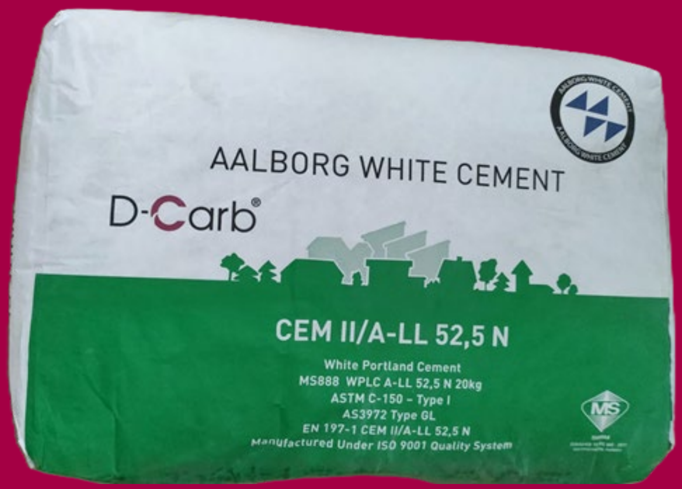
ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025:2006 AND EN 15804:2012+A2:2019/AC:2021 FOR:



D-CARB – CEM II/A-LL 52.5N
from
AALBORG PORTLAND MALAYSIA

Programme:	**The International EPD System, www.environdec.com**
Programme operator:	**EPD International AB**
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An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

GENERAL INFORMATION

PROGRAMME INFORMATION	
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PRODUCT CATEGORY RULES (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): *PCR 2019:14 Construction products version 2.0.1 (valid until 2030 – 04 – 07) and UN CPC 374* – Plaster, lime and cement.
PCR review was conducted by: *The Technical Committee of the International EPD System. See www.environdec.com for a list of members.* ***Review chair:*** *Rob Rouwette| start2see (chair),* *Noa Meron | thinkstep-anz(co-chair).* *The review panel may be contacted via the Secretariat www.environdec.com/support.*
Complementary Product Category Rules: PCR 2019:14-c-PCR-001 Cement and building lime (EN 16908) (c-PCR to PCR 2019:14) (1.0.0)

THIRD-PARTY VERIFICATION
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: Jonas Bengtsson Edge Impact Greenhouse, Level 3, 180 George Street, Sydney NSW 2000, Australia Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD	Aalborg Portland Malaysia Sdn. Bhd.
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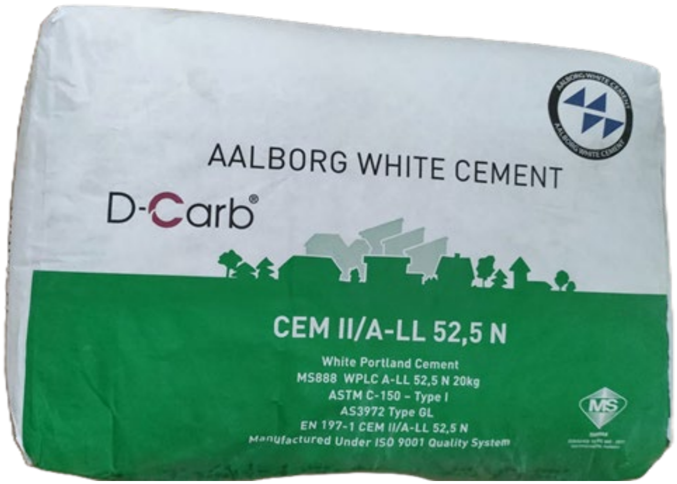
Description of the organisation

Aalborg Portland is the world's leading manufacturer and exporter of white cement. Aalborg Portland has an annual total capacity of 1.8 million tonne of white cement. Most of the white cement is exported to more than 80 countries world-wide. We have production plants in Denmark, Egypt, Malaysia, China and USA and sales and distribution offices in several countries around the world.

Aalborg Portland provides the world with a material that can do anything. Aalborg Portland uses this fact to help our customers and other stakeholders imagine and fulfil new possibilities – by using white cement. Aalborg Portland continuously probes, explore and apply aesthetics – to the benefit of our customers, whose businesses we strive to develop through our efforts.

