



INTERNATIONAL EPD SYSTEM

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025, EN 15804:2012+A2:2019 and
EN 16757:2022 for ECOPact C16/20 Ready-mix Concrete
Manufactured by Holcim (Azerbaijan) OJSC



Programme:
**The International
EPD® System**

Programme Operator:
EPD International AB

Type of EPD:
**EPD of a single product
from a manufacturer**

EPD registration number
EPD-IES-0025657

Version Date
2026-05-15

Validity Date
2030-09-17

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

General Information

Programme Information

Programme	The International EPD® System
Address	EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden
Website	www.environdec.com
e-mail	support@environdec.com

Product Category Rules (PCR)

- 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 and c-PCR-003 Concrete and concrete elements (EN 16757) (2025-04-08), UN CPC code: 375
- PCR review was conducted by: The Technical Committee of the International EPD® System. <https://www.environdec.com/about-us/the-international-epd-system-about-the-system>. The review panel may be contacted via the Secretariat www.environdec.com/contact.

Life Cycle Assessment (LCA)

- LCA practitioner: Can Sönmez, MSc. - GreeniX Sustainability Solutions

Third-Party Verification

- 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: İpek Göktaş Kalkan, Göktaş Kalkan İpek TMI
- Approved by: The International EPD® System

- Procedure for follow-up of data during EPD validity involves third party verifier:
 - ☐ Yes ☒ No

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-of rules and impact assessment methods (including the same version of characterization factors); have equivalent content declarations; and be valid at the time of comparison for further information about comparability, see EN 15804 and ISO 14025.

Holcim has the sole ownership, liability, and responsibility for the EPD.

Information About EPD Owner



Holcim Azerbaijan OJSC

Contact:

Javad Panahov,
javad.panahov@holcim.com

Address:

Salyan Highway, Sahil Settlement
AZ1083 Baku/Azerbaijan

LCA Practitioner:

Can Sönmez,
can.sonmez@greenix.com.tr

Description of the Organisation

Holcim Azerbaijan OJSC, member of Holcim Group - a global leader in innovative and sustainable construction solutions. As part of the Holcim Group, Holcim Azerbaijan manages a diverse portfolio of operations, including the historic Garadagh Cement Plant - one of the region's leading producers since 1949. The company supplies the construction sector with a wide range of high-quality materials, including cement, TECTOR dry mixtures, ready-mix concrete, chemical additive CORSO and Geobrick. In 2023, Holcim Azerbaijan expanded its footprint by launching a new terminal in the Araz Valley Economic Zone of Karabakh, reinforcing its domestic reach and export capacity. The company is also leading the green transition in the construction sector, becoming the first cement producer in the South Caucasus to introduce low-carbon ECOPlanet cement and ECOPact concrete to the market- products designed to significantly reduce CO₂ emissions without compromising performance. By combining innovation, sustainability, and customer focus, Holcim Azerbaijan continues to shape the future of construction, setting new standards toward Net -Zero commitment across the South Caucasus region.

Product-Related or Management System-Related Certifications

ISO 9001, ISO 14001, ISO 45001, EN 197-1:2011, AZS EN 197-1:2021.

Product Information

Product Name

ECOPact C16/20 Ready-mix Concrete

Product Identification

Description	Units	Technical Spec
Cement type	-	Bastion 32.5R
Compressive strength (28 days)	MPa	20
Slump	mm	160-210
Water-Cement ratio	-	≤ 0,5
Maximum aggregate size	mm	22
Density (hardened concrete)	kg/m3	2200 - 2400

UN CPC Code

375 - Articles of concrete, cement and plaster

Product Description

Suitable for a wide range of compressive strength classes, it meets the performance requirements of various structural and non-structural applications. Whether used in residential, commercial, or infrastructure projects, ECOPact combines strength, durability, and environmental responsibility.



With ECOPact, we are committed to helping our customers reduce the footprint of their buildings and infrastructure to build better with less and decarbonize construction at scale.

