paste that binds the aggregates together to create concrete. Cement can also be mixed with sand and water to create mortar or grout, used as a bonding agent between bricks, stones, or concrete blocks in masonry construction. Cement can also be used to stabilise and improve the properties of soil in construction projects. Soil-cement mixtures are created by mixing cement with soil to increase its strength, durability, and load-bearing capacity. This technique is commonly used in road construction, building foundations, and slope stabilisation.

Production process



Upstream production processes



Product specification

Name of ingredient	Share of total weight	Country of origin
Additives	0 - 5 %	Austria
Aggregates	0 - 5 %	Germany
Clinker	79 - 88 %	Germany
Gypsum	0 - 5 %	Germany
Mineral materials	0 - 5 %	Various
Supplementary materials	5 - 12 %	Various

Technical data

	Unit	Value
Compressive Strength (Prisms, EN 196-1)	N / mm ²	42.5
Density	kg / m ³	3100

The product is produced according to the harmonized standard EN 197-1.

Market

Germany

Recipients

B2B

LCA: Calculation rules

Declared unit

1 t

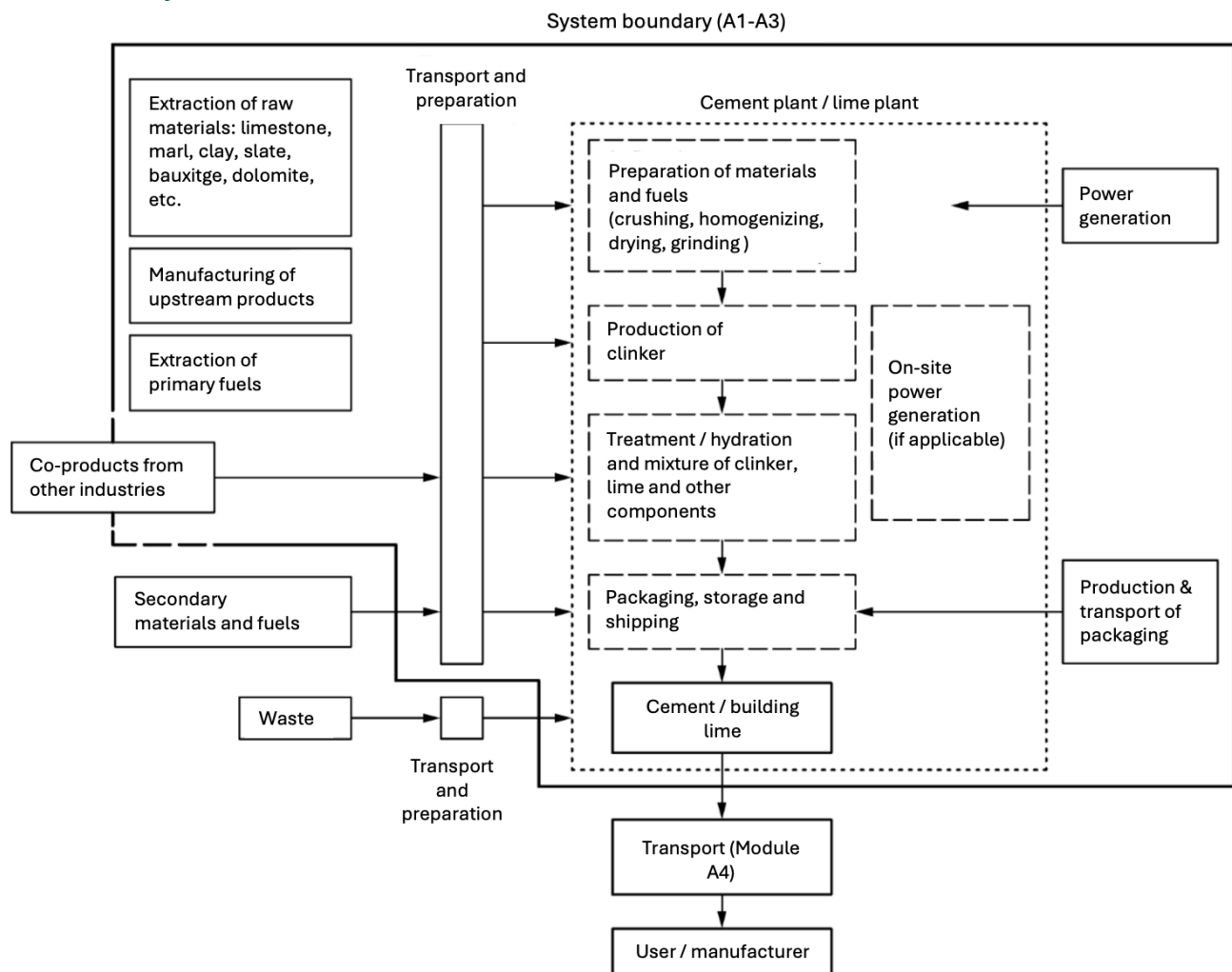
Product lifetime

Not declared

Reference service life

Not declared

System boundary



Data quality

The foreground data are based on extensive and detailed data collection at the production site of the manufacturer, covering key processes such as raw material sourcing, formulation, and manufacturing. These foreground data are fully linked with corresponding datasets from the background database (ecoinvent 3.10) or with EN15804+A2-compliant EPDs, ensuring consistency, reliability, and maintaining alignment with the latest industry standards.

The overall data representativeness is rated as good with an overall score of 4.00/5, in accordance with EN 15804+A2 Annex E guidance on data quality assessment, considering geographical, technical, and temporal representativeness.

The following table discloses all processes or activities assessed with very poor or poor data representativeness according to EN 15804+A2, as well as those assessed as fair that contribute more than 30 % to any core impact indicator in A1–A3:

Element	Minimal Representativeness	Source	Year
Additives	Poor	ecoinvent 3.10	2023
Aggregates	Poor	ecoinvent 3.10	2023
