ENVIRONMENTAL PRODUCT DECLARATION (EPD)

CEM I 52,5R

CEMENTOS LA CRUZ

DAPcons®.NTe.249

DECLARACIÓN AMBIENTAL DE PRODUCTO
ENVIRONMENTAL PRODUCT DECLARATION

According to the standards:
ISO 14025 and UNE-EN 15804:2012+A2:2020/AC:2021

cateb Arquitectura Tècnica Barcelona

ECO PLATFORM EPD VERIFIED

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According to the standards:

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GENERAL INFORMATION

Product

CEM I 52,5R

Company

Product description

Portland cement with very high early strength, specialized for applications in concrete, precast elements, and prestressed structures.

Reference RCP

UNE-EN 16908:2019+A1:2022 Product category rules for cement and building lime.

Production plant

Cementos La Cruz, S.L.

Paraje los Tres Santos, S/N, C.P. 30640, Abanilla, Murcia

Validity

From: 02/09/2025 Until: 02/09/2030

The validity of DAPcons®.NTe.249 is subject to the conditions of the regulation DAPcons®. The current edition of this DAPcons® is the one that appears in the registry maintained by Cateb; for informational purposes, it is included on the Program website www.dapcons.com

EXECUTIVE SUMMARY

CEM I 52,5R

	DAPconstruction® Programme Operator Environmental Product Declarations in the Construction sector www.dapcons.com
	Programme Manager Colegio de la Arquitectura Técnica de Barcelona (Cateb) Bon Pastor, 5 · 08021 Barcelona www.cateb.cat
	Owner of the declaration CEMENTOS LA CRUZ, S.L. PARAJE LOS TRES SANTOS, S/N 30640 - ABANILLA (España) www.cementoscruz.com
	Author of the Life cycle assessment: Cementos La Cruz, S.L Paraje Los Tres Santos, S/N, 30640 - MURCIA, España www.cementoscruz.com

Declared product

CEM I 52,5R

Geographic representation

Spain

Variability between different products

In this document the results of each of the products are declared individually.

Declaration number

DAPcons®.NTe.249

Issue date

07/07/2025

Validity

This verified declaration authorizes its holder to carry the logo of the operator of the ecolabelling program DAPconstruction®. The declaration is applicable exclusively to the mentioned product and for five years from the date of registration. The information contained in this statement was provided under the responsibility of: **CEMENTOS LA CRUZ, S.L.**

Programme Administrator Signature

Celestí Ventura Cisternas. President of Cateb

36548201M CELESTINO VENTURA (R: Q0875009C) 36548201M CELESTINO VENTURA (R: Q0875009C) 25.09.2025 15:40:18 +0200

Verifier Signature

Ferran Pérez Ibáñez. Institut de Tecnologia de la Construcció de Catalunya - ITeC. Verifier accredited by the administrator of the DAPcons® Programme

FERNANDO PÉREZ IBÁÑEZ FERNANDO PÉREZ IBÁÑEZ 25.09.2025 15:40:10 +0200

ENVIRONMENTAL PRODUCT DECLARATION

1. PRODUCT DESCRIPTION AND USE

CEM I 52.5R cement is a high-performance Portland cement, designed to meet the needs of demanding projects that require maximum strength and rapid application.

With a compressive strength of 52.5 MPa at 28 days, this cement is particularly suitable for applications where rapid strength development is essential, such as infrastructure projects or high-performance precast plants.

When properly dosed and mixed with aggregates and water, it is ideal for the production of both mass and reinforced concretes, offering reliable and durable performance across all types of construction.

It strictly complies with EN 197-1:2011, which regulates the requirements of common cements. In addition, it meets the specifications of RC-16 set out in R.D. 256/2016 on cement acceptance, as well as the Structural Code approved on June 29, 2021. All this guarantees a safe, efficient product with high quality standards, ideal for large-scale projects.

1.1 Content information

Product components

Composition of CEM I 52.5R cement according to UNE-EN 197-1:
Clinker: 95–100%
Minor components: 0–5%

These values refer to the cement core, excluding calcium sulfate and any additives.

Packaging materials

Bulk cement.

