ENVIRONMENTAL PRODUCT DECLARATION

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

CEM PLUS+
CEM II/A-LL 42,5R

from

LİMAK DOĞU ANADOLU ÇİMENTO A.Ş.

Programme:	International EPD System, www.environdec.com
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Programme Information

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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 (EN 15804+A2) (2.0.1)
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):	c-PCR-001 Cement and building lime (EN 16908) (2025-04-08).
c-PCR review was conducted by:	The Technical Committee of the International EPD System

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: Agnieszka Pikus, Greenwise

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.

LCA Practitioner: Yıldıray Yılmaz, Furkan Can Akalın, Metsims Sustainability Consulting

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.

Company Information

Owner of the EPD

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Established in 1976 to meet the growing demand of the region as part of the Southeastern Anatolia Project (GAP) and initially operated as state-owned enterprises under Türkiye Çimento ve Toprak Sanayii T.A.Ş. (ÇİTOSAN), the Şanlıurfa Cement Factory and Ergani Cement Factory were privatized in 1993 and 1997, respectively. The Ergani Cement Factory joined the Limak Cement Group in 2006, followed by the Şanlıurfa Cement Factory in 2007.

Located in Şanlıurfa, the largest city in the Southeastern Anatolia Region, the Şanlıurfa factory has an annual production capacity of approx. 2.2 million tons of cement and 1.5 million tons of clinker, with an open area of 875,000 square meters. The Ergani Cement Factory, located in Diyarbakır— the second largest city in the region after Şanlıurfa—has an annual production capacity of about 1.4 million tons of cement and 793,000 tons of clinker, with an open area of 466,000 square meters.

Şanlıurfa Cement Factory, which continuously audits its production processes in accordance with international standards and operates with a total quality management approach, holds EC conformity certificates for the following cement types under EN 197-1: CEM II/A-M (P-LL) 42.5 N, and CEM II/B-M (P-LL) 42.5 N. Additionally, it holds a G conformity certificate for CEM II/C-M (P,LL) 32.5 N type cement under EN 197-5. Ergani Cement Factory holds conformity certificates for the following cements under EN 197-1 and EN 197-2: CEM II A-LL 42.5 R, and CEM II B-LL 32.5.

Şanlıurfa and Ergani Cement Factories, guided by the international vision and approach of the Limak Cement Group, are at the forefront of sustainable practices, integrating economic, environmental, and social responsibility. The factories meticulously track and report their environmental impact-covering carbon emissions, water usage, and supply chain effects-according to rigorous international standards. Beyond their commitment to sustainability, they champion innovation and entrepreneurship, offering continuous training and personal growth opportunities through the Limak Cement Academy, nurturing talent and driving progress from within.

Believing in growth and learning together, Şanlıurfa and Ergani Cement Factories also support social and community development projects throughout the region.

Product Information

Product Name:

CEM PLUS+ (CEM II/A-LL) 42,5R

Product identification	The product is identified as portland limestone cement as defined in EN 197-1:2012.
Product description	CEM II/A-LL 42,5R is a Portland limestone cement conforming to EN 197-1:2012, containing 80–94% Portland clinker and 6–20% high-purity limestone (LL), with minor additional constituents permitted by the standard. It is classified in strength class 42.5 with rapid strength (R) development profile. The product exhibits stable performance, high consistency, and reliable mechanical properties suitable for a wide range of structural and non-structural applications.
Technical purpose of product	CEM II/A-LL 42,5 R is designed to deliver balanced early-age and long-term strength, ensuring dependable workability and durability in concrete and mortar applications. Its limestone content enhances fineness, improves cohesion, reduces water demand, and supports sustainable construction practices by lowering clinker-related CO_2 emissions. The cement is commonly used in ready-mixed concrete, reinforced concrete elements, precast products, masonry mortars, and general-purpose construction works where normal early strength is adequate.
Manufacturing description	The production of CEM II/A-LL 42,5 R begins with the quarrying, crushing, and homogenization of raw materials such as limestone, clay, and corrective additives. The raw meal is finely ground and fed through preheater cyclones into the rotary kiln, where it undergoes calcination and clinkerization at approximately 1,450°C to form Portland clinker. After rapid cooling, the clinker is blended with a controlled proportion of high-purity limestone (LL) and gypsum. The mixture is then ground in a cement mill to achieve the required fineness and performance characteristics. The finished cement is stored in silos, subjected to routine quality control according to EN 197-1, and subsequently dispatched in bulk or bagged form.
Material properties	2 days compressive strength: ≥ 20 Mpa 28 days compressive strength: ≥ 42.5 Mpa Initial setting time: ≥ 60 min Soundness: ≤10 min
Manufacturing site	Elazığ yolu üzeri 2. km. Ergani/DİYARBAKIR
UN CPC code	3744 - Portland cement, aluminous cement, slag cement and similar hydraulic cements, except in the form of clinkers.
Geographical scopes	A1-A2: GLO, A3-A4: TR.
Hazardous and toxic substances	The product does not contain any substances from the SVHC candidate list in concentrations exceeding 0.1% of its weight.

