



INTERNATIONAL EPD SYSTEM

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for
ECOPact C20/25 Ready-mix Concrete
Manufactured by Holcim (Azerbaijan) OJSC



Programme
**The International
EPD® System**

Programme Operator
**EPD
International AB**

EPD registration number
EPD-IES-xxxxxxx

Publication Date
2025-07-30

Valid Until
2030-07-29



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	info@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) (2023-01-02), 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: ☒ EPD verification by individual verifier
- Third-party verifier: İpek Göktaş
- 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.

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

Summary

This study aims to evaluate the environmental impacts of concrete product of the Holcim (Azerbaijan) OJSC. The LCA study is conducted to obtain the third party certified Environmental Product Declarations (EPDs) from The International EPD System. This report focuses on the method of the Life Cycle Assessment (LCA) that calculates the potential impacts within the defined system boundary. The environmental information of an EPD covers the life cycle stages of this system.

This LCA model was developed from the average data collected for the year 2024 from the manufacturer in Azerbaijan and the LCA models were developed for below mentioned four concrete products, and the results were presented in this report accordingly. The considered product is ECOPact C20/25.

LCA was performed in agreement with the requirements of the Product Category Rules document for Construction Products and Construction Services regarding EN 15804+A2. Environmental impacts are calculated based on the required indicators.

The LCA study includes the stages from the upstream processes, core, and downstream processes. The modules included in the EPDs A, B, C and D.

The results of the LCA study performed for investigated concrete product showed that the raw material supply stage is the dominant life cycle stage for all environmental impact categories. This LCA is performed to gain an understanding of the environmental performance of company's concrete product and its communications through environmental product declarations. It is intended for engineers, specifiers, and green building consultants who are interested in sustainable infrastructure projects and their environmental evaluations. The EPD will be mainly used for B2B communications.

The LCA part of this work is conducted by sustainability and LCA consultant Can Sönmez from GreeniX Sustainability Consulting.

Company Information



Holcim Azerbaijan OJSC

Javad Panahov,
javad.panahov@holcim.com

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.

General Aspects

This study is conducted according to the guidelines of ISO 14040 and ISO 14044 and the requirements given in the Product Category Rules (PCR) document for Construction (EN 15804:2012+A2:2019), UN CPC code of 375, and the General Programme Instructions by The International EPD System, version 5.0.1.

The inventory for the LCA study is based on the average data of production figures for four different concrete products produced by Holcim OJSC in their production plants throughout Azerbaijan, for the year 2024. This LCA was modeled with SimaPro 9.6 LCA package using the Ecoinvent 3.10 database for secondary data.

This LCA study evaluates the environmental impacts of 1 m³ of concrete product with cradle to grave to be awarded Environmental Product Declarations (EPDs) certified by The International EPD System through third-party verification. This application complies with EN 15804 harmonized standards for EPD across the EU. The EPD certificate, its background data, and the results will be used for Business-to-Business communications.

The result of this LCA study will provide a better understanding of the environmental impacts that are originated by the manufacturing of ready-mix concrete. Therefore, the company may start to work for reducing its carbon footprint and the other environmental impacts.

Product Information

Product Description and Characterisation

ECOPact is a sustainable concrete solution designed to reduce CO₂ emissions by up to 30% compared to traditional CEM I mixes. 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.

ECOPact C20/25		
Description	Units	Technical Spec
Cement type	-	Inshaatchi (MC 22.5 X)
Compressive strength (28 days)	MPa	25
Slump	mm	160-210
Water-Cement ratio	-	≤ 0.5
Maximum aggregate size	mm	22
Density (hardened concrete)	kq/m3	2200 - 2400

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	17	0	0
Fine Aggregates	44	0	0
Coarsa Aggregates	32	0	0
Water	8	0	0
Additives	<1	0	0

System Boundary

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, B1, 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.

LCA Information

Functional Unit

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

Time Representativeness

2024

Database(s) and LCA Software

Ecoinvent 3.10 and SimaPro 9.6

LCA Information																	
	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	GLO	GLO	AZ	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Specific Data Used	98.8%				-	-	-	-	-	-	-	-	-	-	-	-	-
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.

X: Included in LCA
NR: Not relevant
ND: Not declared

A1: Raw Material

This stage includes raw material extraction and pre-treatment processes before production. The main materials used in production are cement, water, aggregates, chemical additives, and cementitious materials. The impacts of these materials are considered at this stage.