2. DESCRIPTION OF THE STAGES OF THE LIFE CYCLE

2.1. Manufacturing (A1, A2 y A3)

Raw Materials and transport (A1 y A2)

The raw materials used in the production of CEM I 52.5R cement include clinker and gypsum. Clinker is produced in international plants, considering the environmental impact of production processes. Gypsum is sourced from regional quarries, covering extraction, crushing, and preparation stages.

Clinker is transported from its plants of origin by sea to the destination port, and from there by road to the grinding plant in Abanilla.
Gypsum, being of regional origin, is transported directly from quarries by land transport.

Manufacturing (A3)

Cement production is carried out through a controlled grinding and mixing process of the raw materials. These are stored, dosed, and conveyed through mechanized systems to the production unit. Once the final product is obtained, the cement is shipped in bulk for commercial distribution.

2.2. Construction process stage (A4 y A5)

Transport to the building site (A4)

Undeclared

Product installation process and construction (A5)

Undeclared

2.3. Product use (B1-B7)

Use (B1)

Undeclared

Maintenance (B2)

Undeclared

Repair (B3)

Undeclared

Replacement (B4)

Undeclared

Refurbishment (B5)

Undeclared

Operational energy use (B6)

Undeclared

Operational water use (B7)

Undeclared

2.4. End of life (C1-C4)

Deconstruction and demolition (C1)

Undeclared

Transport to waste processing (C2)

Undeclared

Waste processing for reuse, recovery and/or recycling (C3)

Undeclared

Disposal (C4)

Undeclared

2.5. Reuse/recovery/recycling potential (D)

Undeclared

3. LIFE CYCLE ASSESSMENT

The Life Cycle Assessment (LCA) supporting the Environmental Product Declaration has been prepared in accordance with the most recognized European standards on sustainability in construction. In particular, it follows UNE-EN 15804:2012+A2:2020/AC:2021, which defines the basic rules for environmental product declarations of construction products; UNE-EN 16908:2019, which complements this standard for products such as cements and limes; and UNE-EN ISO 14040:2006, which establishes the principles and framework of life cycle assessment within environmental management.

The study scope covers all stages from raw material extraction to the cement leaving the plant, under the “cradle to gate” approach, considering exclusively internal processes up to the point when the product is ready for distribution. The system boundary establishes the unit processes to be included in the model.

Two fundamental principles define these boundaries:
- “Modularity principle”: Processes affecting the environmental performance of the product during its life cycle must be assigned to the life cycle module in which they occur. All environmental aspects and impacts must be declared at the stage in which they arise.
- “Polluter pays principle”: Processes related to waste treatment are assigned to the system of the product that generates the waste, until end-of-waste status is reached.

Consequently, LCA results do not include emissions from waste treatment derived from product use.

3.1. Declared Unit

For the production of CEM I 52.5R cement, the declared unit is 1000 kg, equivalent to 1 ton of product.

Additional comments

As with any industrial activity, cement production involves the use of natural resources and generates environmental impacts that may contribute to global challenges such as climate change.
This Life Cycle Assessment (LCA) makes it possible to objectively evaluate the environmental impacts associated with the manufacture of CEM I 52.5R cement, considering all process stages from raw material extraction to the plant gate.

3.2. Scope and modules that are declared

Table 2. Declared modules

Product stage			Construction Process Stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw materials supply	Transport	Manufacturing	Transport	Construction - Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