PRODUCT INFORMATION

Product name	D-CARB – CEM II/A-LL 52.5N
Product identification	AALBORG WHITE® Cement
Product number / reference	PC000352
Name and location of production site	Aalborg Portland Malaysia Sdn. Bhd. Lot 75244, Pinji Estate, P.O. Box 428, 30750 Ipoh, Perak, Malaysia
UN CPC code	374 – Plaster, lime and cement



Product description

White cement is used as a hydraulic binder together with natural and artificial aggregates, such as sand and gravel, to produce mortars, plasters, concrete and premixed materials. The peculiarity of AALBORG WHITE® limestone is the lack of contamination from sand and clay, a circumstance that makes it very pure, ideal for the production of white cement. The combination of this pure raw material, high-quality sands and kaolin, advanced technology, a specialized workforce and over 100 years of experience have made AALBORG WHITE® cement unique in the world for its properties such as high reflection, high resistance, low alkali content and high resistance to sulphates. As the world leader in the white cement market with the AALBORG WHITE® brand, Cementir offers a wide product range which complies with the best international standards. Our industrial processes are inspired by Group consolidated best practices that guarantee our customers a unique quality and reliability over time. Our Research Quality & Technical Centre (RQT) has a worldwide reputation for international patents, awards and multiple collaborations with prestigious universities.

Manufacturing Process

Cement is made by heating, in a cement kiln, a mixture of raw materials (mainly limestone or chalk) to a calcining temperature of above 600°C and then a fusion temperature, which is about 1450°C to sinter the materials into white clinker. The clinker production process is a so-called dry process. To achieve the desired propertied in the finished cement, gypsum or anhydrite is added to the clinker and the mixture is finely ground with limestone filler.

Product application

The use of white cement in construction offers multiple advantages

- Energy saving: light reflection reduces solar absorption and the consequent accumulation of heat, allowing savings in lighting and air conditioning of the rooms.
- Reduction of heat accumulation: covering buildings with reflective materials reduces solar absorption and the consequent heat accumulation.
- Optimisation of construction and maintenance costs: white cement allows to obtain coloured cement products, reducing construction costs and subsequent maintenance costs.
- Greater road safety: white concrete road barriers increase visibility and improve safety because they keep a bright colour over time in wet and poor lighting conditions

Technical specifications and physical properties of the product

The product system covers the production of white cement, primarily composed of clinker, limestone, gypsum, and minor additives. Manufacturing is based on a dry process, where raw materials are heated at high temperatures to produce clinker, which is subsequently ground with gypsum and other constituents to achieve the desired properties. Further information on the product is available on the Aalborg Portland Malaysia website: www.aalborgportland.com.my/the-product

Product standards

D-CARB – CEM II/A-LL 52.5N cement is manufactured according to the requirements in the European standard EN 197-1

CONTENT DECLARATION

Content declaration of the product (per 1 000kg of the product)

Product content	Weight, kg	Post-consumer recycled %	Biogenic %	Bio carbon, kg
Clinker	7.90E+02 – 8.40E+02	0	0	0.00E+00
Limestone	1.50E+02 – 2.00E+02	0	0	0.00E+00
Other constituents	0.00E+00 – 5.00E+01	0	0	0.00E+00

Content declaration of packaging (per 1 000kg of the product)

Packaging materials	Weight (kg/t)	Weight-% (versus the product)	Biogenic material, kg C/t
Paper bag	6.09E+00	0.609%	1.21E-02
Cardboard	1.72E-01	0.017%	3.42E-04
Plastic bag	3.11E+00	0.311%	0.00E+00
Wooden pallet	1.69E+01	1.691%	7.55E-01

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO_2.

The product declared in this EPD does not contain any substances exceeding the threshold of 0.1% by weight that are listed on the European Chemicals Agency (ECHA) Candidate List of Substances of Very High Concern (SVHC) for authorisation.