Name and Location of Production Site

Holcim (Azerbaijan) JSC, Garadagh District, Baku

Content Declaration

The mass per functional unit

The mass per functional unit (1 m³ of ready-mix concrete) is 2340 kg.

Content of the product in the form of a list of materials and substances, and their mass

The product mainly consists of two materials; cement and aggregates. Minor additives such as fibers are used with small quantities along with water. The percentage breakdown for the wet weight composition is shown below.

Product Composition	Weight (%)	Post-consumer material weight- %	Biogenic material kg C / functional unit
Cement	15	0	0
Fine Aggregates	44	0	0
Coarsa Aggregates	32	0	0
Water	8	0	0
Additives	<1	0	0

The mass and the content of distribution and/or consumer packaging

There is no distribution or consumer packaging associated with ready-mix concrete; therefore, no packaging mass is declared.

Information on the environmental and hazardous/toxic properties of a substances contained in the product

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).

Biogenic Carbon Content

The product does not contain biogenic carbon, and thus, there is no biogenic carbon content in the product. Additionally, there is no use of packaging, as the product is sold fresh via concrete mixers.

LCA Information

Functional Unit

The functional unit is defined as 1 m³ of concrete with a reference service life (RSL) of 50 years.

Conversion Factor

The functional unit of this EPD is 1 m³ of ready-mix concrete, which corresponds to an average mass of 2340 kg. To convert results expressed per cubic meter into results per kilogram, a conversion factor of $1/2340 = 0,000427$ shall be applied. Conversely, results per kilogram can be converted back to the functional unit by multiplying by 2340.

Reference Service Life (RSL)

The reference service life (RSL) of the product is specified as 50 years.

Time Representativeness

01.01.2024 - 31.12.2024

Geographical Scope

The processes in modules A1-A3 have been modelled to represent concrete production in Baku, Azerbaijan. The raw materials are sourced from within Azerbaijan, and the end-of-life (module C) of the product has been modelled to represent Azerbaijan as well (based on the default scenario).

Database(s) and LCA Software

Ecoinvent 3.10 and SimaPro 9.6

Description of System Boundaries

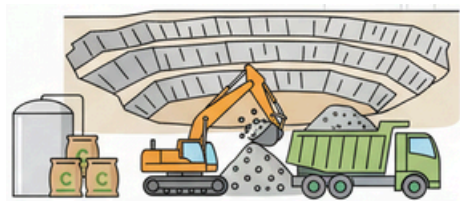
According to the PCR of Construction Products and Construction Services, A1 – A3 product stages that refer to 'Raw material supply', 'Transport' and 'Manufacturing' shall be considered in the LCA studies. This rule is applied in this EPD. Other optional modules A4, A5, B, C modules and module D are also considered in this study.

The system boundary covers the below mentioned stages. (cradle to grave). The review framework comprises the following details:

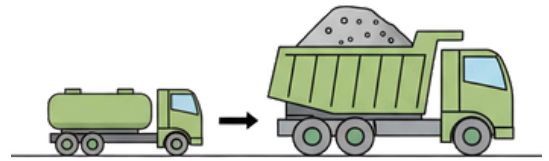
- Raw materials acquisition
- Raw materials transport
- Production operations
- Energy and water consumption, waste management
- Transport of end product
- Construction & Installation of product
- Use Phase
- Deconstruction of the product
- Transport of the waste product
- Waste processing
- Disposal
- Benefits beyond boundaries

The system boundaries are explained in detail below. The included scenarios are currently in use and represent one of the most likely alternatives.

