



ENVIRONMENTAL PRODUCT DECLARATION

In accordance with: ISO 14025:2006, EN 15804:2012+A2:2019/
AC:2021

Portland Cement Clinker ÇİMSA Çimento San. ve Tic. A.Ş.

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

**EPD Owner:**

ÇİMSA Çimento San. ve Tic. A.Ş.

Programme:

International EPD System
www.environdec.com

Programme Operator:

EPD International AB

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EPD Türkiye

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General Information

Programme: International EPD System

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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)

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 (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/support.

(c-PCR): 2019:14-c-PCR-001 Cement and building lime (EN 16908) (c-PCR to PCR 2019:14) (1.0.0)

c-PCR review was conducted by: The Technical Committee of the International EPD System

UN CPC Code: 37440 - Portland cement, aluminous cement, slag cement, and similar hydraulic cements, except in the form of clinkers

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: Stephen Forson, ViridisPride Ltd.

Approved by International EPD System

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes ☐ No ☒

LCA practitioner: Yıldıray Yılmaz, Metsims Sustainability Consulting, info@metsims.com

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.

About ÇİMSA

Çimsa, a subsidiary of Sabancı Holding, was founded in Mersin in 1972. Today, the company operates four integrated production plants in Türkiye, located in Mersin, Eskişehir, and Afyonkarahisar. In addition to producing grey cement, Çimsa leads the Turkish cement and building materials sector in innovation, offering specialized products such as white cement and CAC (calcium aluminate cement). Committed to delivering profitable growth and creating value for all stakeholders, Çimsa remains focused on sustaining this trajectory into the future.

Çimsa, one of the world's foremost brands in white cement and one of the world's top three producers of CAC with the latest investment completed in Mersin, manages its international operations through its Netherlands based subsidiary, Cimsa Building Solutions BV.

Çimsa, which develops new technologies that shed light on the future of the building materials industry in Türkiye through its first R&D Center, Formula Center—approved by the Ministry of Industry and Technology—operates at the Mersin Plant. This is the only integrated facility in the world capable of producing grey cement, white cement, and CAC and has at the same time extended its innovation power to Europe through the Sabancı Technology Center located on the campus of the Technical University of Munich in Germany.

Çimsa ensures the complete and timely fulfillment of its customers' product and service needs through its market-focused approach and extensive distribution network. As a trusted partner to its stakeholders, the company delivers essential materials for living spaces and infrastructures designed to endure for generations to come.

About Sabancı Building Solutions

In line with the goal to become a leading global player in the white cement industry and to create a more efficient and stronger platform, Sabancı Holding and Çimsa integrated their operational and financial strengths and founded Çimsa Building Solutions BV in Holland in November 2020. While Sabancı holds 49% of the total equity shares of the company, the remaining 51% belongs to Çimsa.

Çimsa Building Solutions BV has emerged as a key player in the international white cement market, with a white cement production plant in Valencia, Spain, a grinding plant in Houston, USA, and terminals in Hamburg, Germany, Trieste, Italy, and Seville, Spain. Most recently, with the acquisition completed in October 2024, Ireland-based Mannok Holdings, which specializes in the production and sale of cement, cement-based products (such as tiles, precast materials, and concrete), insulation materials, and recycled plastic packaging, has been included in the Cimsa Building Solutions BV portfolio.



Product Information

Clinker is an intermediate product in the manufacturing of cement, obtained by sintering a precisely controlled mixture of limestone, clay, and corrective materials at high temperatures in a rotary kiln. The resulting nodular material primarily consists of calcium silicates, which provide the hydraulic properties necessary for cement performance.

The clinker production process involves raw material preparation, homogenization, pyroprocessing, and rapid cooling to ensure

the required mineralogical composition and quality consistency. Clinker serves as the principal constituent in the production of Portland cement and blended cement types.

The product is manufactured in compliance with relevant national and international quality standards and is subject to continuous process and quality control procedures. No specific technical or actual service life is declared.