X = Declared module **MND** = Undeclared module

3.3. LCA results of potential environmental impact referred to the declared unit (ACV)

Table 3. Parameters of environmental impact

Parameter	Unit	Life cycle stage																Module D
		Product stage			Construction Process Stage		Use stage							End of life stage				
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
Climate change - total (GWP-total)	kg CO2 eq	8.30E+02	2.68E+01	1.38E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Climate change - fossil (GWP-fossil)	kg CO2 eq	8.16E+02	2.68E+01	1.36E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Climate change - biogenic (GWP-biogenic)	kg CO2 eq	1.39E+01	2.81E-03	9.46E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Climate change - land use and changes in land use (GWP-luluc)	kg CO2 eq	2.43E-01	1.98E-02	1.09E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Ozone layer depletion (ODP)	kg CFC 11 eq	3.12E-05	5.54E-06	9.57E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Acidification (AP)	mol H+ eq	2.24E+00	5.77E-01	1.16E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Eutrophication of fresh water (EP-freshwater)	kg P eq	1.02E-01	1.30E-03	4.94E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Eutrophication of sea water (EP-marine)	kg N eq.	6.19E-01	1.33E-01	1.85E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Terrestrial eutrophication (EP-terrestrial)	mol N eq.	7.01E+00	1.47E+00	1.92E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Photochemical ozone formation (POCP)	kg NMVOC eq	9.13E+00	3.95E-01	5.17E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Depletion of abiotic resources - minerals and metals (ADP-minerals&metals)	kg Sb eq	1.04E-04	4.99E-05	1.61E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Depletion of abiotic resources - fossil fuels (ADP-fossil)	MJ, net calorific value	3.92E+03	3.63E+02	3.25E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Water consumption (WDP)	m3 worldwide eq. private	-5.36E+01	9.78E-01	8.94E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Eco-toxicity - freshwater (ETP-fw)	CTUe	5.50E+03	2.58E+02	2.07E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Human toxicity, cancer effect (HTP-c)	CTUh	5.48E-06	2.08E-07	1.39E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Human toxicity, non-cancer effects (HTP-nc)	CTUh	3.62E-07	1.58E-08	4.57E-09	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
The Indicador includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This Indicador is thus equal to the GWP Indicador originally defined in EN 15804:2012+A1:2013. Can be obtained from IPCC characterization factors.																		
Global Warming Potential (GHG)	kg CO2 eq	8.30E+02	2.68E+01	1.38E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

A1 Supply of raw materials. **A2** Transport to waste processing. **A3** Manufacturing. **A4** Transport to waste processing. **A5** Installation and construction processes. **B1** Use. **B2** Maintenance. **B3** Repair. **B4** Replacement. **B5** Refurbishment. **B6** Operational energy use. **B7** Operational water use. **C1** Deconstruction and demolition. **C2** Transport to waste processing. **C3** Waste management for reuse, recovery and recycling. **C4** Fine removal. **D** Environmental benefits and burdens beyond the system boundary. **MND** Undeclared module.

Table 4. Parameters for the use of resources, waste and output material flows

Parameter	Unit	Life cycle stage																Module D
		Product stage			Construction Process Stage		Use stage							End of life stage				
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
Use of renewable primary energy excluding renewable primary energy resources used as feedstock	MJ, net calorific value	9.70E+01	3.24E+00	7.22E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Use of renewable primary energy used as raw material	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Total use of renewable primary energy (primary energy and renewable primary energy resources used as feedstock)	MJ, net calorific value	9.70E+01	3.24E+00	7.22E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-renewable primary energy use, excluding non-renewable primary energy resources used as feedstock	MJ, net calorific value	4.15E+03	3.85E+02	3.37E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Use of non-renewable primary energy used as raw material	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Total use of non-renewable primary energy (primary energy and renewable primary energy resources used as feedstock)	MJ, net calorific value	4.15E+03	3.85E+02	3.37E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Use of secondary materials	kg	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Use of renewable secondary fuels	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Use of non-renewable secondary fuels	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Net use of freshwater resources	m3	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Hazardous waste removed	kg	0.00E+00	0.00E+00	8.0E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-hazardous waste eliminated	kg	0.00E+00	0.00E+00	5.13E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Radioactive waste disposed of	kg	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Materials for energy recovery (energy recovery)	kg	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Exported energy	MJ by energy vector	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Exported electrical energy (AEE)	MJ	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Exported thermal energy (EET)	MJ	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

A1 Supply of raw materials. **A2** Transport to waste processing. **A3** Manufacturing. **A4** Transport to waste processing. **A5** Installation and construction processes. **B1** Use. **B2** Maintenance. **B3** Repair. **B4** Replacement. **B5** Refurbishment. **B6** Operational energy use. **B7** Operational water use. **C1** Deconstruction and demolition. **C2** Transport to waste processing. **C3** Waste management for reuse, recovery and recycling. **C4** Fine removal. **D** Environmental benefits and burdens beyond the system boundary. **MND** Undeclared module.