Electricity from grid	Poor	ecoinvent 3.10	2023
Mineral materials	Poor	ecoinvent 3.10	2023
Packaging	Poor	ecoinvent 3.10	2023

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

	Production			Installation		Use stage							End-of-Life				Next product system
	Raw material supply	Transport	Manufacturing	Transport	Installation Process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Demolition	Transport	Waste Processing	Disposal	Benefits and loads beyond the system boundary
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x
Geography			DE	MND	MND	MND	MND	MND	MND	MND	MND	MND	DE	DE	DE	DE	DE

For the geographies modeled in A1 and A2, refer to *Product specification*.

Type of EPD: Cradle to gate with modules C1-C4 + D

Stage of Material Production and Construction

Module A1: Extraction and transport of raw materials and fuels, Clinker production, Production of secondary constituents, Production of additives, Production of consumables

Module A2: Transport of constituents, additives, and consumables

Module A3: Cement production, Preparation of cement for delivery

Disposal Stage

Module C1: Demolition/Dismantling

Module C2: Transportation of waste

Module C3: Recycling/Incineration

Module C4: Landfill

Cut-off criteria

No cut-offs were applied.

Allocation

Foreground inventory data (energy and fuels, ancillary materials, emissions and waste) was collected at the production process level. Mass-based allocation was applied to allocate the total output of the production process in 2024 to the reference product.

Flue gas desulphurization (FGD) gypsum is a low revenue co-product of the electricity generation from hard coal.

Economic allocation was used to allocate impacts from the electricity generation process from hard coal to the FGD gypsum, based on the market values of electricity and FGD gypsum.

Key assumptions and estimates

Production process flows are allocated to the reference product, as described under allocation. The mass-based allocation assumes a uniform distribution of production impacts across co-products. Foreground inventory data is checked for consistency of production process, to ensure the validity of the allocated results.

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD. Mass and energy flows are reported per 1 t of product.