Highlights

- High and consistent hydraulic performance
- Suitable for use in structural and infrastructure applications



Clinker is primarily used in the production of:

- Ordinary Portland Cement (OPC)
- Portland Composite Cement (PCC)
- Ready-mix concrete
- Precast concrete products
- Residential and commercial construction



Product Composition

*Product components	Weight, %	Post-consumer recycled material, weight-%	Biogenic material, weight of % of product
Limestone	85 - 88	0	0
Clay	7 - 10	0	0
Silica sand	3 - 5	0	0
Iron ore	1 - 3	0	0
Other	< 1	0	0
SUM	100	0	0

*Product composition is presented as percentages rather than specific weights to maintain confidentiality while transparently communicating the relative proportions of each component.

Clinker is supplied and transported in bulk form; therefore, no packaging materials are utilized throughout the distribution process.

Product Information

Clinker production is carried out in accordance with applicable national and international standards, technical specifications, and quality management procedures to ensure consistent product performance and suitability for cement manufacturing applications. The product is manufactured in compliance with relevant standards and guidelines, including; EN 197, ISO 9001, ASTM C150 and C595.

See the below link for further information about the product: www.cimsa.com.tr/en/products/



Physical and Mechanical Properties

Specific gravity	3.0 - 3.3 gr/cm ³
Specific Surface (Blaine)	3000 - 3500 cm ² /gr
Initial Setting Time	100 - 150 minutes
Final Setting Time	150 - 250 minutes
Soundness (Le Chatelier)	1.0 - 5.0 mm
2-day Compressive Strength	22 - 28 MPA
28-day Compressive Strength	45 - 50 MPA

LCA Information

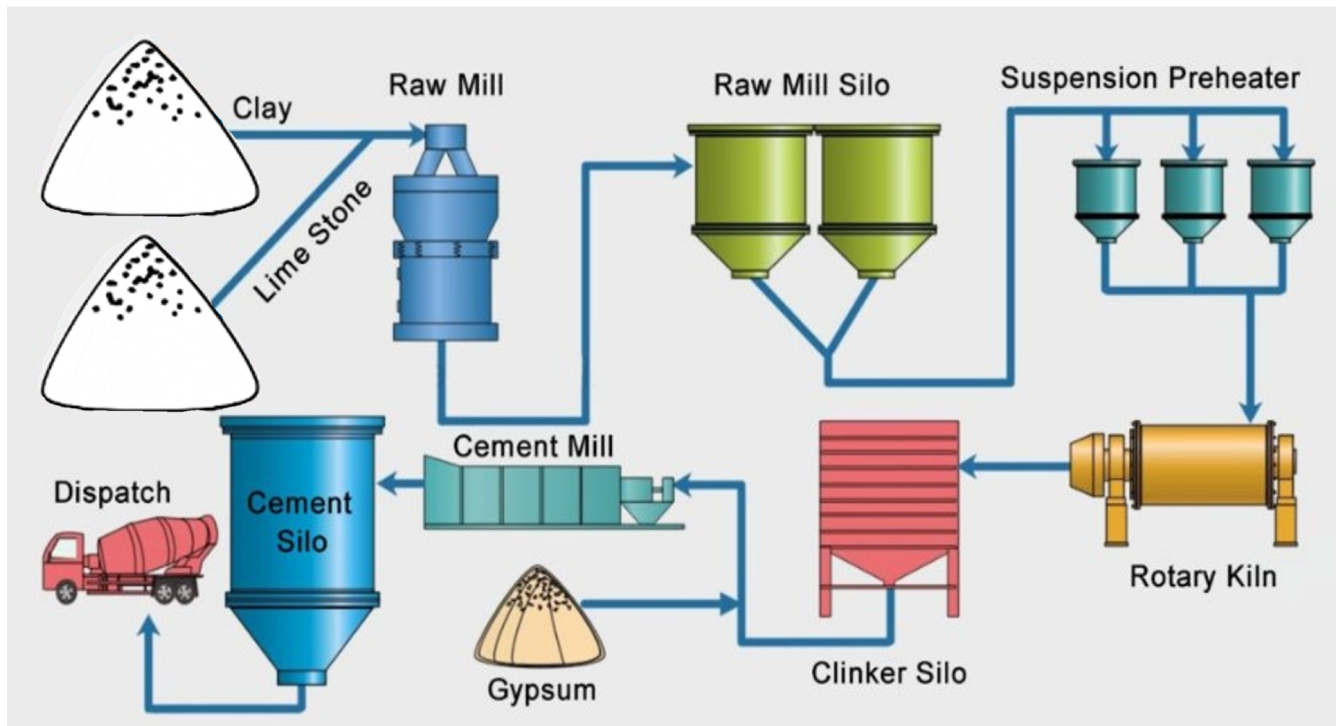
Declared Unit:	1 tonne of portland cement clinker
Conversion factor to mass:	0.001
Data Period:	2025 (Full calendar year)
Type of EPD:	e) Cradle to gate with options (A4)
Database and LCA Software Used	Ecoinvent 3.11 & SimaPro Craft 10.2