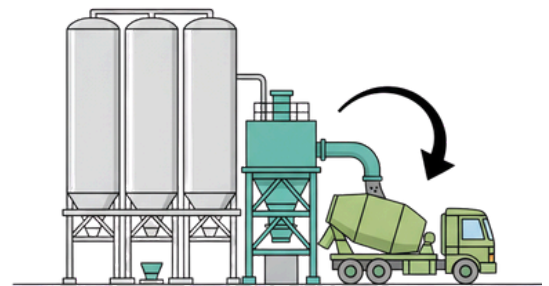
Process Flow Diagram



A1
Raw Material Supply



A2
Raw Material Transport



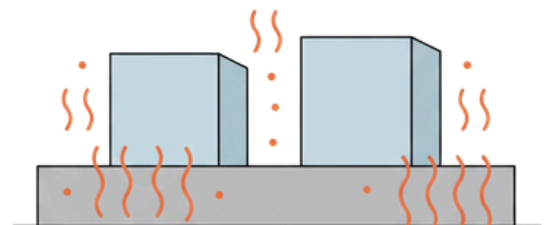
A3
Manufacturing



A4
Product Shipment



A5
Installation



B1
Carbonation



C1 - C4
End Of Life



D1
Future Benefits & Burdens

More Information

A1: Raw Material

This stage includes raw material extraction and pre-treatment processes before production. The main materials used are cement, water, aggregates, chemical admixtures, and other cementitious materials. The environmental impacts of these materials are considered at this stage. In particular, cement production is associated with direct CO₂ emissions released during the clinker production process, primarily from the calcination of limestone and from fuel combustion in kilns. These emissions are accounted for within the upstream cement production processes included in the A1 module.

A2 : Raw Material Transport

This stage includes the transportation-related impacts of the materials needed for concrete production. It is observed that highway transportation is involved at this stage. Transport routes and distances are supplier-specific and provided by the manufacturer.,

A3 : Manufacturing

Raw materials for producing Holcim's ready-mix concrete include cementitious materials, aggregates, admixtures, oxides, fibres, water, and ice. These raw materials are generally transported from various locations around Azerbaijan and stored in silos, hoppers, ground bins, or tanks. The materials are then fed into the batching plant hopper with calibrated scales and discharged via a chute into the ready-mix concrete truck. Water is weighed or volume-metered and added through the same charging tank. The ready-mix concrete is produced by combining these inputs under controlled batching and mixing operations.

Electricity is consumed during the manufacturing. The dataset representing the residual electricity mix used is provided in the table below.

Electricity Data	Electricity, medium voltage {AZ} market for electricity, medium voltage Cut-off, U (Modified as mix of fossil sources)
Type of Dataset	Cradle-to-gate
GWP of Electricity Data	0,692 CO2 eq./ kWh

A4 : Transport to Customer

This stage concerns the delivery of the final product to the intended markets and customers. Highway transportation is used at this stage. The transport routes and distances are supplier-specific and provided by the manufacturer.

Scenario Information	Unit (Per Functional Unit)
Vehicle	Lorry, Size Class: >32 metric ton, EURO 5
Fuel Type	Diesel
Fuel Use (L/tkm)	0,0322
Density of Products	2340 kg/m ³
Distance	6 km
Average Load Factor	50%
Volume Capacity Utilization Factor	<1

A5 : Construction & Installation

As Holcim does not have operational control over the installation of ready-mix concrete at the construction site, assumptions for construction inputs and installation waste have been made based on industrial expertise and the GCCA Tool. The inputs cover the pouring of concrete from a ready-mix truck and pump, excluding any pre-installation activities such as site preparation and formwork. Installation waste rates have been included in line with GCCA Tool guidance.

Construction inputs and waste	Value	Unit
Installation Loss*	3	%
Water use	669	L
Electricity use	2,78	kWh
Diesel, in building machine	1,67	L
Wastewater	669	L

*100% of concrete waste is sent to landfill

Electricity consumption during the construction/installation stage has been included in the A5 module. The electricity data used for this calculation is presented in the table below, based on site-specific consumption records and relevant emission factors.

Electricity Data	Electricity, low voltage {AZ} market for electricity, low voltage Cut-off, S
Type of Dataset	Cradle-to-gate
GWP of Electricity Data	0,704 CO ₂ eq./ kWh

B1 : Use Phase

Due to the carbonation of cement during its use phase, concrete absorbs some CO₂ emissions from the atmosphere over its lifespan. Following the relevant standard, EN 16757, the carbonation-related recarbonation impact is calculated. Since the final application of the product is unknown, a simplified, yet realistic approach for assessing the CO₂ uptake of concrete and concrete elements is used.

