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ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804+A2

Akmenės cementas AB
CEM II/B-M (S-LL) 42.5 N

Owner of the declaration
Akmenės cementas AB
J. Dalinkevičiaus gatvė 2
85118 Naujoji Akmenė
Lithuania

Product
CEM II/B-M (S-LL) 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-12306-12306-2

Registration number
NEPD-12306-12306-2

Issue date
28.09.2026

Valid to
27.09.2031

EPD Software
Emidat Platform v1.0.0

General Information

Product
CEM II/B-M (S-LL) 42.5 N

Program Operator
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Phone: +47 23 08 80 00
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Declaration Number
NEPD-12306-12306-2

This declaration is based on Product Category Rules
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

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Place of production
Naujoji Akmenė, Lithuania

Management system
ISO 9001 , ISO 14001 , ISO 45001 , ISO 50001

Organisation no
LT530091413

Issue date
28.09.2026

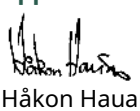
Valid to
27.09.2031

Year of study
2025

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

Approved

Håkon Hauan, The Norwegian EPD Foundation

Product

Product description

Akmenes Cementas CEM II/B-M (S-LL) 42.5 N is a Portland-composite cement with an ordinary early strength. The cement contains limestone and granulated blast furnace slag. The product is produced according to the harmonized standard EN 197-1.

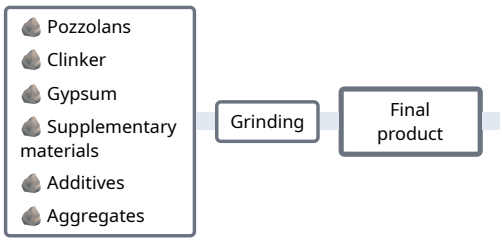
Further technical information can be found on www.cementas.lt.

No packaging was included for the modeled product.

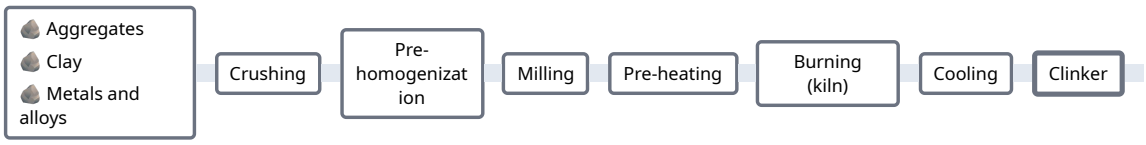
Application description

Akmenes Cementas CEM II/B-M (S-LL) 42.5 N can be used as a binder in ready-mix concrete and for prefabricated concrete products and wares. It can further be used as a component in dry mortars and for ground stabilization work.

Production process



Upstream production processes



Product specification

Name of ingredient	Share of total weight
Additives	0 - 5 %
Aggregates	5 - 12 %
Clinker	65 - 79 %
Gypsum	5 - 12 %
Pozzolans	0 - 5 %
Supplementary materials	12 - 20 %

Technical data

	Unit	Value
Compressive Strength (Prisms, EN 196-1)	N / mm²	42.5
Density	kg / m³	3050