LCA INFORMATION

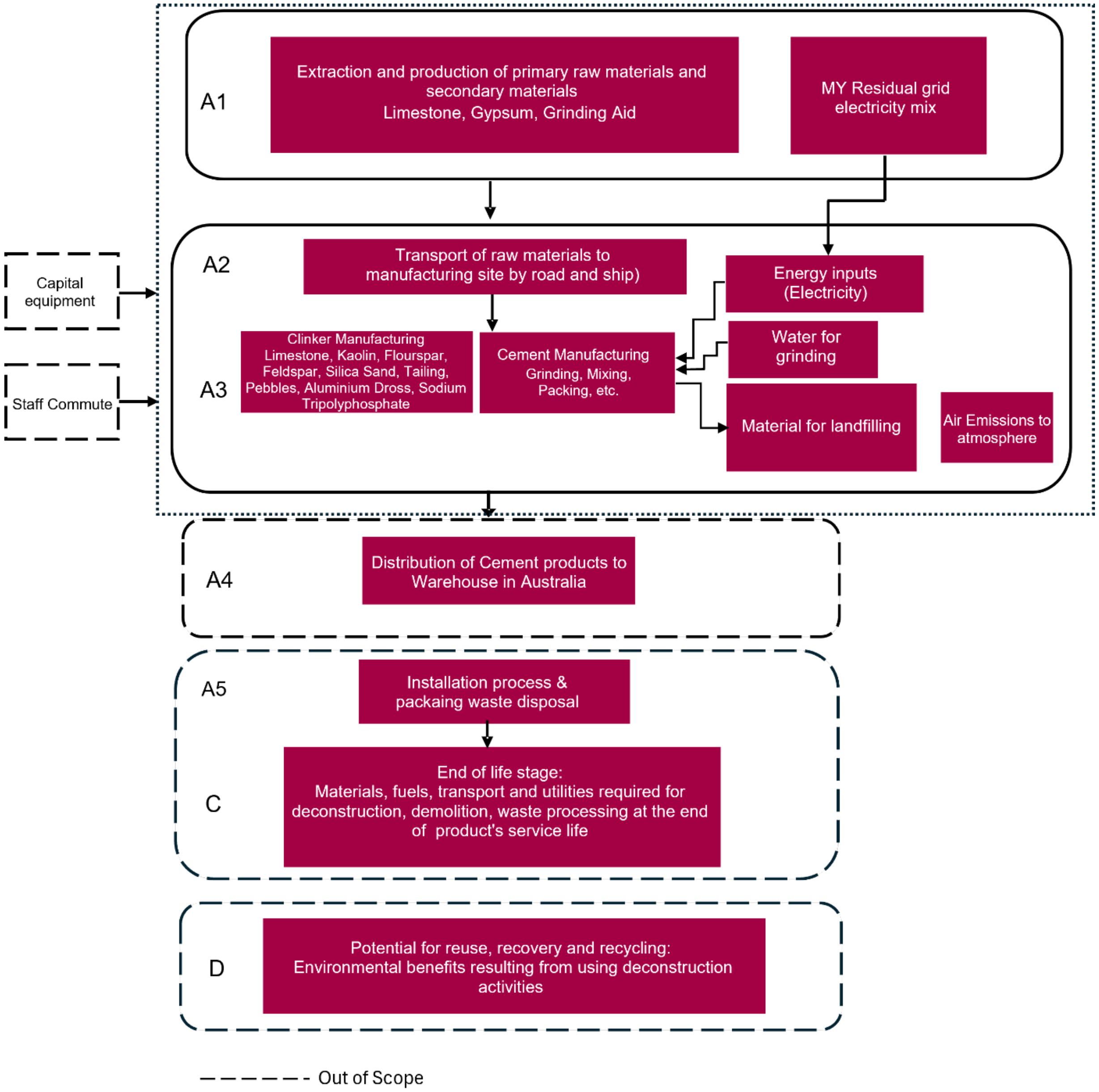
Declared unit	1 000 kg of CEM II/A-LL 52.5N
Reference service life	Not relevant due to the “cradle-to-gate” boundary conditions.
Time representativeness	01/01/2025 – 30/06/2025
Geographical scope	Malaysia
Database and LCA software	ecoinvent 3.11 SimaPro (v10.2.0.3)

Results of this EPD shall be used with care as the LCI data for CEM II/A-LL 52.5N is not yet based on 1 year of production which may result in increased uncertainty. The EPD will be updated once one year of production data becomes available.