End-of-life Scenario

Module	Parameter	Value	Unit
C1 – Deconstruction / Demolition	Diesel	2, 674	L / m3 concrete
C2 – Transportation	Distance to processing	50	km
C3 – Waste processing	Concrete recycling	1898 (80%)	kg
C4 – Final disposal	Inert waste landfill	475 (20%)	kg

C1 : Deconstruction / Demolition

This stage includes the demolition or deconstruction of the discarded concrete from the construction sites. It is assumed that a medium-sized (129 kW) excavator will be used. For Module C1 (deconstruction), the modelling assumptions and default values are based on the Global Cement and Concrete Association (GCCA) Tool, in accordance with EN 15804 requirements.

C2: Transport

This stage covers the transportation-related impacts of the discarded concrete. Due to a lack of information and variances, a 50 km transportation distance using Euro 5 motor trucks is assumed.

C3: Waste Processing

Assume 80% of the EoL product is reprocess / recycled as Module C3. This is based on the 2022 National Waste Report (DCCEEW, 2023).

C4: Final Disposal

The remaining waste concrete (20%) undergoes inert waste landfill as Module C4.

D: Benefits

The recycled portion of waste concrete can substitute the use of aggregates in future concrete-making processes. This benefit is allocated accordingly.

Allocations

There are no co-products in the production of concrete; therefore, no co-product allocation was required. In line with EN 15804, allocation was avoided wherever possible by using process-specific data. Based on manufacturing data, transport, energy, and materials used for raw material preparation within the plant were allocated among the different product models. Separate measurements were conducted on the production lines during data collection to ensure accuracy. The Mass Balance Approach has not been applied.

Cut-Off Rules

A 1% cut-off rule has been applied in accordance with EN 15804 and PCR 2.0.1. Input flows contributing less than 1% individually, up to a cumulative maximum of 5%, have been excluded, ensuring that at least 95% of the total environmental impacts are included.

As prescribed by the PCR, installation, infrastructure and machinery maintenance are excluded from the system boundaries. Furthermore, impacts related to office operations, employee commuting, forklift operation, and other minor contributions have not been modelled, as they are considered to be negligible.

Period Under Review

01.01.2024 - 31.12.2024

CO2 certificates

Holcim (Azerbaijan) Ltd. does not currently have CO₂ certification.

Data Quality Assessment

The data used in this study is based on a combination of primary data collected from Holcim's ready-mix concrete plants in Azerbaijan (reference year 2024) and secondary background data from the ecoinvent v3.10 database. Primary data represents site-specific operations with high temporal, geographical, and technological relevance. Secondary data was selected to ensure consistency with the system boundaries and processes not covered by primary data. Overall, the quality of the data is considered to be high and suitable for the intended use of this EPD.

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results)

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Benefifits 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
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Module Declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ
Specific Data Used	69,7%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

The results of the LCA study with the indicators according to EPD requirement are given in the following tables for the considered system boundaries. The system boundaries in tabular form for all modules are shown in the table above. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while freshwater use is calculated with the addition of the water flows within the inventory. As per PCR requirements, net freshwater does not include cooling, turbine, salt (sole) and salt (ocean) water.

Declaration of sources and share of primary data: The share of primary data is calculated in accordance with the pre-verified tool. The quality data assessment has been conducted in conformity with the requirements of the applicable PCR and has been developed in an external calculation file that is available upon request; the assessment covers at least 80% of the results. The cement is manufactured within the same group of the concrete manufacturer; in fact, the EPD owner has complete access to the information regarding the manufacturing process of cement.

