



# Environmental Product Declaration

*In accordance with ISO14025:2006 and EN15804+A2:2019/AC:2021 for*

## CEM II/A-M(P-L) 42,5 R

Manufactured by Çimko Çimento ve Beton San. Tic. A.Ş.

**Programme:** The International EPD® System

**Programme Operator:** EPD International AB

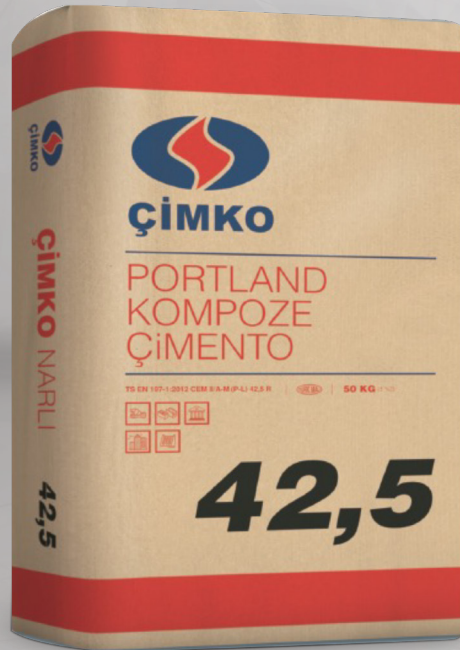
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**Geographical Scope:** Türkiye



An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com).

  
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# General Information

The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden

EPD Türkiye [www.epdturkey.org](http://www.epdturkey.org) [info@epdturkey.org](mailto:info@epdturkey.org) managed and run by SÜRATAM [www.suratam.org](http://www.suratam.org)

Nef 09 B Blok No:7/15 34415 Kagithane/Istanbul, Türkiye

ISO standard ISO 21930:2017 and CEN standard EN 15804 serves as the core Product Category Rules (PCR) Product Category Rules (PCR): 2019:14 Version 1.3.1, Construction Products and Construction Services, EN 15804:2012 + A2:2019 Sustainability of Construction Works

PCR review was conducted by: The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat [www.environdec.com/contact](http://www.environdec.com/contact).

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: EPD verification by individual verifier

Third party verifier: Prof. Ing. Vladimír Kočí, Ph.D., MBA LCA Studio Šárecká 5, 16000 Prague 6 - Czech Republic

Approved by: The International EPD® System

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

Yes  No

## Life Cycle Assessment (LCA)

LCA accountability: Metsims Sustainability Consulting

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

# How To Read This EPD?

An Environmental Product Declaration (EPD) is an ISO Type III Environmental Declaration based on ISO 14025 standard. An EPD transparently reports the environmental performance of products or services from a lifecycle perspective. The preparation of an EPD includes different stages, from acquiring raw materials to the end of life of the final product/service. EPDs are based on international standards and consider the entire value chain. Additionally, EPD is a third-party verified document. This EPD includes the following sections described below.

## 1. General and Program Information

The first part of an EPD has information about the name of the manufacturer and product/service and other general information such as the validity and expiration dates of the document, the name of the program operator, geographical scope, etc. The second page states the standards followed and gives information about the program operator, third-party verifier, etc. The followed Product Category Rule (PCR) is indicated on the second page.

## 2. Company and Product/Service Information

Information about the company and the investigated product is given in this section. It summarizes the characteristics of the product provided by the manufacturer. It also includes information about the product such as product composition and packaging.

## 3. LCA Information

Life Cycle Analysis (LCA) information is one of the most important parts of the EPD as it describes the functional/declared unit, time representativeness of the study, database(s) and LCA software, along with system boundaries. The table presented in this part has columns for each stage in the life cycle. The considered stages are marked 'X' whereas the ones that are not considered are labeled as 'ND' (Not Declared). Not all EPDs consider the full life cycle assessment for a product's entire life stages. The 'System Boundary' page is also the place where one can find detailed information about the stages and the assumptions made.

## 4. LCA Results

The results of the LCA analysis are presented in table format. The first column in each table indicates the name of the impact category and their measurement units are presented in the second column. These tables show an amount at each life cycle stage to see the impact of different indicators on different stages. Each impact can be understood as what is released through the production of the declared unit of the material. The benefits of reuse/recycling of the declared product are reflected in this section.

