



# ENVIRONMENTAL PRODUCT DECLARATION

In accordance  
with ISO 14025 and EN 15804:2012+A2:2019 for

## Çimsa RECIPRO40 Calcium Aluminate Cement



**Programme:**

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

**Programme Operator:**

EPD International AB

**Local Operator:**

EPD Turkey

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# Programme Information

## Programme

EPD Turkey, managed and run by:

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Product Category Rules (PCR): 2019:14 Version 1.11, 2021-02-05, Construction Products and CPC 54 Construction Services, EN 15804:2012 + A2:2019 Sustainability of Construction Works

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

EPD process certification

EPD verification

Third party verifier: Prof. Vladimír Kocí

Approved by: The 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 from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.*

# About Company

Çimsa, which is an affiliate of Sabancı Holding, was established in Mersin in 1972. Today, Çimsa runs its manufacturing operations through its 5 integrated factories in Mersin, Eskişehir, Kayseri, Niğde and Afyonkarahisar, and its grinding plant in Ankara.

Being one of the leading brands in white cement around the world, Çimsa continues its operations in the international arena through Cimsa Sabanci Cement BV, which was formed by combining its operational capability with the financial strength of Sabancı Holding, its main shareholder.

Thanks to its market-oriented approach and large distribution network, Çimsa fully meets the needs of its customers in a timely manner. As a reliable business partner for its stakeholders, it provides the necessary supplies to build living spaces and infrastructure for the next generations.

Çimsa leads the Turkish cement and construction materials industry in innovation with its special products such as white cement and calcium

aluminate cement, as well as gray cement.

Driving value and focusing on profitable growth for all of its stakeholders, Çimsa also aims to maintain this in the future.

## **About Çimsa Sabancı Cement Bv**

In line with the objective of Sabancı Holding and Çimsa to be a leading player in the global white cement market by combining their operational and financial power and to build a more efficient and stronger platform in this area, the company named Cimsa Sabanci Cement BV, located in the Netherlands, was established in November 2020, in which Sabancı Holding has a capital share of 60% and Çimsa has 40%.

Cimsa Sabanci Cement BV has become an international player in the white cement industry with its white cement factory in Valencia (Spain), which it has recently incorporated, its grinding plant in Houston (USA), and its terminals in Hamburg (Germany), Trieste (Italy) ve Sevilla (Spain).



# About Product

The declared product is Çimsa RECIPRO40 - Calcium Aluminate Cement (RECIPRO40) manufactured in accordance with /EN14647/. RECIPRO40 is defined under the special cement class. Calcium aluminate cement is composed of hydraulic calcium aluminates as main constituent.

Cement is the adhesive or glue which, when sets, binds particles of fine aggregate together to produce mortar.

When mixed with water the cement forms a paste called the fine matrix. Cements are hydraulic materials, this means that they depend upon a reaction with water rather than air for strengthening. When water is added to cement a chemical reaction called hydration commences immediately. The reaction continues while water is still present. After hardening, it retains its strength and stability even under water.



## Usage Area

With the superior strength characteristics it has, it provides far more strength beyond grey cements and it is primarily preferred by especially refractory and technical concrete producers. It is preferred in the refractory sector thanks to its high thermal resistance.



## Technical Features

It is a calcium aluminate cement developed for the first time in Turkey by Çimsa Research and Development Center and provides high stability and performance, which we have developed for refractory applications in line with our 20 years of technical expertise and feedback from partners around the world.



## Sector - Specific Advantages

It is preferred in the refractory sector thanks to its high thermal resistance. Refractory manufacturers will be able to produce high temperature resistant mortar.



## Selling Type

Bag-Without Palette: Mersin  
Bag-With Pallet: Mersin  
Casting: Bulk  
Bigbag: Mersin



## Composition

Bauxite : 40-60 %  
Limestone : 40-60 %

*Please click or scan the QR code for more information about Çimsa Products*



**Declared Unit**

1 tonne of Çimsa RECIPRO40  
Calcium Aluminate Cement

**Time Representativeness**

2020

**Database(s) and LCA Software Used** Ecoinvent 3.6, SimaPro 9.1

The inventory for the LCA study is based on the 2020 production figures for Çimsa RECIPRO40® Calcium Aluminate Cement by Çimsa production plants in Mersin, Turkey.