The inventory for the LCA study is based on the 2025 production figures for portland cement clinker by Çimsa produced at Afyon facility in Türkiye. The study follows a cradle-to-gate system boundary aligned with PCR 2019:14 – Construction Products – Version 2.0.1. The product qualifies for the exclusion of downstream life cycle stages, as it is physically incorporated into other construction materials, cannot be feasibly separated at the end of its life, and loses its distinct identity due to physical and chemical transformations. The product itself contains no biogenic carbon.

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport to site	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geography	TR	TR	TR	GLO	-												
Share of primary data	93.9%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

(X = Module declared, ND = Not declared, TR = Türkiye, GLO = Global)

System Boundaries



A1: Raw Material Supply

This stage includes the extraction, preparation, and supply of raw materials used in clinker production, such as limestone, clay, and corrective materials. It also covers the supply of fuels, electricity, and auxiliary materials required for the manufacturing process.

A2: Raw Material Transport

The A2 stage includes the transportation of raw materials, fuels, and auxiliary materials from suppliers and quarries to the Mersin Plant. Transport activities are carried out via road transport, considering specific supplier distances and representative vehicle capacities.

Transport Mode	Type
Road	Vehicle: Lorry, Size class: >32 metric ton, Emission standard: Euro6, Fuel Type: Diesel

A3: Manufacturing

This stage covers all manufacturing processes within the clinker production facility, including raw material grinding and homogenization, preheating, calcination, clinker burning in the rotary kiln, clinker cooling, and storage operations. The clinkerization process takes place at high temperatures of approximately 1,450°C to achieve the required mineralogical properties. This stage also includes the consumption of fuels, electricity, and auxiliary materials, as well as process emissions, dust collection, and internal material handling activities.

A4: Transport

This stage is relevant for the delivery of final product to the intended markets and customers. Highway and seaway transportation are involved in this stage. The transport routes and distances are supplier-specific and provided by the manufacturer.

Cut-Off Rules

Cut-off criteria were applied in accordance with PCR 2019:14 v2.0.1 and EN 15804+A2. For each declared module, 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 $\geq 95\%$ completeness requirement specified in EN 15804 and PCR 2019:14.

REACH Regulation

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

LCA Modelling, Calculation and Data Quality

The results of the LCA with the indicators as per EPD requirements are given in the LCA result tables. There are no co-product allocations within the LCA study underlying this EPD. The regional energy datasets were used for all energy calculations.

Characterization factors of EN 15804 reference package based on EF 3.1 are utilized. Impact of infrastructure and capital goods are excluded from the analysis.