Description of system boundary

This EPD covers a cradle-to-gate system boundary (Modules A1–A3). Cement is an intermediate product used in construction, and downstream transport (A4) is project-specific; therefore, it is not declared in accordance with PCR 2019:14. Once incorporated into concrete, cement becomes part of the material matrix and cannot be practically separated at end of life; consequently, further life cycle stages are not considered relevant for this EPD.

Process flow diagram



Modules declared, geographical scope and GWP-GHG variation in the share of primary data, products, and manufacturing sites

Module	A1 Raw materials	A2 Transport	A3 Manufacturing	A4 Transport	A5 Assembly	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 De-construction demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, Recovery, Recycling potential
Modules declared	x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geography	MY	MY	MY	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Share of primary data	84.33%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Not declared = ND.

This study adopts a cradle-to-gate system boundary covering Modules A1–A3, in accordance with PCR 2019:14 – Construction Products – Version 2.0.1. The product meets the conditions for excluding downstream life cycle stages, as it is physically integrated into other construction materials, cannot be practically separated at end of life, and is no longer identifiable due to physical and chemical transformation. The product does not contain biogenic carbon.

Although minor amounts of biogenic carbon are present in packaging materials, these account for less than 5% of the total product mass, module A5 is not included at least for balancing out the emission of this carbon.

Data sources and share of primary data

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Generation of electricity used in manufacturing of product	Collected data, Database	Measured by Aalborg Portland Malaysia, ecoinvent v3.11	2025	Primary data, Secondary data	5.75%
Production of Clinker	Collected data	Measured by Aalborg Portland Malaysia	2025	Primary data	78.53%
Production of Limestone	Collected data	Measured by Aalborg Portland Malaysia	2025	Primary data	0.042%
Production of Gypsum	Database	ecoinvent v3.11	2025	Secondary data	0%
Production of Grinding aid	Database	ecoinvent v3.11	2025	Secondary data	0%
Transport of raw materials to the manufacturing site	Collected data, Database	Measured by Aalborg Portland Malaysia, ecoinvent v3.11	2025	Primary data, Secondary data	0.005%
Others	Database	ecoinvent v3.11	2025	Secondary data	0%
Total share of primary data, of GWP-GHG for A1-A3					**84.33%**

Cut-off criteria

Cut-off criteria were applied in accordance with PCR 2019:14 v2.0.1 and EN 15804+A2. The objective was to ensure completeness of the Life Cycle Inventory (LCI) while excluding flows that are demonstrably negligible and do not materially influence the results.

For each declared module (A1–A3), a quantitative completeness check was performed. Total annual mass inflows (raw materials, packaging, auxiliary materials) and total energy inflows (electricity and fuels) were compiled and used as the reference basis. The inventoried flows represent more than 95% of total mass and energy inputs per module, thereby fulfilling the ≥95% completeness requirement specified in EN 15804 and PCR 2019:14.

Flows were screened using the following criteria:

- Individual flows contributing less than 1% of total mass or energy per module were evaluated for exclusion.
- Exclusion was permitted only where the flow was demonstrably negligible in both mass and expected environmental relevance.
- No flow known or expected to have a significant environmental impact was excluded, regardless of its quantitative contribution.
- The cumulative contribution of excluded flows remained below 5% of total mass and energy inputs for each declared module.

The following flows were excluded from the system boundary:

- Capital goods (infrastructure, buildings, production equipment, and tools not directly consumed in production). In line with EN 15804 guidance and Frischknecht et al. (2007), such contributions are typically marginal relative to operational inputs and fall within inventory uncertainty ranges.
- Personnel-related activities, including employee commuting and administrative activities, as these are not product-specific and are outside the defined product system boundary.
- Transport of packaging materials, representing less than 1% of the declared product mass and assessed as environmentally insignificant in the context of total module impacts.
- Minor auxiliary materials individually contributing less than 1% of total mass or energy and verified as environmentally negligible, including, for example, lubricants, maintenance chemicals, cleaning agents, and minor process additives.
- Modules A4–A5, B1–B7, C1–C4, and D are not declared, as the product is assessed cradle-to-gate (A1–A3). Downstream transport and use-stage impacts depend on project-specific conditions and are therefore excluded from this EPD in accordance with PCR 2019:14.