End-of-life scenario (C1-C4)	Value	Unit
Diesel required to demolish 1 kg of concrete	0.06	MJ / kg
PM 10 emissions during the demolishment of 1 kg of concrete	6.00e-05	kg / kg
PM 2.5 emissions during the demolishment of 1 kg of concrete	1.70e-05	kg / kg
Collection process specified by type		
Collected individually	0	kg
Collected with mixed construction and demolition waste	1000.00	kg
Recovery system specified by type		
Destined for reuse	0	kg
Recycling rate	10.00	%
Destined for recycling	100.00	kg
Destined for energy recovery	0	kg
Disposal specified by type		
Product or material destined for final disposal	900.00	kg
Transport		
Distance to landfill	50.00	km
Distance to recycling	50.00	km
Transport modality: Truck	transport, freight, lorry >32 metric ton, EURO6	-
Energy demand	1.58	MJ / t*km
Energy demand (km)	1.58	MJ / km
Capacity utilization	53.30	%

Module C2 includes the impact of transportation of material after deconstruction, during the End-of-Life stage.

Reuse, recovery and/or recycling potentials (D)	Value	Unit
Amount of secondary material that the system takes in	167.82	kg
Installation: Material eligible for recycling/reuse credits	0	kg
End-of-life: Material eligible for recycling/reuse credits	83.55	kg
Substitution of gravel	83.55	kg
End-of-life: Exported energy eligible for credits	0	MJ

Calculation of loads and benefits per EN 15804+A2. Exported energy is credited only where it originates from the incineration of primary material; landfilled fractions receive no exported-energy credit and therefore no avoided primary energy consumption. Recycling or reuse benefits are credited when primary material from the product is recovered at end-of-life and replaces virgin material that would otherwise have been produced.

LCA: Results

The following results are based on the market-based electricity approach applied to the foreground system (A3). Further details on electricity data are provided in the Additional Requirements section.

Core environmental impact indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total (net)	kg CO ₂ -eq.	6.15e+02	6.13e+00	5.18e+00	4.41e-01	5.66e+00	-1.71e-01
GWP-fossil (net)	kg CO ₂ -eq.	6.11e+02	6.13e+00	5.18e+00	4.38e-01	5.63e+00	-1.66e-01
GWP-biogenic (net)	kg CO ₂ -eq.	3.46e+00	6.12e-04	2.60e-03	2.74e-03	2.47e-02	-5.25e-03
GWP-luluc	kg CO ₂ -eq.	1.30e-01	5.33e-04	1.84e-03	3.81e-05	2.92e-03	-1.87e-05
ODP	kg CFC-11-Eq	2.15e-06	9.38e-08	1.08e-07	6.70e-09	1.63e-07	-2.34e-09
AP	mol H ⁺ -Eq	7.08e-01	5.53e-02	1.22e-02	3.95e-03	3.99e-02	-1.43e-03
EP-freshwater	kg P-Eq	9.92e-02	1.79e-04	3.64e-04	1.28e-05	4.67e-04	-7.33e-06
EP-marine	kg N-Eq	2.60e-01	2.57e-02	3.21e-03	1.83e-03	1.52e-02	-5.68e-04
EP-terrestrial	mol N-Eq	2.74e+00	2.81e-01	3.47e-02	2.01e-02	1.66e-01	-6.64e-03
POCP	kg NMVOC-Eq	8.05e-01	8.38e-02	2.12e-02	5.98e-03	5.94e-02	-1.90e-03
ADPE	kg Sb-Eq	1.01e-03	2.20e-06	1.48e-05	1.57e-07	8.93e-06	-1.70e-06
ADPF	MJ, net calorific value	2.59e+03	8.02e+01	7.77e+01	5.73e+00	1.38e+02	-2.42e+00
WDP	m ³ world Eq deprived	2.00e+01	1.96e-01	3.90e-01	1.40e-02	3.86e-01	-1.17e-01

GWP-total (net): Global Warming Potential - total (net), **GWP-fossil (net):** Global warming potential - fossil (net), **GWP-biogenic (net):** Global Warming Potential - biogenic (net), **GWP-luluc:** Global Warming Potential - luluc, **ODP:** Depletion potential of the stratospheric ozone layer, **AP:** Acidification potential, Accumulated Exceedance, **EP-freshwater:** Eutrophication potential - freshwater, **EP-marine:** Eutrophication potential - marine, **EP-terrestrial:** Eutrophication potential - terrestrial, **POCP:** Photochemical Ozone Creation Potential, **ADPE:** Abiotic depletion potential - non-fossil resources, **ADPF:** Abiotic depletion potential - fossil resources, **WDP:** Water (user) deprivation potential

Remarks to environmental impacts

Net values are declared for the GWP indicators in modules A1-A3. These values exclude 125.58 kg CO₂ eq. from the combustion of the fossil fraction of waste-derived fuels. In accordance with the "polluter pays" principle of EN 15804+A2, these emissions are attributed to the system generating the waste. The corresponding gross values for the GWP indicators are provided as additional environmental information in the table "Environmental impacts - Gross".