PROCESS	SOURCE TYPE	SOURCE	REFERENCE YEAR	DATA CATEGORY	SHARE OF PRIMARY DATA, OF GWP-GHG RESULTS FOR A1-A3
Manufacturing of Cement	Collected Data, Database	EPD Owner, Ecoinvent v.3.10	2024	Primary Data, Secondary Data	73,6%
Production of Other Raw Material	Database	Ecoinvent v.3.10	2024	Secondary Data	0%
Generation of Electricity Used in Manufacturing of Product	Database	Ecoinvent v.3.10	2024	Primary Data	100%
Transport of Raw Materials to Manufacturing Site	Database	Ecoinvent v.3.10	2021	Primary Data	100%
TOTAL SHARE OF PRIMARY DATA, OF GWP-GHG RESULTS FOR A1-A3					69,7%

The environmental performance results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

The results of the end-of-life stage should be considered when using the results of the product stage.

Environmental Performance

Environmental Indicators																
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP - Fossil	kg CO2 eq	2,34E +02	1,52E +00	1,77E +01	-3,32E +01	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	8,64E +00	1,28E +01	2,90E +01	2,96E +00	-1,12E +01
GWP - Biogenic	kg CO2 eq	6,21E -02	3,43E -04	-4,57E -02	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	8,81E -04	2,89E -03	-2,68E -02	-9,44E -04	-2,00E -02
GWP - Luluc	kg CO2 eq	4,47E -02	6,77E -04	6,85E -03	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	8,90E -04	5,72E -03	4,48E -02	1,69E -03	-1,77E -02
GWP - Total	kg CO2 eq	2,34E +02	1,52E +00	1,76E +01	-3,32E +01	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	8,64E +00	1,28E +01	2,90E +01	2,96E +00	-1,12E +01
ODP	kg CFC-11 eq	2,16E -06	2,23E -08	3,93E -07	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,32E -07	1,89E -07	4,29E -07	8,59E -08	-2,87E -08
AP	mol H+ eq	3,66E -01	5,15E -03	8,34E -02	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	7,81E -02	4,35E -02	2,05E -01	2,10E -02	-4,35E -02
EP - Freshwater	kg P eq	1,21E -02	1,18E -04	2,24E -03	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	2,50E -04	9,94E -04	7,48E -03	2,43E -04	-5,95E -03
EP - Marine	kg N eq	9,82E -02	1,70E -03	4,61E -02	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	3,62E -02	1,44E -02	7,84E -02	8,02E -03	6,83E -03
EP - Terrestrial	mol N eq	1,12E +00	1,84E -02	3,72E -01	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	3,97E -01	1,55E -01	8,50E -01	8,73E -02	4,56E -02
POCP	kg NMVOC	4,45E -01	7,59E -03	1,18E -01	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,18E -01	6,42E -02	2,66E -01	3,13E -02	2,01E -02
ADPE	kg Sb eq	1,06E -03	4,21E -06	5,44E -05	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	3,10E -06	3,56E -05	6,81E -05	4,71E -06	-9,97E -05
ADPF	MJ	1,76E +03	2,19E +01	2,02E +02	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,13E +02	1,85E +02	4,06E +02	7,26E +01	-1,31E +02
WDP	m3 depriv.	3,50E +01	1,08E -01	1,79E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	2,83E -01	9,16E -01	2,56E +00	2,10E -01	-2,84E +01
PM	disease inc.	6,18E -06	1,52E -07	2,56E -06	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	2,22E -06	1,28E -06	1,88E -05	4,79E -07	1,45E -05
IR	kBq U-235 eq	2,56E +00	1,91E -02	2,23E -01	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	5,01E -02	1,61E -01	7,65E -01	4,57E -02	-1,85E +00