The first impact in the table is global warming potential (GWP), which shows how much CO<sub>2</sub> is released at each stage. Other impacts include eutrophication potential, acidification potential, ozone layer depletion, land use related impacts, etc. The second table provides results for resource use and the third table is about the waste produced during production. The fourth and final table shows the results for the GWP-GHG indicator, which is almost equivalent to the GWP-Total indicator mentioned previously. The only difference is that this indicator excludes the biogenic carbon content by following a certain methodology.

# About the ÇİMKO

The foundation of Çimko Çimento was the acquisition of Adıyaman Çimento, which was included in the scope of privatization, by SANKO Holding in 1995 and the establishment of Çimko Çimento ve Beton San. Tic. Inc. (Çimko Cement) and continued its activities under the title. The company acquired Bartın Çimento in 2005 and continued its growth in the cement sector by commissioning Narlı Çimento in 2007. Çimko Cement; It consists of Adıyaman, Bartın, Narlı factories and Ready-Mixed Concrete facilities. Çimko; It has an annual production capacity of 5.4 million tons of clinker and 9.4 million tons of cement with 3 integrated factories, 2 packaging facilities, 1 grinding-packaging facility and ready-mixed concrete facilities. Company; Aware of its responsibilities towards its customers, employees, environment and society, it works with the aim of meeting the needs of tomorrow beyond today by focusing on quality, stakeholder satisfaction and sustainability in all its processes. All requirements are fulfilled within the scope of the Integrated Management System and API Management System in the facilities of Çimko Cement, which meticulously observes the protection of the environment and the reduction of natural resource consumption in all business processes, and which has Certificates of Conformity in TSE and European EN 197-1 norms and CE Product Certificates.



# About the Product

The product CEM II/A-M(P-L) 42,5 R Portland Composite Cement consists of clinker, gypsum as a regulator and 12-20% major additive (Pozzolan - Limestone) and it's been grinded together. CEM II/A-M(P-L) 42,5 R is complied with the EN 197-1:2011 standard. CEM II/A-M(P-L) 42,5 R cement is suitable for all kinds of uses including all types of reinforced concrete structures, ready-mixed concrete production, construction chemicals, production of concrete briquettes, tile, bims, aerated concrete, mass concrete applications, jet grout applications, all types of reinforced concrete structures, high structures, art structures. The relevant product is produced in ÇİMKO Narlı Facility.

<b>Raw Material</b>	<b>Composition according to EN 197-1 (%)</b>
Clinker	80-88%
Major Additives	12-20%

<b>Packaging</b>	<b>Composition (%)</b>
Kraft Paper	100%

<b>Physical and Mechanical Analysis (%)</b>	<b>Result of Analysis</b>	<b>Standard Values EN 197-1:2011</b>
Specific Gravity (gr/cm <sup>3</sup> )	3.10	
Specific Surface (cm <sup>2</sup> /gr)	4125	
Residue on 45µ sieve (%)	5.3	
Residue on 90µ sieve (%)	0.3	
Initial Setting Time (minute)	200	Min. 60
Final Settling Time (minute)	300	
Soundness (mm)	1	Max. 10
<b>Compressive Strength Test (MPa)</b>		
2 Days	26.0	Min. 20.0
7 Days	38.7	
28 Days	48.2	Min. 42.5 – Max 62.5

# System Boundaries & Description

## A1 - RAW MATERIAL SUPPLY

Production starts with raw materials mainly locally sourced, but some transported from other parts of the world. 'Raw material supply' includes raw material extraction and pre-treatment processes before production.

## A2 - TRANSPORT

Transport information of the raw materials are provided by the manufacturer. The distances and routes are calculated accordingly.

Transport Mode	Type
Road	Vehicle: Lorry Size Class: 16-32 metric ton Emission Standard: EURO5 Fuel Type: Diesel

## A3 - MANUFACTURING

Cement production starts with quarry operation. After the crushing and homogenization process, raw material mix is sent to the raw mills. Production continue with burning and cooling. Finally, additional raw materials are added to the mixture, mixed and ready for use. Additionally, since Çimko produces clinker used in the cement, the effects of clinker production is included in this stage.

## A4 - TRANSPORT

Transport of final product to customers are considered and the routes and distances are calculated accordingly. Transport routes were provided by the manufacturer for 2022.