Allocations

Allocation procedures were applied in accordance with EN 15804+A2:2019 and PCR 2019:14 v2.0.1. No co-products are generated within the declared system boundary, therefore no co-product allocation is necessary. All process-related material and energy inputs, emissions, and relevant waste flows are fully attributed to cement production. In accordance with EN 15804+A2 system boundary requirements, only waste directly attributable to the declared product

system 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.

Assumptions

Upstream road transportation are assumed to be carried out with Euro6 motor vehicles with a size class of > 32 metric tonnes where distances acquired through Google Maps.

Scrap (recycled material) inputs contribution level

Less than 10% of the GWP-GHG results in modules A1-A3 come from scrap inputs (No scrap input).

LCA Information

Data Quality Assessment

Life Cycle Assessment (LCA) for this Environmental Product Declaration (EPD) is based on both primary and secondary data. Primary data were collected directly from the manufacturer's production processes and site-specific operations for the reference year 2025. The quality and representativeness of all data used for the EPD have been evaluated in terms of time, geography, and technology according to the principles outlined in EN 15804:2012+A2:2019, Annex E, and the data quality requirements specified in EN 15941:2010 for life cycle data. All relevant datasets were reviewed for completeness, consistency, and reliability, and the assessment confirmed that no data were classified as "poor" or "very poor" in quality.

Process name	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1- A3
Clinker Production (Calcination + Combustion emissions)	Calculated Data	EPD Owner	2025	Primary	90.5%
Electricity use during production	Calculated Data	EPD Owner	2025	Primary	3.0%
Upstream Transport	Calculated Data	EPD Owner	2025	Primary	0.4%
Other Process	Databases	Ecoinvent 3.11	2025	Secondary	0%
Total share of primary data, of GWP-GHG results for A1-A3					93.9%
Note	The share of primary data is calculated based on GWP GHG results. It is a simplified indicator for data quality that supports the use of more primary data to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.				

Electricity Modeling

The electricity demand of the Çimsa Afyon Plant is partially supplied from the national grid. In addition, the plant has solar systems and also utilizes I-REC certified renewable electricity. Considering grid electricity, solar electricity, and I-REC coverage together, approximately 51% of the plant's total electricity consumption is sourced from renewable energy.

Type of electricity mix	Residual electricity mix		Renewable shares	
Energy sources	Imported coal	40.5%	Photovoltaic	7.2%
	Natural gas	35%	Renewable certificates	92.8%
	Lignite	22.1%		
	Hard coal	2.39%		
	Climate impact (GWP-GHG):	0.89 kg CO ₂ eq./kWh	Climate impact (GWP-GHG):	0.069 kg CO ₂ eq./kWh
Average Climate impact (GWP-GHG): 0.47 kg CO ₂ eq./kWh				
Method used to calculate residual electricity mix	The market consumption data is modified to exclude all the renewable sources as there is no 'secondary data' on the residual market mix in Türkiye.			

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.

Mandatory environmental performance indicators according to EN 15804

Module	Indicator	Unit	A1-A3	A4
Climate change - total	GWP-total	kg CO ₂ eq.	8.91E+02	7.59E+01
Climate change - fossil	GWP-fossil	kg CO ₂ eq.	8.91E+02	7.59E+01
Climate change - biogenic	GWP-biogenic	kg CO ₂ eq.	7.96E-02	3.06E-03
Climate change - land use and land-use change	GWP-luluc	kg CO ₂ eq.	2.03E-01	2.26E-03
Ozone depletion	ODP	kg CFC-11 eq.	2.92E-06	1.26E-06
Acidification	AP	mol H ⁺ eq.	1.83E+00	1.62E+00
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	7.31E-03	5.78E-05
Eutrophication aquatic marine	EP-marine	kg N eq.	5.27E-01	3.68E-01
Eutrophication terrestrial	EP-terrestrial	mol N eq.	6.14E+00	4.11E+00
Photochemical ozone formation	POCP	kg NMVOC eq.	1.76E+00	1.15E+00
Depletion of abiotic resources - minerals and metals	ADP- minerals & metals ¹	kg Sb eq.	1.40E-05	9.88E-07
Depletion of abiotic resources - fossil fuels	ADP-fossil ¹	MJ, net calorific value	3.19E+03	9.60E+02
Water use	WDP ¹	m ³ world eq. deprived	3.10E+01	7.38E-01
Acronyms	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; 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			
Disclaimer 1	The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator			