ETP - FW	CTUe	2,83E +02	3,10E +00	4,86E +01	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	6,23E +00	2,62E +01	1,28E +02	6,12E +00	-4,96E +01
HTTP - C	CTUh	2,49E -08	2,50E -10	2,89E -09	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	8,90E -10	2,11E -09	5,79E -09	5,46E -10	-4,40E -09
HTTP - NC	CTUh	7,07E -07	1,42E -08	1,21E -07	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,41E -08	1,20E -07	2,35E -07	1,25E -08	-1,43E -07
SQP	Pt	8,71E +02	2,20E +01	6,72E +01	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	7,93E +00	1,86E +02	2,85E +02	1,43E +02	-2,07E +02
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, C1: Deconstruction / Demolition, C2: Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary.														
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	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	3,74E +01	3,00E -01	4,01E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	7,17E -01	2,54E +00	1,32E +01	7,02E -01	-2,25E +01
PERM	MJ	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00
PERT	MJ	3,74E +01	3,00E -01	4,01E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	7,17E -01	2,54E +00	1,32E +01	7,02E -01	-2,25E +01
PENRE	MJ	1,76E +03	2,19E +01	2,03E +02	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,13E +02	1,85E +02	4,06E +02	7,26E +01	-1,31E +02
PENRM	MJ	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00
PENRT	MJ	1,76E +03	2,19E +01	2,03E +02	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,13E +02	1,85E +02	4,06E +02	7,26E +01	-1,31E +02
SM	kg	5,97E -01	9,34E -03	9,31E -02	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	4,70E -02	7,89E -02	1,59E -01	1,83E -02	-2,15E -01
RSF	MJ	1,03E +02	1,19E -04	3,10E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,23E -04	1,00E -03	1,33E -03	3,78E -04	-1,64E -03
NRSF	MJ	7,52E -01	0,00E +00	2,26E -02	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00
FW	m3	1,85E +00	3,24E -03	7,57E -02	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	7,48E -03	2,74E -02	-8,01E -01	7,55E -02	-6,78E -01
Acronyms		PERE: Use of renewable primary energy resources used as energy, 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 resources as energy, 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	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	4,36E +00	3,72E -02	3,95E -01	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,26E -01	3,14E -01	1,03E +00	8,02E -02	-1,69E +00
NHWD	kg	9,14E +01	6,88E -01	6,92E +02	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,72E +00	5,81E +00	1,18E +03	1,84E +00	-3,21E +01
RWD	kg	6,26E -04	4,67E -06l	5,42E -05	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,23E -05	3,95E -05	1,86E -04	1,12E -05	-4,49E -04
CRU	kg	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00
MFR	kg	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	1,90E +03	0,00E +00	0,00E +00
MER	kg	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00
EE	MJ	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00
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: Exported energy															