Transport Mode	Type
Road	Vehicle: Lorry Size Class: 16-32 metric ton Emission Standard: EURO5 Fuel Type: Diesel
Sea	Vehicle: Container Ship DWT (Load Capacity): 43000 tonnes Fuel Type: Heavy Fuel Oil



# LCA Information

## Functional / Declared Unit

The declared unit is 1 tonne of CEM II/A-M(P-L) 42,5 R

## 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).

## System Boundary

The system boundary covers cradle to gate with options. (A1+A2+A3+A4)

## Cut-off Rules

1% cut-off is applied. Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

## Background Data

For all LCA modelling and calculation, Ecoinvent database (v3.9.1) and SimaPro (v9.5) LCA software were used.

## 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. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while freshwater use is calculated with selected inventory flows in SimaPro according to the PCR. There are no co-product allocations within the LCA study underlying this EPD. The regional energy datasets were used for all energy calculations. 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.

Type Of Information Description	Type Of Information Description
Location	Türkiye
Geographical representativeness description	Split of energy sources in Turkey - Natural gas, 17% - Hydro, 33% - Coal, 37% - Wind, 8% - Other, 1% - Geothermal, 3% - Biogas, 1% - Biomass, <1%
Reference year	2022
Type of dataset	Cradle to gate, Ecoinvent
Source	IEA (International Energy Agency), 2022
CO2 emission kg CO2 eq. / kWh	0.588 (Medium Voltage)

## Period Under Review

The data used for LCA study concerns the year 2022.

## Allocations

Water consumption, energy consumption and raw material transportation were weighted according to 2022 production figures. In addition, hazardous and nonhazardous waste amounts were also allocated from the 2022 total waste generation.

## Biogenic Carbon Content

This product does not contain biogenic carbon.

Information on biogenic carbon content according to EN 15804+A2	
Biogenic carbon content in product (kg C)	0
Biogenic carbon content in packaging (kg C)	0.145

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage			Benefits and Loads	
	Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction / Demolition	Transport	Waste Processing		Disposal
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	GLO	TR	GLO	-	-	-	-	-	-	-	-	-	-	-	-	-
Specific Data Used	>90%				-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Products	0%				-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Sites	0%				-	-	-	-	-	-	-	-	-	-	-	-	-

(ND = Not declared, X = Module included)



# LCA Results

Impact Category	Unit (EN)	A1-A3	A4
GWP - Fossil	kg CO2 eq	789	59.7
GWP - Biogenic	kg CO2 eq	0.361	0.017
GWP - Luluc	kg CO2 eq	0.637	0.033
GWP - Total	kg CO2 eq	790	59.7
ODP	kg CFC-11 eq	3.55E-06	1.20E-06
AP	mol H+ eq	2.033	0.594
*EP - Freshwater	kg P eq	0.103	0.004
EP - Marine	kg N eq	0.557	0.162
EP - Terrestrial	mol N eq	6.12	1.77
POCP	kg NMVOC	1.79	0.552
ADPE	kg Sb eq	3.44E-04	1.58E-04
ADPF	MJ	3387	817
WDP	m3 depriv.	74.2	2.99
PM	disease inc.	1.17E-05	3.99E-06
IR	kBq U-235 eq	7.06	0.935
HTTP - C	CTUh	1.13E-07	2.68E-08
HTTP - NC	CTUh	4.79E-06	4.99E-07
SQP	Pt	1106	390
Acronyms	GWP-total: Climate change. GWP-fossil: Climate change-fossil. GWP-biogenic: Climate change - biogenic. GWP-luluc: Climate change - land use and transformation. ODP: Ozone layer depletion. AP: Acidification terrestrial and freshwater. EP-freshwater: Eutrophication freshwater. EP-marine: Eutrophication marine. EP-terrestrial: Eutrophication terrestrial. POCP: Photochemical oxidation. ADPE: Abiotic depletion - elements. ADPF: Abiotic depletion - fossil resources. WDP: Water scarcity. PM: Respiratory inorganics - particulate matter. IR: Ionising radiation. ETP-FW: Ecotoxicity freshwater. HTP-c: Cancer human health effects. HTP-nc: Non-cancer human health effects. SQP: Land use related impacts. soil quality.		
Legend	A1: Raw Material Supply. A2: Transport. A3: Manufacturing. A4: Transport		
Disclaimer 1	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.		
Disclaimer 2	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.		