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

Market

Lithuania

Recipients
B2B

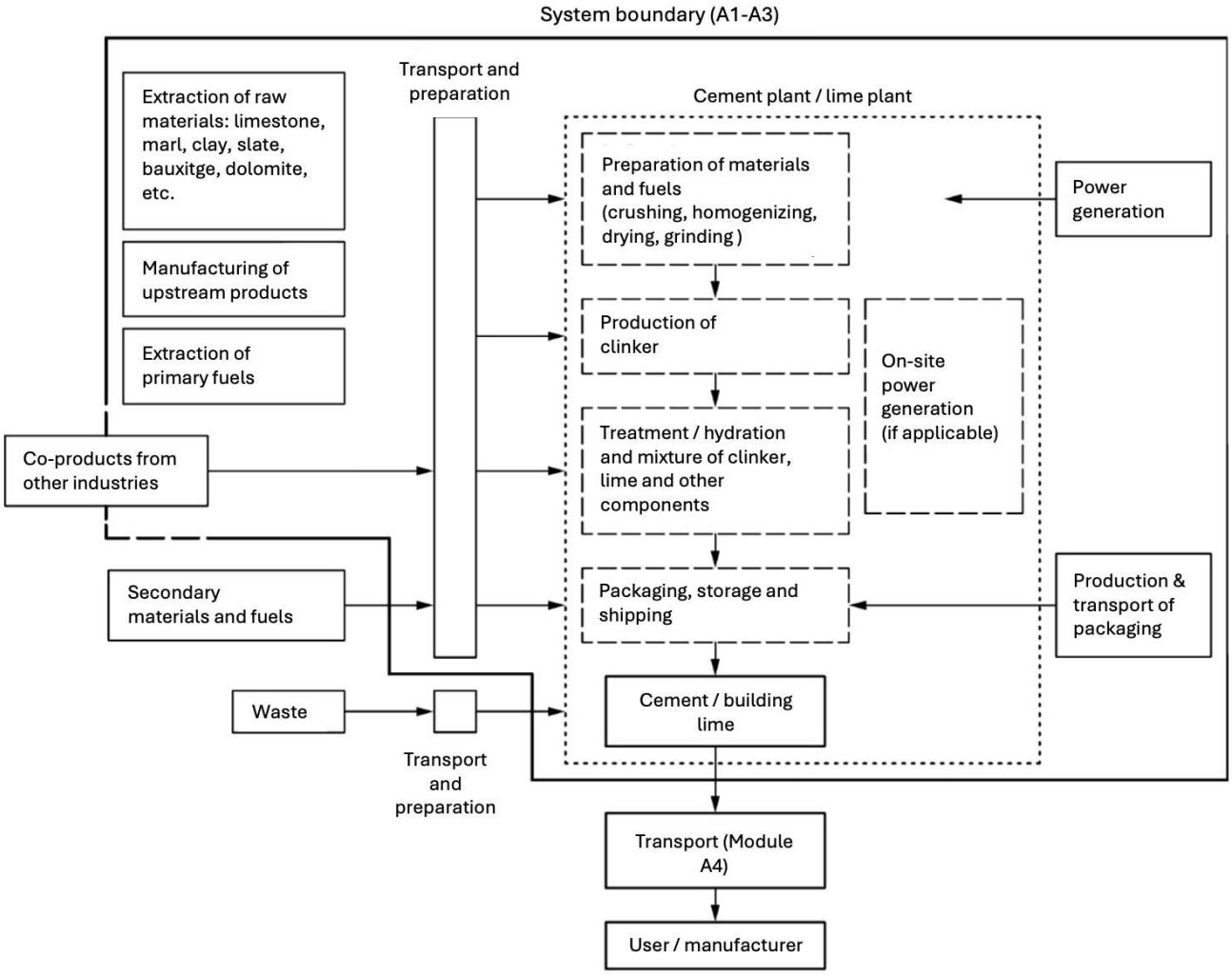
LCA: Calculation rules

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
Gypsum	Poor	ecoinvent 3.10	2023
Packaging	Poor	ecoinvent 3.10	2023
Pozzolans	Poor	ecoinvent 3.10	2023
Supplementary materials	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	MND	MND	MND	MND	MND
Geography			LT	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

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

Type of EPD: Cradle to gate

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

Cut-off criteria

All inputs and outputs related to the declared modules of CEM II/B, including raw materials, packaging, transportation, energy usage and ancillary materials, were comprehensively considered in line with EN 15804+A2 and if applicable the product-specific PCR. Furthermore, all known hazardous substances (within the REACH list and the Norwegian Priority List), regulated materials, and significant emissions were declared and are not excluded under the cut-off rules.