Additional Environmental Impact Indicators																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
*GWP-GHG	kg CO2 eq	2,34E +02	1,52E +00	1,76E +01	-3,32E +01	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	0,00E +00	8,64E +00	1,28E +01	2,90E +01	2,96E +00	-1,12E +01
*This 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 CO2 is set to zero.																

Additional LCA Results

In accordance with the requirements of the latest PCR, an additional scenario analysis was carried out for the end-of-life stage of ready-mix concrete. Two alternative scenarios were modelled: 100% recycling and 100% landfill. The results of these scenarios are presented in the table below to illustrate the potential variation in environmental impacts depending on different end-of-life assumptions.

		100% Recycling			100% Landfill		
Impact Category	Unit	C3	C4	D	C3	C4	D
GWP - Fossil	kg CO2 eq	3,63 E+01	0,00 E+00	-1,40 E+01	0,00 E+00	1,48 E+01	0,00 E+00
GWP - Biogenic	kg CO2 eq	-3,35 E-02	0,00 E+00	-2,50 E-02	0,00 E+00	-4,72 E-03	0,00 E+00
GWP - Luluc	kg CO2 eq	5,60 E-02	0,00 E+00	-2,21 E-02	0,00 E+00	8,47 E-03	0,00 E+00
GWP - Total	kg CO2 eq	3,63 E+01	0,00 E+00	-1,40 E+01	0,00 E+00	1,48 E+01	0,00 E+00
ODP	kg CFC-11 eq	5,36 E-07	0,00 E+00	-3,58 E-08	0,00 E+00	4,29 E-07	0,00 E+00
AP	mol H+ eq	2,56 E-01	0,00 E+00	-5,43 E-02	0,00 E+00	1,05 E-01	0,00 E+00
EP - Freshwater	kg P eq	9,35 E-03	0,00 E+00	-7,44 E-03	0,00 E+00	1,22 E-03	0,00 E+00
EP - Marine	kg N eq	9,80 E-02	0,00 E+00	8,54 E-03	0,00 E+00	4,01 E-02	0,00 E+00
EP - Terrestrial	mol N eq	1,06 E+00	0,00 E+00	5,69 E-02	0,00 E+00	4,37 E-01	0,00 E+00
POCP	kg NMVOC	3,32 E-01	0,00 E+00	2,52 E-02	0,00 E+00	1,57 E-01	0,00 E+00
ADPE	kg Sb eq	8,52 E-05	0,00 E+00	-1,25 E-04	0,00 E+00	2,35 E-05	0,00 E+00
ADPF	MJ	5,08 E+02	0,00 E+00	-1,63 E+02	0,00 E+00	3,63 E+02	0,00 E+00
WDP	m3 depriv.	3,20 E+00	0,00 E+00	-3,55 E+01	0,00 E+00	1,05 E+00	0,00 E+00
PM	disease inc.	2,35 E-05	0,00 E+00	1,81 E-05	0,00 E+00	2,40 E-06	0,00 E+00
IR	kBq U-235 eq	9,56 E-01	0,00 E+00	-2,31 E+00	0,00 E+00	2,29 E-01	0,00 E+00
ETP - FW	CTUe	1,59 E+02	0,00 E+00	-6,21 E+01	0,00 E+00	3,06 E+01	0,00 E+00
HTTP - C	CTUh	7,24 E-09	0,00 E+00	-5,51 E-09	0,00 E+00	2,73 E-09	0,00 E+00
HTTP - NC	CTUh	2,94 E-07	0,00 E+00	-1,78 E-07	0,00 E+00	6,26 E-08	0,00 E+00
SQP	Pt	3,56 E+02	0,00 E+00	-2,59 E+02	0,00 E+00	7,17 E+02	0,00 E+00

		100% Recycling			100% Landfill		
Impact Category	Unit	C3	C4	D	C3	C4	D
PERE	MJ	1,64 E+01	0,00 E+00	-2,81 E+01	0,00 E+00	3,51 E+00	0,00 E+00
PERM	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PERT	MJ	1,64 E+01	0,00 E+00	-2,81 E+01	0,00 E+00	3,51 E+00	0,00 E+00
PENRE	MJ	5,08 E+02	0,00 E+00	-1,63 E+02	0,00 E+00	3,63 E+02	0,00 E+00
PENRM	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PENRT	MJ	5,08 E+02	0,00 E+00	-1,63 E+02	0,00 E+00	3,63 E+02	0,00 E+00
SM	kg	1,98 E-01	0,00 E+00	-2,69 E-01	0,00 E+00	9,14 E-02	0,00 E+00
RSF	MJ	1,66 E-03	0,00 E+00	-2,05 E-03	0,00 E+00	1,89 E-03	0,00 E+00
NRSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
FW	m3	-1,00 E+00	0,00 E+00	-8,48 E-01	0,00 E+00	3,77 E-01	0,00 E+00
HWD	kg	1,29 E+00	0,00 E+00	-2,11 E+00	0,00 E+00	4,01 E-01	0,00 E+00
NHWD	kg	1,47 E+03	0,00 E+00	-4,02 E+01	0,00 E+00	9,18 E+00	0,00 E+00
RWD	kg	2,33 E-04	0,00 E+00	-5,62 E-04	0,00 E+00	5,58 E-05	0,00 E+00
CRU	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MRF	kg	2,37 E+03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MER	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
EE	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
GWP-GHG	kg CO2 eq	3,63 E+01	0,00 E+00	-1,40 E+01	0,00 E+00	1,48 E+01	0,00 E+00

Abbreviations

General Abbreviations	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CPC	Central product classification
Environmental Impact Indicators	
GWP	Global warming potential
GWP-luluc	Global warming potential- land use and land use change
ODP	Ozone depletion potential
AP	Acidification Potential
EP	Eutrophication potential (for freshwater, marine, terrestrial compartments)
POCP	Photochemical ozone creation potential
ADP	Abiotic depletion potential
WDP	Water deprivation potential
GWP-GHG	Global warming potential- accounts for all greenhouse gases except biogenic CO ₂ uptake and emissions and biogenic carbon stored in the product and/or the packaging.
PM	Particulate Matter
IRP	Ionizing radiation Potential
ETP-FW	Ecotoxicity Potential- freshwaters
HTTP-C	Human Toxicity potential- Cancer
HTTP-NC	Human Toxicity potential- Non-Cancer