Additional indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PM	disease incidence	4.68e-06	8.92e-06	5.04e-07	8.56e-07	9.07e-07	-3.93e-08
IRP	kBq U235-Eq	1.24e+01	3.59e-02	9.44e-02	2.56e-03	8.80e-02	-2.79e-02
ETP-fw	CTUe	1.02e+03	1.14e+01	1.84e+01	8.11e-01	1.89e+01	-1.20e+00
HTP-c	CTUh	2.43e-06	2.40e-08	3.31e-08	1.71e-09	2.54e-08	-2.70e-09
HTP-nc	CTUh	1.82e-06	1.09e-08	5.13e-08	7.77e-10	2.48e-08	-1.57e-09
SQP	dimensionless	7.93e+02	5.62e+00	7.82e+01	4.01e-01	2.72e+02	-5.47e+00

PM: Potential incidence of disease due to PM emissions, **IRP:** Potential Human exposure efficiency relative to U235, **ETP-fw:** Potential Comparative Toxic Unit for ecosystems, **HTP-c:** Potential Comparative Toxic Unit for humans - cancer effects, **HTP-nc:** Potential Comparative Toxic Unit for humans - non-cancer effects, **SQP:** Potential Soil quality index. **IRP:** 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. **ETP-fw, HTP-c, HTP-nc, SQP:** The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with these indicators.

Use of resources

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	1.28e+02	4.90e-01	1.23e+00	3.50e-02	1.28e+00	-7.92e-01
PERM	MJ	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
PERT	MJ	1.28e+02	4.90e-01	1.23e+00	3.50e-02	1.28e+00	-7.92e-01
PENRE	MJ	2.59e+03	8.02e+01	7.77e+01	5.73e+00	1.38e+02	-2.42e+00
PENRM	MJ	5.80e+00	0.00e+00	0.00e+00	-5.80e-01	0.00e+00	0.00e+00
PENRT	MJ	2.60e+03	8.02e+01	7.77e+01	5.15e+00	1.38e+02	-2.42e+00
SM	kg	3.25e+02	0.00e+00	0.00e+00	0.00e+00	0.00e+00	8.35e+01
RSF	MJ	8.09e+02	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
NRSF	MJ	1.92e+03	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
FW	m³	1.40e+00	5.21e-03	1.13e-02	3.72e-04	1.43e-01	-1.19e-01

PERE: Primary energy resources - renewable: use as energy carrier , **PERM:** Primary energy resources - renewable: used as raw materials , **PERT:** Primary energy resources - renewable: total , **PENRE:** Primary energy resources - non-renewable: use as energy carrier , **PENRM:** Primary energy resources - non-renewable: used as raw materials , **PENRT:** Primary energy resources - non-renewable: total , **SM:** Use of secondary material , **RSF:** Renewable secondary fuels , **NRSF:** Non-renewable secondary fuels , **FW:** Net use of fresh water

Waste flows

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	1.14e-01	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
NHWD	kg	1.09e-01	0.00e+00	0.00e+00	0.00e+00	9.00e+02	0.00e+00
RWD	kg	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

HWD: Hazardous waste disposed , **NHWD:** Non hazardous waste disposed , **RWD:** Radioactive waste disposed

Output flows

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
CRU	kg	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
MFR	kg	9.31e-02	0.00e+00	0.00e+00	1.00e+02	0.00e+00	0.00e+00
MER	kg	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
EEE	MJ	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
EET	MJ	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

CRU: Components for re-use , **MFR:** Materials for recycling , **MER:** Materials for energy recovery , **EEE:** Exported electrical energy , **EET:** Exported thermal energy

Name	Value	Unit
Biogenic carbon content in product	7.48e-03	kg C
Biogenic carbon content in accompanying packaging	0.00e+00	kg C

Additional requirements

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

Electricity consumption in the manufacturing phase is composed from the sources below. This EPD follows the market-based approach.