The following processes are considered below the EN 15804+A2 cut-off threshold and were excluded:

- Impacts related to the manufacturer's infrastructure and assets
- Manufacturing of means of production, buildings or other capital goods
- Transportation of personnel to the plant
- Transportation of personnel within the plant
- Research and development activities
- Long-term emissions

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 2025 to the reference product.

Blast furnace slag (BFS) is a low revenue co-product of the blast furnace iron making process. Economic allocation was used to allocate impacts from the blast furnace process, based on the market values of pig iron and BFS. In addition, water used in the granulation process is considered.

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: 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
GWP-total (net)	kg CO_2-eq.	5.40e+02
GWP-fossil (net)	kg CO_2-eq.	5.38e+02
GWP-biogenic (net)	kg CO_2-eq.	4.15e-01
GWP-luluc	kg CO_2-eq.	1.65e+00
ODP	kg CFC-11-Eq	1.45e-06
AP	mol H+-Eq	2.61e+00
EP-freshwater	kg P-Eq	6.16e-02
EP-marine	kg N-Eq	4.95e-01
EP-terrestrial	mol N-Eq	5.52e+00
POCP	kg NMVOC-Eq	1.54e+00
ADPE	kg Sb-Eq	3.02e-03
ADPF	MJ, net calorific value	2.22e+03
WDP	m^3 world Eq deprived	1.67e+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 61.13 kg CO_2 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
PM	disease incidence	1.37e-05
IRP	kBq U235-Eq	9.24e+00
ETP-fw	CTUe	7.90e+02
HTP-c	CTUh	1.48e-06
HTP-nc	CTUh	2.30e-06
SQP	dimensionless	1.87e+03

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 experienced with these indicators.

Use of resources

Indicator	Unit	A1-A3
PERE	MJ	5.19e+02
PERM	MJ	0.00e+00
PERT	MJ	5.19e+02
PENRE	MJ	2.22e+03
PENRM	MJ	5.92e+00
PENRT	MJ	2.22e+03
SM	kg	0.00e+00
RSF	MJ	5.39e+02
NRSF	MJ	4.54e+02
FW	m^3	6.63e-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
HWD	kg	5.21e-02
NHWD	kg	2.01e+00
RWD	kg	0.00e+00

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

Output flows

Indicator	Unit	A1-A3
CRU	kg	0.00e+00
MFR	kg	8.68e+00
MER	kg	0.00e+00
EEE	MJ	0.00e+00
EET	MJ	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	0.00e+00	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_2e/kWh]
market-based	ecoinvent: electricity production, photovoltaic, 570kWp open ground installation, multi-Si (NL)	4.21	0.10
market-based	ecoinvent: electricity production, wind, >3MW turbine, onshore (LT)	9.28	0.02
market-based	ecoinvent: electricity production, hydro, pumped storage (LT)	21.24	0.63
market-based	ecoinvent: electricity production, deep geothermal (LT)	0.10	0.07
market-based	ecoinvent: electricity production, wood, future (GLO)	16.47	0.05
(location-based)	(ecoinvent: market for electricity, high voltage (LT))	(51.29)	(0.40)

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

Electricity consumption in upstream production processes:

Electricity	Emission Factor [kg CO_2e/kWh]
ecoinvent: electricity production, photovoltaic, 570kWp open ground installation, multi-Si (NL)	0.10
ecoinvent: electricity production, wind, >3MW turbine, onshore (LT)	0.02
ecoinvent: electricity production, hydro, pumped storage (LT)	0.63
ecoinvent: electricity production, deep geothermal (LT)	0.07
ecoinvent: electricity production, wood, future (GLO)	0.05

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 0 % 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
GWP-IOBC	kg CO_2-eq.	5.40e+02

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.	6.01e+02	5.40e+02
GWP-fossil	kg CO_2-eq.	5.99e+02	5.38e+02

Global warming potential of co-products used as inputs

Co-product	GWP-total	GWP-total (net)	GWP-IOBC
Blast furnace slag	7.11e-02	7.11e-02	7.11e-02

Values in kg CO2-eq per kg of co-product, excluding transport to the plant.

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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