## Resource Use

Impact Category	Unit	A1-A3	A4
PERE	MJ	324	11.2
PERM	MJ	0	0
PERT	MJ	324	11.2
PENRE	MJ	3387	817
PENRM	MJ	0	0
PENRT	MJ	3387	817
SM	kg	0	0
RSF	MJ	0	0
NRSF	MJ	0.500	0
FW	m3	4.64	0.119
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials. PERM: Use of renewable primary energy resources used as raw materials. PERT: Total use of renewable primary energy. PENRE: Use of non-renewable primary energy excluding 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. SM: Secondary material. RSF: Renewable secondary fuels. NRSF: Non-renewable secondary fuels. FW: Net use of fresh water.		

## Waste & Output Flows

Impact Category	Unit	A1-A3	A4
HWD	kg	1.70E-05	0
NHWD	kg	2.89E-04	0
RWD	kg	0	0
CRU	kg	0	0
MFR	kg	0	0
MER	kg	0	0
EE (Electrical)	MJ	0	0
EE (Thermal)	MJ	0	0
Acronyms	HWD: Hazardous waste disposed. NHWD: Non-hazardous waste disposed. RWD: Radioactive waste disposed. CRU: Components for reuse. MFR: Material for recycling. MER: Materials for energy recovery. EE (Electrical): Exported energy electrical. EE (Thermal): Exported energy. Thermal.		

## Climate Impact

Indicator	Unit	A1-A3	A4
*GHG-GWP	kg CO2 eq	791	59.8
<b>GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology</b> * The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013			
Legend	A1: Raw Material Supply. A2: Transport. A3: Manufacturing. A4: Transport		

# References

GPI / General Programme Instructions of the International EPD® System. Version 4.0. EN ISO 9001/ Quality Management Systems - Requirements EN ISO 14001/ Environmental Management Systems - Requirements

EN ISO 50001 / Energy Management Systems - Requirements ISO 14020:2000/ Environmental Labels and Declarations - General principles

EN 15804:2012+A2:2019/ Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products

ISO 14025 / DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations - Principles and procedures

ISO 14040/44 / DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

PCR for Construction Products and Construction Services/ Prepared by IVL Swedish Environmental Research Institute, Swedish environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2019:14 Version 1.3.1 DATE 2023-12-08.

The International EPD® System / The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. [www.environdec.com](http://www.environdec.com)

Ecoinvent / Ecoinvent Centre, [www.ecoinvent.org](http://www.ecoinvent.org)

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

Metsims / [www.metsims.com](http://www.metsims.com)

Çimko Çimento / [www.cimko.com.tr/Home](http://www.cimko.com.tr/Home)

# Contact Information

## Programme

**The International EPD® System**  
[www.environdec.com](http://www.environdec.com)

## Programme operator

EPD International AB Box 210 60  
SE-100 31 Stockholm, Sweden  
[www.environdec.com](http://www.environdec.com) info@  
environdec.com



EPD registered through fully aligned  
regional programme: EPD Türkiye  
[www.epdturkey.org](http://www.epdturkey.org) info@epdturkey.  
org SÜRATAM A.Ş. Nef 09 B Blok  
No:7/15, 34415 Kağıthane / İstanbul,  
TÜRKİYE [www.suratam.org](http://www.suratam.org)



## Owner of the declaration



Çimko Çimento ve Beton San. Tic. A.Ş.  
BURAK MAH. SANI KONUKOĞLU BLV.  
SANKO HOLDİNG 1 / 221 GAZİANTEP /  
ŞEHİTKAMİL [www.cimko.com.tr/Home](http://www.cimko.com.tr/Home)

## LCA practitioner and EPD design



Türkiye: Nef 09 B Blok No:7/46-47  
34415 Kağıthane/İstanbul, TÜRKİYE  
+90 212 281 13 33

The United Kingdom: 4 Clear Water  
Place Oxford OX2 7NL, UK 0 800  
722 0185 [www.metsims.com](http://www.metsims.com)  
info@metims.com

## LCA Verifier



Prof. Ing. Vladimír Kočí, Ph.D., MBA

LCA Studio Šárecká 5, 16000  
Prague 6 - Czech Republic  
[www.lcastudio.cz](http://www.lcastudio.cz)