- Based on the quantitative verification performed, the excluded flows collectively account for less than 5% of total mass and energy inflows per module. The inventory is therefore considered complete and compliant with the requirements of EN 15804+A2 and PCR 2019:14.

Allocation

Allocation procedures were applied in accordance with EN 15804+A2:2019 and PCR 2019:14 v2.0.1. Allocation is required when a process yields multiple functional outputs to distribute environmental inputs and outputs among the products concerned. For all allocated processes, the sum of allocated flows equals the total unallocated inputs and outputs.

The cement grinding and packaging operations produce cement types using shared infrastructure and utilities. As the products differ only in composition and are manufactured using the same equipment and process lines, environmental inputs and outputs from Module A3 were allocated based on annual production mass (t/year). Mass allocation reflects the underlying physical relationship between production volume and resource consumption and is consistent with the allocation hierarchy defined in EN 15804+A2.

No co-products are generated within the declared system boundary (A1–A3). Therefore, no co-product allocation is required. All process-related material and energy inputs, emissions, and relevant waste flows are attributed to cement production.

Treatment of Plant-Level Waste Data

The plant tracks the yearly amount of "plant materials to landfill", including:

- General plant waste,
- Site clean-up waste,
- Maintenance-related waste,
- Other non-process industrial waste streams not directly linked to cement production.

In accordance with EN 15804+A2 system boundary requirements, only waste directly attributable to the declared product system (Modules A1–A3) is included in the LCI. General facility waste, maintenance waste, and site clean-up waste are not considered product-specific and would occur irrespective of the specific cement type produced. These waste streams are therefore excluded from the product system as they fall outside the defined cradle-to-gate boundary for the declared unit.

Only manufacturing waste directly associated with cement grinding and packaging operations (e.g., packaging residues and minor operational process waste) is included in the LCA model.

This approach ensures that:

- Waste reporting reflects only product-relevant flows crossing the system boundary;
- Non-product-specific facility waste is not artificially allocated to cement products;
- The inventory remains compliant with EN 15804+A2 and PCR 2019:14 requirements regarding system boundaries and allocation principles

No waste flows leaving the declared product system boundary (Modules A1–A3) are considered in the LCA model. Manufacturing waste included in the study is limited to minor process-related waste generated during cement grinding and packaging and is treated within the system boundary. All non-product-specific waste streams are excluded; therefore, no waste outputs crossing the system boundary are reported.

Averages and variability

EPD is based on plant specific data covering the period 01/01/2025 – 30/06/2025 to eliminate risk of seasonality impact and random fluctuations. Burdens from internal clinker production is assigned to cement according to clinker factor.