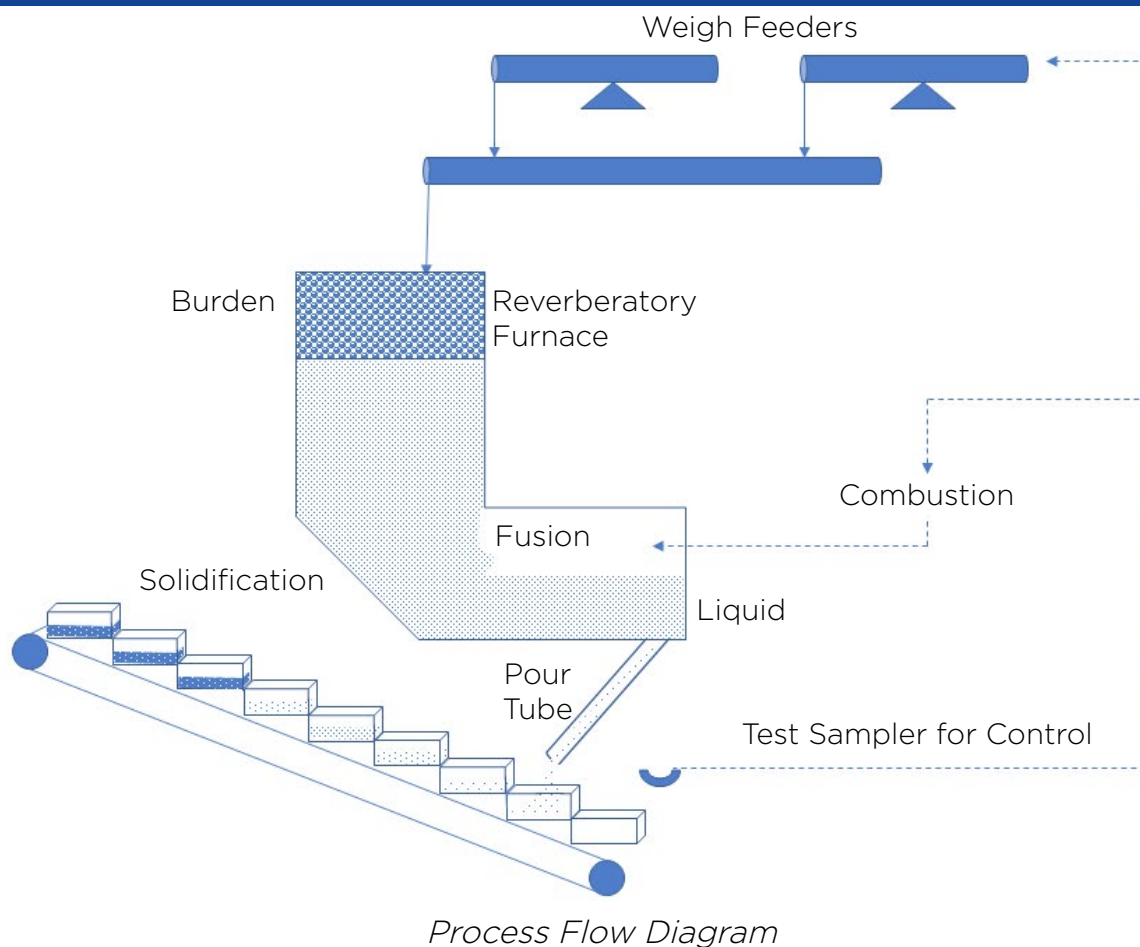
This EPD's system boundary is cradle to grave. The results of the LCA with the indicators as per EPD requirement are given in the following tables for product manufacture (A1, A2, A3), construction process stage (A4). According to EN 15804+A2:2019 standard, if the product or material is physically integrated with other products during installation then they cannot be physically separated at the end of life stage. For this reason, modules C1-C4 and Module D are excluded.

The system boundaries in tabular form for all modules are shown in the table above.