Content Declaration

PRODUCT CONTENT

Content name	*Weight, %	Post-consumer recycled material, weight-% of product	Biogenic material, weight-% of product	Biogenic material[1], kg C/ declared unit
Clinker	80 - 85	0	0	0
Limestone	5 - 10	0	0	0
Gypsum	5 - 10	0	0	0
Slag	3 - 5	0	0	0
Total	**100**	**0**	**0**	**0**

Note 1 — 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2

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

The product is not packaged in the respective data period; it is delivered in bulks, thus no packaging is used or considered in calculations.

LCA Information

EPD based on declared or functional unit	Declared unit
Declared unit and reference flow	1 tonne of CEM II/A-LL 42,5R cement
Data Period	2024 (Entire year)
Data sources used for this EPD	ecoinvent 3.11 database
LCA Software	SimaPro Craft 10.2
Version of the EN 15804 reference package	EF Reference Package 3.1
Allocation	Energy consumption and raw material transportation were weighted according to 2024 production figures. In addition, hazardous and non-hazardous waste amounts were also allocated from the total waste generation in 2024.
Cut-off Rules	The criteria for exclusion were set so that individual input flows of less than 1% of the total, with a cumulative limit of less than 5%, could be omitted. This was contingent upon confirming that these excluded flows did not significantly alter the reported data, with "significant" defined as affecting the total by less than 5%.
REACH	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).
Assumptions	Upstream and downstream 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
Infrastructure and capital goods	Excluded

LCA Information

DATA QUALITY ASSESSMENT

Description of data quality assessment and reference years: The 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 2024. 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	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Clinker Production	Collected Data	EPD	2024	Primary	78%
Cement Grinding	Collected Data	EPD Owner	2024	Primary	7%
Raw Material Transportation	Collected Data	EPD Owner	2024	Primary	1%
Other Processes	Databases	Ecoinvent 3.11	2015-2025	Secondary	**86%**
Total share of primary data, of GWP-GHG results for A1-A3					
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 used in the manufacturing process for A3

Type of electricity mix	Residual electricity mix on the market	
	Imported coal	39.3%
	Natural gas	33.6%
	Lignite	21.4%
	Hard coal	1.79%
	Asphaltite	0.53%
	Solar	3%
Climate impact (GWP-GHG):	0.89 kg CO_2 eq./kWh	

Method used to calculate residual electricity mix	The market consumption data for Türkiye is modified to exclude all the renewable sources as there is no 'secondary data' on the residual market mix for Türkiye.

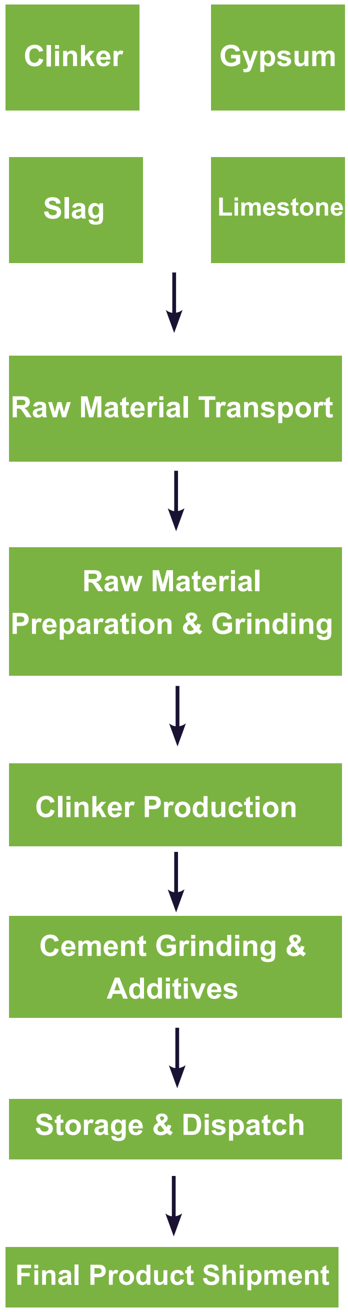
System Boundary

Description of the System boundary	e) Cradle to gate with option, A4.
Excluded Stages	Use and end-of-life phases are excluded as the below criterias highlighted in the PCR are met: • the product or material is physically integrated with other products during installation so they cannot be physically separated from them at end of life, • the product or material is no longer identifiable at end of life as a result of a physical or chemical transformation process, • the product or material does not contain biogenic carbon, and • the EPD is not intended to be used for business-to-consumer communication.