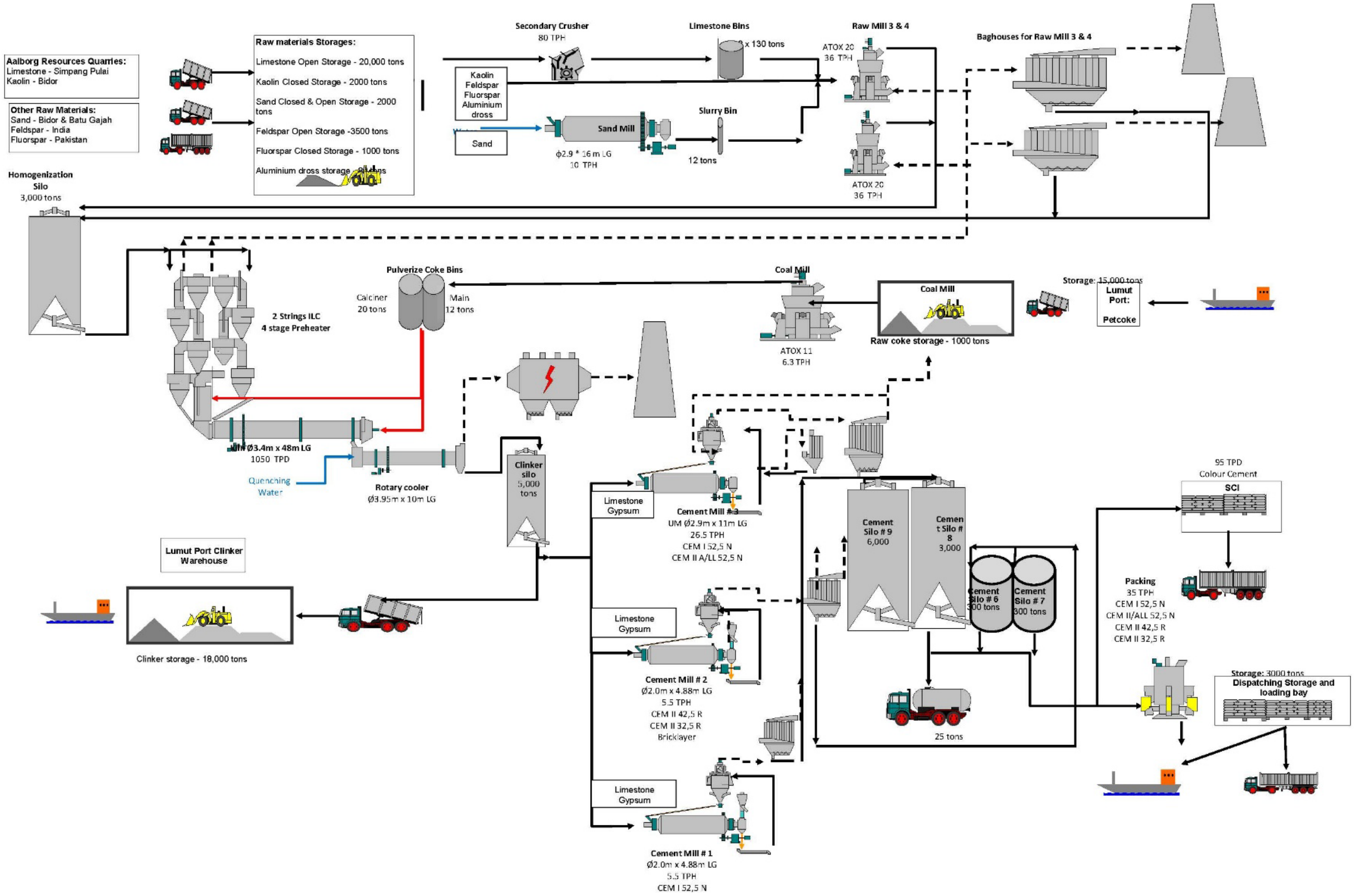
Minor inputs such as waste handling and internal transport are averaged over all clinker production, since no specific data was available.

Data quality assessment

Primary data were collected directly from the cement manufacturing plant and consolidated using a weighted average to represent the declared unit.
Background data sourced from the ecoinvent v3.11 database are considered to have good geographical representativeness, and very good technological and temporal representativeness.

Manufacturing process

AALBORG PORTLAND MALAYSIA PROCESS FLOWSHEET



Module A1 – Raw material supply

Module A1 includes the extraction and production of primary and secondary raw materials required for cement manufacturing. This comprises clinker, limestone, gypsum, and grinding aids. Raw materials such as limestone and other mineral constituents are extracted and processed, while upstream inputs including the Malaysian residual grid electricity mix are accounted for in this stage.

Module A2 – Transportation

Module A2 covers the transport of raw materials to the manufacturing site. Materials are transported via road and, where applicable, by sea freight. Transport modelling includes representative logistics for delivery from suppliers and quarries to the cement production facility.

Module A3 – Manufacturing

Module A3 includes clinker production and cement manufacturing processes. Clinker is produced from raw materials such as limestone, kaolin, fluorspar, feldspar, silica sand, and other constituents through high-temperature processing. The clinker is then ground with gypsum and other additives to produce cement, followed by mixing and packaging operations.

Operational inputs include residual electricity (Malaysian grid), water for grinding, and fuels used in clinker production.

Electricity modelling

Aalborg Cement's products are manufactured at its facility in Malaysia. In line with Section 4.8.1 of the Product Category Rules (PCR) for Construction Products Version 2.0.1, the electricity used for Module A3 is modeled using the residual electricity mix available on the market, as no contractual instruments – such as Renewable Energy Certificates (RECs) or Guarantees of Origin – are in place.