Abbreviations

Environmental Impact Indicators	
SQP	Index of soil quality potential
PERE	Use of primary energy excluding renewable primary energy resources used as raw materials
PERM	Use of renewable primary energy resources used as raw materials
PERT	Use of 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	Use of Total use of non-renewable primary energy resources
SM	Use of secondary materials
RSF	Use of renewable secondary fuels
NSRF	Use of non-renewable secondary fuels
FW	Use of fresh water (net)
HW	Hazardous Waste (disposed) (kg)
NHW	Non-Hazardous Waste (disposed) (kg)
RW	Radioactive Waste (disposed) (kg)
CFR	Components for Reuse (kg)
MR	Material for Recycling (kg)
MER	Materials for Energy Recovery (kg)
EEE	Exported Energy, Electricity (MJ)
EET	Exported Energy, Thermal (MJ)

References

ISO 14025	EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures
ISO 140440/44	Environmental management - Life cycle assessment Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)
Product Category Rules (PCR)	PCR 2019:14 Construction products (EN 15804:A2). Version 2.0.1. www.environdec.com .
c-PCR	c-PCR-003 Concrete and concrete elements (EN 16757:2022), Product category rules for concrete and concrete elements. Version 8 April 2025.
EN 15804	EN 15804:2012+A2:2019 Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.
EN 16757	EN 16757:2022, Sustainability of construction works – Environmental product declarations - Product Category Rules for concrete and concrete elements, European Committee for Standardization (CEN), Brussels, October 2022.
GPI	EPD International. (2021). General Programme Instructions for the International EPD® System. Version 5.0.1. www.environdec.com
SimaPro	SimaPro 9.6 software for LCA calculations, developed by PRé Sustainability, Stationsplein 121, 3818 LE Amersfoort, Netherlands, https://simapro.com
Ecoinvent	Ecoinvent dataset v3.10, developed by the Swiss Centre for Life Cycle inventories, Technoparkstrasse 1, 8005 Zurich, Switzerland https://ecoinvent.org/
IPCC	IPCC. (2021a). Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.
GCCA Tool	GCCA (Global Cement and Concrete Association). (2023). GCCA Industry EPD Tool v3.0. London: GCCA. https://gccassociation.org/sustainability-innovation/epd-tool
Environmental Product Declaration	EPD International AB. (2025). Environmental Product Declaration: Bastion 32.5R Cement. Registration no. EPD-IES-0025747:001. The International EPD System. EPD owner: HOLCIM AZERBAIJAN OJSC. Published: 2025-11-19. Valid until: 2030-11-18.
Holcim	www.holcim.com

Version History

Version	Date	Description of changes
v1.0	2025-09-18	First publication of the EPD.
v2.0	2026-05-15	Major revision. Life cycle assessment results were updated and recalculated in accordance with the latest valid PCR due to changes in the background EPD data used in the study. The applicable PCR, declared unit, system boundaries and methodological framework remain unchanged.

Contact

Programme

The International EPD® System
www.environdec.com

Programme Operator

EPD International AB
Box 210 60
SE-100 31 Stockholm/Sweden
www.environdec.com
info@environdec.com



Owner of the Declaration

Javad Panahov,
javad.panahov@holcim.com
Phone: : +994 10 2320459
www.holcim.com
Salyan Highway, Sahil Settlement
AZ1083 Baku/Azerbaijan



Third Party Verifier

İpek Göktas Kalkan
Göktas Kalkan Ipek TMI
Leikosaarentie 11 D 59
00980 Helsinki/Finland

LCA Study & EDP Design

Cemal Ulusoy Caddesi No:57 A
Plaza, Bahçelievler,
İstanbul/Türkiye
info@greenix.com.tr