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	Future reuse, recycling or energy recovery potentials
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

X = Included in LCA, ND = Not Declared

# System Boundary



## A1: Raw Material Supply

Production for each product starts with mainly locally sourced but some transported from other parts of the world. 'Raw material supply' includes raw material extraction and pretreatment processes before production.

## A2: Raw Material Transport

Transport is relevant for delivery of raw materials and other materials to the plant and the transport of materials within the plant. Transport of raw materials to production site is taken as the weight average values for transport from raw materials supplier in 2020.

## A3: Manufacturing

Cement production starts with quarry operation. After the crushing and homogenization process, raw materials go to the mills. Production continues with burning and cooling. Finally, additional raw materials are added to the mixture, mixed and ready for use.

## A4: Transport to Customer

Transport of final product to construction site is taken as the weight average values for transport to customers in 2020. The product shipment distance is calculated according to the domestic and international sales rates over the assumed distances. It has been accepted as an average of 250 km by road.

## **Allocations**

Water consumption, energy consumption and raw material transportation were weighted according to 2020 production figures.

In addition, hazardous and non-hazardous waste amounts were also allocated from the 2020 total waste generation.

## **Cut-Off Criteria**

1% cut-off 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.

## **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 requirement are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while fresh water 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 SimaPro 9.1 LCA software and the Ecoinvent 3.6 LCA database were used to calculate the environmental impacts. The regional energy datasets were used for all energy calculations.

## **Geographical Scope**

The geographical scope of this EPD is global.



# LCA Results

Environmental Impacts for 1 tonne Çimsa RECIPRO40 Calcium Aluminate Cement			
Impact Category	Unit	A1-A3	A4
GWP - Fossil	kg CO <sub>2</sub> eq	963	23.4
GWP - Biogenic	kg CO <sub>2</sub> eq	-1.23	0.013
GWP - Luluc	kg CO <sub>2</sub> eq	0.201	0.007
GWP - Total	kg CO <sub>2</sub> eq	962	23.5
ODP	kg CFC-11 eq	38.6E-6	5.32E-6
AP	mol H+ eq	5.74	0.100
EP - Freshwater	kg P eq	0.232	0.002
*EP - Freshwater	kg PO <sub>4</sub> eq	0.709	0.006
EP - Marine	kg N eq	0.947	0.030
EP - Terrestrial	mol N eq	10.2	0.327
POCP	kg NMVOC	4.21	0.104
ADPE	kg Sb eq	0.001	394E-6
ADPF	MJ	6551	358
WDP	m <sup>3</sup> depriv.	52.9	1.30
PM	disease inc.	74.7E-6	2.09E-6
IR	kBq U-235 eq	40.2	1.70
ETP - FW	CTUe	25979	307
HTTP - C	CTUh	3.51E-6	7.09E-9
HTTP - NC	CTUh	7.36E-6	328E-9
SQP	Pt	1349	405
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, A1-A3: Sum of A1, A2, and A3, A4: Transport to Site.		
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.		
*Disclaimer 3	EP-freshwater: This indicator has been calculated as "kg P eq" as required in the characterization model. (EUTREND model, Struijs et al, 2009b, as implemented in ReCiPe; <a href="http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml">http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml</a> )		



Resource Use for 1 tonne Çimsa RECIPRO40 Calcium Aluminate Cement			
Impact Category	Unit	A1-A3	A4
PERE	MJ	281	3.85
PERM	MJ	0	0
PERT	MJ	281	3.85
PENRE	MJ	0	0
PENRM	MJ	6551	358
PENRT	MJ	0	0
SM	kg	6551	358
RSF	MJ	0	0
NRSF	MJ	0	0
FW	m <sup>3</sup>	1.97	0.075
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.		
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3, A4: Transport to Site.		

Waste&Output Flows for 1 tonne Çimsa RECIPRO40 Calcium Aluminate Cement			
Impact Category	Unit	A1-A3	A4
HWD	kg	0.041	0
NHWD	kg	0.490	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.		
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3, A4: Transport to Site.		

# 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 CPC 54 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 1.11 DATE 2019-12-20

/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)

# Contact Informations

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