Since an official residual electricity mix for Malaysia is not publicly available, a conservative estimation approach has been adopted, in accordance with PCR guidance. This estimation subtracts all renewable energy sources from the national consumption mix to represent only the non-renewable portion of electricity used. Specifically, hydropower and woodchip-based biomass have been excluded from the inventory.

The resulting residual mix has been derived from detailed life cycle inventory (LCI) data in the ecoinvent v3.11 database. It includes only non-renewable and imported electricity sources, with the following composition:

Energy Source	Share (%)
Hard coal	47.63
Natural Gas	27.25
Oil	21.96
Imports/Other	3.16

The emission factor applied for the residual electricity mix is 1.035 kg CO_2 eq/kWh, based on the GWP-GHG indicator. This modeling approach fully adheres to the PCR electricity hierarchy and ensures consistency in the absence of contractual energy sourcing.

ENVIRONMENTAL PERFORMANCE

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The EN 15804 reference package based on EF 3.1 is used. Results for 1 000 kg of CEM II/A-LL 52.5N.

Since the study covers Modules A1–A3 only, and Module A5 (construction/installation stage) is outside the scope of the LCA, the biogenic carbon uptake associated with packaging materials would otherwise lead to an artificial biogenic credit within the reported system boundary. To avoid this, a virtual biogenic CO_2 emission equivalent to the packaging-related carbon uptake was added in Module A3. This adjustment offsets the biogenic uptake from packaging materials and ensures consistent reporting of the GWP-biogenic indicator

Mandatory impact category indicators according to EN 15804

Impact category	Unit	A1-A3
Global warming potential - total (GWP-total)	kg CO_2 eq.	8.72E+02
Global warming potential - fossil fuels (GWP-fossil)	kg CO_2 eq.	8.71E+02
Global warming potential - biogenic (GWP-biogenic)	kg CO_2 eq.	6.18E-01
Global warming potential - land use and land use change (GWP-luluc)	kg CO_2 eq.	1.62E-01
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 eq.	8.24E-06
Acidification potential, accumulated exceedance (AP)	mol H^+ eq.	2.51E+00
Eutrophication potential - freshwater (EP-freshwater)	kg P eq.	6.09E-02
Eutrophication potential - marine (EP-marine)	kg N eq.	8.07E-01
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq.	8.79E+00
Photochemical ozone creation potential (POCP)	kg NMVOC eq.	2.77E+00
Abiotic depletion potential - non-fossil resources (ADPE)[1]	kg Sb eq.	4.48E-04
Abiotic depletion potential - fossil resources (ADPF)[1]	MJ, net calorific value	5.55E+03
Water (user) deprivation potential (WDP)[1]	m^3 world eq. deprived	5.63E+01

[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.

Additional mandatory and voluntary impact category indicators

Impact category	Unit	A1-A3
GWP-GHG[2]	kg CO_2 eq.	8.71E+02
Particulate matter emissions (PM)	disease incidence	2.82E-05
Ionizing radiation, human health (IRP)[3]	kBq U-235 eq.	6.05E+00
Eco-toxicity - freshwater (ETP-fw)[4]	CTUe	5.88E+02
Human toxicity, cancer effect (HTP-c)[4]	CTUh	7.92E-08
Human toxicity, non-cancer effects (HTP-nc)[4]	CTUh	1.19E-06
Land use related impacts/Soil quality (SQP)[4]	Pt	4.94E+03

[2] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero

[3] 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.

[4] 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 the indicator.

Resource use indicators

Impact category	Unit	A1-A3
Use of renewable primary energy as energy carrier (PERE)	MJ	2.71E+02
Use of renewable primary energy resources used as raw materials (PERM)	MJ	4.45E+02
Total use of renewable primary energy (PERT)	MJ	7.16E+02
Use of non renewable primary energy as energy carrier (PENRE)	MJ	5.42E+03
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	1.33E+02
Total use of non renewable primary energy resource (PENRT)	MJ	5.55E+03
Use of secondary material (SM)	kg	1.45E+00
Use of renewable secondary fuels (RSF)	MJ	6.04E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00
Net use of fresh water (FW)	m^3	1.02E+00