Table 5. Kg of biogenic carbon

Carbon content (biogenic) - packaging	0.00E+00
Carbon content (biogenic) - product	0.00E+00

3.4. Recommendations of this EPD

Environmental Product Declarations (EPDs) from different calculation programs are not directly comparable, since calculation rules may differ.
This declaration reflects the environmental performance of CEM I 52.5R cement produced by Cementos La Cruz S.L.

3.5. Cut-off rules

The Environmental Product Declaration has been prepared in accordance with UNE-EN 16908:2019+A1:2022 "Building limes and cements – Environmental product declarations – Product category rules complementary to EN 15804." According to this standard, the EPD provides quantified environmental information about a construction product, based on a scientific and harmonized approach. Its purpose is to provide a basis for evaluating and identifying products with lower environmental pressure.

More than 95% of all mass and energy inputs and outputs of the system have been included, excluding additives used in the manufacturing process of this cement and steel ball losses, due to lack of data and because they contribute less than 1% to total environmental impact. Likewise, the bagging process is omitted, since the product is supplied in bulk.

3.6. Additional environmental information

Cement is classified as irritating and harmful, but once hardened, cement is not hazardous to the environment. It becomes an inert product that does not release dangerous substances.

Cementos La Cruz holds several certifications supporting its commitment to quality, sustainability, and energy efficiency. Since 2017, the company has held ISO 9001:2015 certification, granted by AENOR, which endorses the implementation of a management system focused on continuous improvement and customer satisfaction. That same year, it also obtained ISO 14001:2015 certification, recognizing responsible environmental management aimed at preventing impacts and controlling risks arising from its activities.

In 2023, Cementos La Cruz further strengthened its commitment to sustainability by obtaining ISO 50001:2018 certification, which establishes the basis for efficient and optimized energy management.

These certifications reflect the company's focus on responsible, efficient, and environmentally respectful operations, aligned with principles of sustainability and continuous improvement.

3.7. Other data

The Life Cycle Assessment (LCA) of CEM I 52.5R cement has made it possible to assess in detail the environmental impacts associated with its production, from raw material extraction to final manufacturing. This assessment has provided key information on resource consumption, emissions, and waste generated by the production process.

The results highlight the importance of optimizing raw material use and improving energy efficiency in cement production. They also demonstrate the need to continue promoting measures to minimize environmental impact, such as the use of alternative fuels, integration of renewable energy sources, and improvements in transport logistics to reduce CO_2 emissions.

4. ADDITIONAL TECHNICAL INFORMATION AND SCENARIOS

4.1. Transport to the building site (A4)

Undeclared

4.2. Installation processes (A5)

Undeclared

4.3. Reference life (B1)

Undeclared

4.4. Maintenance (B2), Repair (B3), Replacement (B4), or Refurbishment (B5)

Maintenance (B2)

Undeclared

Repair (B3)

Undeclared

Replacement (B4)

Undeclared

Refurbishment (B5)

Undeclared

4.6. Operational energy use (B6) and operational water use (B7)

Undeclared

4.7. End of life (C1-C4)

Undeclared

5. ADDITIONAL INFORMATION

6. PCR AND VERIFICATION

This statement is based on Document

UNE-EN 16908:2019+A1:2022 Product category rules for cement and building lime. Cement and building lime.

Independent verification of the declaration and data, in accordance with ISO 14025 and IN UNE-EN 16908:2019+A1:2022

☑ External

Third party Verifier

Ferran Pérez Ibáñez
Accredited by the administrator of the DAPcons® Programme

Verification date:

01/09/2025

References

- UNE-EN 16908:2019+A1:2022 “Building limes and cements – Environmental product declarations – Product category rules complementary to EN 15804.”
- UNE-EN 15804:2012+A2:2020/AC:2021 “Sustainability in construction – Environmental product declarations – Core rules for the product category of construction products.”
- Ecoinvent 3.
- International Reference Life Cycle Data System (ILCD) Handbook.
- UNE-EN ISO 14040:2006. Environmental Management and Life Cycle Assessment – Principles and framework.
- UNE-EN ISO 14044:2006. Environmental Management and Life Cycle Assessment – Requirements and guidelines.

Programme Manager

Colegio de la Arquitectura Técnica de Barcelona (Cateb)
Bon Pastor, 5 · 08021 Barcelona www.cateb.cat