	Product stage			Construction process 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	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geography	GLO		TR	TR	-												
Share of specific data	86%			-													
Variation - products	0%			-													
Variation - sites	0%			-													

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

System Boundary



A1 - Raw Material Supply

This stage covers the extraction, processing, and preparation of all raw materials used in the cement, including clinker, limestone, gypsum, and fly ash. Limestone is quarried and crushed, while clinker is produced through controlled processing of raw feed materials. Gypsum and fly ash are sourced from industrial processes and delivered as secondary raw materials. All upstream energy and resource consumption associated with material production is included.

A2 - Raw Material Transport

This stage is for the transportation of clinker, limestone, gypsum, fly ash and other material sources to the cement plant. Transport distances, modes (typically truck or conveyor), and fuel consumption are included.

A3 - Manufacturing

This stage includes all on-site processes required to manufacture the final cement product. A conventional cement production process begins with the extraction of raw materials such as limestone, clay, sand etc. from quarries. These materials are crushed, blended, and ground to form a homogeneous raw meal. The raw meal is then fed into a preheater tower, where it undergoes partial calcination before entering the rotary kiln. Inside the kiln, temperatures reach around 1,450°C, causing the raw materials to react and form clinker nodules. The hot clinker is rapidly cooled in a clinker cooler to preserve its mineral structure and ensure product quality. Once cooled, the clinker is mixed with a small amount of gypsum and ground into a fine powder to produce cement. Throughout the process, strict quality control measures are applied to ensure consistent chemical composition and performance. bulk for downstream use in concrete production. Finally, the cement is stored in silos and packaged or transported in bulk for downstream use in concrete production.

A4 - Transport

This stage covers distribution of the finished cement to customers via truck or other transport modes. Fuel use, emissions, and distances associated with delivering bulk to construction sites or distributors are included.

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.	8.64E+02	6.14E+00
Climate change - fossil	GWP-fossil	kg CO_2 eq.	8.64E+02	6.14E+00
Climate change - biogenic	GWP-biogenic	kg CO_2 eq.	2.96E-01	4.28E-04
Climate change - land use and land-use change	GWP-luluc	kg CO_2 eq.	5.06E-01	3.39E-04
Ozone depletion	ODP	kg CFC-11 eq.	2.65E-06	8.16E-08
Acidification	AP	mol H+ eq.	1.92E+00	9.69E-03
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	2.19E-01	3.56E-04
Eutrophication aquatic marine	EP-marine	kg N eq.	5.54E-01	2.00E-03
Eutrophication terrestrial	EP-terrestrial	mol N eq.	5.89E+00	2.14E-02
Photochemical ozone formation	POCP	kg NMVOC eq.	1.68E+00	1.43E-02
Depletion of abiotic resources - minerals and metals	ADP- minerals & metals[1]	kg Sb eq.	2.93E-04	5.10E-07
Depletion of abiotic resources - fossil fuels	ADP-fossil[1]	MJ, net calorific value	3.94E+03	8.30E+01
Water use	WDP[1]	m^3 world eq. deprived	-1.52E+01	1.66E-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.			

Additional mandatory environmental performance indicators

Module	Indicator	Unit	A1-A3	A4
Climate change - GWP-GHG	GWP-GHG[1]	kg CO_2 eq.	8.64E+02	6.14E+00
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.			

Environmental Performance

Resource use indicators according to EN 15804

Module	Unit	A1-A3	A4
PERE	MJ, net calorific value	3.22E+02	1.67E-01
PERM	MJ, net calorific value	0.00E+00	0.00E+00
PERT	MJ, net calorific value	3.22E+02	1.67E-01
PENRE	MJ, net calorific value	3.94E+03	8.30E+01
PENRM	MJ, net calorific value	0.00E+00	0.00E+00
PENRT	MJ, net calorific value	3.94E+03	8.30E+01
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	-2.52E-01	3.95E-03
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.		

Waste indicators according to EN 15804

Module	Unit	A1-A3	A4
HWD	kg	1.33E+01	8.17E-02
NHWD	kg	1.06E+03	1.77E+00
RWD	kg	3.46E-04	3.53E-06
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.		

Abbreviations

Abbreviation	Definition
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central product classification

Version History

Original version of the EPD, 2025-12-29.

References

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) (2025-04-08).

ISO 14040:2021 “Environmental management - Life cycle assessment - Principles and framework”.

ISO 14044:2018 “Environmental management - Life cycle assessment - Requirements and guidelines”.

ISO 14025:2006 “Environmental labels and declarations - Type III environmental declarations - Principles and procedures”.

General Program Instructions of International EPD System, (Ver. 5.0.1) 2025-02-27 “General Programme Instructions for the International EPD System”.

Ecoinvent database (v3.11) - www.ecoinvent.org

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Limak Çimento now must say new things