Waste indicators

Impact category	Unit	A1-A3
Hazardous waste disposed (HWD)	kg	9.58E+00
Non-hazardous waste disposed (NHWD)	kg	1.93E+02
Radioactive waste disposed (RWD)	kg	1.40E-03

Output flows indicators

Impact category	Unit	A1-A3
Components for re-use (CRU)	kg	0.00E+00
Materials for recycling (MFR)	kg	0.00E+00
Materials for energy recovery (MER)	kg	0.00E+00
Exported electrical energy (EEE)	MJ	0.00E+00
Exported thermal energy (EET)	MJ	0.00E+00

Additional voluntary impact indicators according to EN 15804+A1:2013

Impact category	Unit	A1-A3
Global warming (GWP100a)	kg CO_2 eq.	8.73E+02
Ozone layer depletion (ODP)	kg CFC-11 eq.	6.39E-06
Acidification	kg SO_2 eq.	1.92E+00
Eutrophication	kg PO_4^{3-} eq.	5.02E-01
Photochemical oxidation	kg C_2H_4 eq.	6.96E-02
Abiotic depletion	kg Sb eq.	4.48E-04
Abiotic depletion, fossil fuels	MJ	6.01E+03

ABBREVIATION

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared
Environmental Performance Indicators (EN 15804)	
GWP-total	Total Global Warming Potential
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
ADPE	Abiotic depletion potential for non-fossil resources
ADPF	Abiotic depletion for fossil resources potential
WDP	Water (user) deprivation potential, deprivation-weighted water consumption

GWP-GHG	Global Warming Potential GHG
PM	Potential incidence of disease due to PM emissions
IRP	Potential Human exposure efficiency relative to U235
ETP	Potential Comparative Toxic Unit for ecosystems
HTPC	Potential Comparative Toxic Unit for humans – cancer
HTPNC	Potential Comparative Toxic Unit for humans – non-cancer
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
HWD	Hazardous waste disposed
NHWD	Non-hazardous waste disposed
RWD	Radioactive waste disposed
CRU	Components for re-use
MR	Material for recycling
MER	Materials for energy recovery
EEE	Exported electrical energy
EET	Exported thermal energy
Others	
MJ	Megajoule
kg	Kilogram
m^3	Cubic Meter

NMVOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent

REFERENCES

BS EN 15804+A2. (2020). *BS EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.*

BS EN15804+A1. (2013). *EN 15804:2012+A1:2013 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.*

BS EN 15941:2024 — *Sustainability of construction works — Data quality for environmental assessment of products and construction work — Selection and use of data*. Brussels, Belgium: CEN.

Environdec. (2025). *General Programme Instructions for the International EPD System*, version 5.0.1.

European Union. (2024). *Candidate List of substances of very high concern for Authorisation*.

Frischknecht, R. (2007). *The Environmental Relevance of Capital Goods in Life Cycle Assessments of Products and Services*. *Int. J LCA*.

ISO 14020. (2000). *ISO 14020:2000, Environmental labels and declarations — General principles.* Geneva: International Organization for Standardization.

ISO 14025. (2006). *ISO 14025:2006 - Environmental labels and declarations - Type III environmental declarations - Principles and procedures*. Geneva: International Organization for Standardization (ISO).

ISO 14040. (2006). I*SO 14040:2006. Environmental management – Life cycle assessment – Principles and framewor*k. Geneva: International Organization for Standardization.

ISO 14044. (2006). *ISO 14044:2006. Environmental management – Life cycle assessment – Requirements and guidelines.* Geneva: International Organization for Standardization.

Moreno, R. F. (2024). *Doccumentation of changes implemented in the ecoinvent database v3.11*.

PCR 2019:14. (2025). *PCR 2019:14 Product Category Rules- Construc Products*, version 2.0.1.

c-PCR 2019:14. (2025). *Complementary Product Category Rules (c-PCR) - Cement and Building Lime*, version 1.0.0.

VERSION HISTORY

Version	2
Revision date	2026-05-06

Version differences

Version	Amendment summary
1	Original Version
2	Product brand and product number/reference have been updated. The declared range of clinker content has been revised to align with the EN 197-1 standard. There are no changes to the environmental results.

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