Environmental Performance

Additional environmental performance indicators according to EN 15804 (optional)

Module	Indicator	Unit	A1-A3	A4
Particulate Matter	PM	disease inc.	1.03E-05	2.75E-06
*Ionising Radiation	IR	kBq U-235 eq.	4.46E-01	7.77E-02
Freshwater Eutrophication Potential	ETP-FW	CTUe	2.49E+02	3.24E+01
Human Toxicity, Cancer	HTP-C	CTUh	8.03E-08	9.56E-09
Human Toxicity, Non-Cancer	HTP-NC	CTUh	4.85E-06	2.79E-07
Soil Quality Potential	SQP	Pt	1.31E+02	1.23E+00
Disclaimer 1	This impact category deals mainly with the eventual impact of low-dose ionising radiation on human health from the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure, or radioactive waste disposal in underground facilities. Potential ionising radiation from the soil, from radon, and from some construction materials is also not measured by this indicator.			

Additional mandatory environmental performance indicators

Module	Indicator	Unit	A1-A3	A4
Climate change - GWP-GHG	GWP-GHG ¹	kg CO ₂ eq.	8.91E+02	7.59E+01
Acronyms	GWP-GHG = Global warming potential greenhouse gas.			
Disclaimer 1	The GWP-GHG indicator is termed GWP-IOBC/GHG in the ILCD+EPD+ data format. The 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.			

Resource use indicators according to EN 15804

Module	Unit	A1-A3	A4
PERE	MJ, net calorific value	9.39E+02	1.97E+00
PERM	MJ, net calorific value	0.00E+00	0.00E+00
PERT	MJ, net calorific value	9.39E+02	1.97E+00
PENRE	MJ, net calorific value	3.19E+03	9.60E+02
PENRM	MJ, net calorific value	0.00E+00	0.00E+00
PENRT	MJ, net calorific value	3.19E+03	9.60E+02
SM	kg	0.00E+00	0.00E+00
RSF	MJ, net calorific value	0.00E+00	0.00E+00
NRSF	MJ, net calorific value	0.00E+00	0.00E+00
FW	m ³	7.59E-01	1.80E-02
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water.		

Environmental Performance

Waste indicators according to EN 15804

Module	Unit	A1-A3	A4
HWD	kg	4.09E-02	0.00E+00
NHWD	kg	4.14E-01	0.00E+00
RWD	kg	0.00E+00	0.00E+00
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed.		

Output flow indicators according to EN 15804

Module	Unit	A1-A3	A4
CRU	kg	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00
EEE	MJ, net calorific value	0.00E+00	0.00E+00
EET	MJ, net calorific value	0.00E+00	0.00E+00
Acronyms	CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.		

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[EN 15804:2012+A2:2019+AC:2021](#) Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

[PCR 2019:14](#) (ver. 2.0.1) Construction products (EN 15804:A2)

[c-PCR-001](#) Cement and building lime (EN 16908) (c-PCR to PCR 2019:14)

[Ecoinvent database](#) (v3.11) - www.ecoinvent.org

[SimaPro](#) LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

[Çimsa](#) www.cimsa.com.tr

[Metsims](#) www.metsims.com

Abbreviations

Abbreviation	Definition
CEN:	European Committee for Standardization
Ecoinvent:	LCA database referenced (Ecoinvent v3.11)
EN:	European Norm (Standard)
EPD:	Environmental Product Declaration
GPI:	General Programme Instructions
ISO:	International Organization for Standardization
LCA:	Life Cycle Assessment
PCR:	Product Category Rules

Version History

Original version of the EPD, 2026-07-09.

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