Approach	Electricity	Quantity [kWh]	Emission Factor [kg CO ₂ e/kWh]
market-based	ecoinvent: electricity, high voltage, residual mix (DE)	40.16	0.84
market-based	ecoinvent: electricity production, nuclear, pressure water reactor (DE)	0.02	6.56e-03
market-based	ecoinvent: electricity production, photovoltaic, 570kWp open ground installation, multi-Si (DE)	0.21	0.10
market-based	ecoinvent: electricity production, wind, >3MW turbine, onshore (DE)	0.47	0.03
market-based	ecoinvent: electricity production, hydro, pumped storage (DE)	0.08	0.72
market-based	ecoinvent: electricity production, deep geothermal (DE)	0.02	0.07
market-based	ecoinvent: electricity production, wood, future (GLO)	0.09	0.05
market-based	ecoinvent: electricity production, natural gas, conventional power plant (DE)	0.27	0.76
market-based	ecoinvent: electricity production, oil (DE)	0.02	0.95
market-based	ecoinvent: electricity production, hard coal (DE)	0.47	1.06
(location-based)	(ecoinvent: market for electricity, high voltage (DE))	(41.81)	(0.47)

Rows marked with () are provided for reference and not used in the assessment.

Electricity consumption in upstream production processes:

Electricity	Emission Factor [kg CO ₂ e/kWh]
ecoinvent: electricity, high voltage, residual mix (DE)	0.84
ecoinvent: electricity production, nuclear, pressure water reactor (DE)	6.56e-03
ecoinvent: electricity production, photovoltaic, 570kWp open ground installation, multi-Si (DE)	0.10
ecoinvent: electricity production, wind, >3MW turbine, onshore (DE)	0.03
ecoinvent: electricity production, hydro, pumped storage (DE)	0.72
ecoinvent: electricity production, deep geothermal (DE)	0.07
ecoinvent: electricity production, wood, future (GLO)	0.05
ecoinvent: electricity production, natural gas, conventional power plant (DE)	0.76
ecoinvent: electricity production, oil (DE)	0.95
ecoinvent: electricity production, hard coal (DE)	1.06

Dangerous substances

The product contains no hazardous substances given by the REACH Candidate List or the Norwegian Priority List.

Additional environmental information

Secondary content

The product contains 16.45 % secondary material. Secondary material includes recycled, recovered and by-product content.

Additional environmental impact indicators required in NPCR Part A for construction products

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-IOBC	kg CO ₂ -eq.	6.11e+02	6.13e+00	5.18e+00	4.38e-01	5.63e+00	-1.66e-01

GWP-IOBC: Global Warming Potential - Instantaneous oxidation of biogenic carbon

Gross and net global warming potential (A1-A3)

Indicator	Unit	Gross	Net
GWP-total	kg CO ₂ -eq.	7.40e+02	6.15e+02
GWP-fossil	kg CO ₂ -eq.	7.37e+02	6.11e+02

Bibliography

CEN/TR 15941:2010	Sustainability of construction works - Environmental product declarations - Methodology for selection and use of generic data
EN 15804:2012+A2:2019	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
EN 15942:2022-04	Sustainability of construction works - Environmental product declarations - Communication format business-to-business
ISO 14025:2011-10	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14040:2021-02	Environmental management - Life cycle assessment - Principles and framework
ISO 14044:2021-02	Environmental management - Life cycle assessment - Requirements and guidelines
EF 3.1	Environmental Footprint (EF) Life Cycle Impact Assessment method - Characterisation Factors version 3.1, European Commission, Joint Research Centre (JRC)
ecoinvent 3.10	ecoinvent, Zurich, Switzerland, database version 3.10
NPCR Part A:2021	Construction products and services, Version 2.0. Issue date: 24.03.2021; validity extended to 31.12.2026.
EN 16908:2017+A1:2022	Cement and building lime – Environmental product declarations – Product category rules complementary to EN 15804.

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