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. The raw materials are stored in silos, hoppers, ground bins or tanks. The materials are feed to batching plant hopper with calibrated scale. Then all the raw materials are discharged via a chute into the ready-mix concrete truck. Water is then weighed, or volume metered and discharged into the mixer truck through the same charging tank

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: 16-32 metric ton
Fuel Type	Diesel
Fuel Use (L/tkm)	1.97E-02
Density of Products	2400 kg/m3
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
Concrete losses that go to landfill	3.00E+00	%
Water use	6.69E+02	L
Electricity use	2.78E+00	kWh
Diesel, in building machine	1.67E+00	L
Wastewater	6.69E-01	L

B1 : Use Phase

Due to the calcination of cement during its use phase, concrete absorbs some CO₂ emissions from the atmosphere over its lifespan. Following the relevant standard, EN 16757, the calcination-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.

Formulation:

$$CO_2 \text{ uptake} = k * (K_k) * (\sqrt{t} / 1000) * U_{tcc} * C * (D_c)$$

$$U_{tcc} = w * C_c * (m_{CO_2} / m_{CaO})$$

C	cement content per m3 of concrete	kg cement/m3 concrete	400
t	time	year	50
Dc	degree of carbonation	-	64%
k	k-factor	mm/√year	2,78
Kk	correction to k-factor	-	1,1
-	average thickness per m2	m	0,3
w	part of reactive CaO	kg CaO/kg binder	0,65
Cc	mass of binder	kg binder/kg cement	0,95
mCO2	molar weight CO2	g CO2/mol	44
mCaO	molar weight CaO	g CaO/mol	56
Utcc	maximum theoretical uptake of CO2 in totally carbonated concrete	kg CO2/kg cement	0,49

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	1891	kg
C4 – Final disposal	Inert waste landfill	473	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 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 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.

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 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 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.

Life Cycle Inventory Analysis

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.

Conversion Factor

1 m³ of the investigated concrete weighs an average of 2363 kg. Therefore, a mass conversion factor of 0.000423 should be used.

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

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).

CO₂ certificates

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

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.

Reference Service Life (RSL)

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

Life Cycle Inventory Analysis

Declaration of Sources and Share of Primary Data

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	EPD OWNER	2024	PRIMARY DATA	67%
MANUFACTURING OF PRODUCT	COLLECTED DATA	EPD OWNER	2024	PRIMARY DATA	0%
OTHER PROCESSES	DATABASE	Ecoinvent v.3.10	2024	SECONDARY DATA	0%
TOTAL SHARE OF PRIMARY DATA, OF GWP-GHG RESULTS FOR A1-A3					67%

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

LCA Results

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	2,17 E+02	1,52 E+00	1,33 E+01	-8,95 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	8,66 E+00	1,27 E+01	2,90 E+01	2,96 E+00	-1,11 E+01
GWP - Biogenic	kg CO2 eq	4,33 E+00	5,22 E-05	1,09 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,46 E-04	4,35 E-04	2,97 E-02	4,07 E-04	-3,99 E-02
GWP - Luluc	kg CO2 eq	5,49 E-02	6,10 E-04	2,44 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	7,52 E-04	5,08 E-03	4,02 E-02	1,52 E-03	-1,72 E-02
GWP - Total	kg CO2 eq	2,21 E+02	1,52 E+00	1,34 E+01	-8,95 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	8,66 E+00	1,27 E+01	2,91 E+01	2,96 E+00	-1,12 E+01
ODP	kg CFC-11 eq	2,04 E-06	2,25 E-08	3,32 E-07	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,32 E-07	1,87 E-07	4,28 E-07	8,55 E-08	-3,04 E-08
AP	mol H+ eq	8,21 E-01	5,20 E-03	7,92 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	7,81 E-02	4,33 E-02	2,06 E-01	2,09 E-02	-4,33 E-02
EP - Freshwater	kg P eq	3,02 E-02	1,20 E-04	1,28 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,53 E-04	9,98 E-04	7,52 E-03	2,45 E-04	-5,93 E-03
EP - Marine	kg N eq	2,35 E-01	1,71 E-03	3,16 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,62 E-02	1,42 E-02	7,83 E-02	7,98 E-03	6,83 E-03
EP - Terrestrial	mol N eq	2,69 E+00	1,86 E-02	3,49 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,97 E-01	1,55 E-01	8,48 E-01	8,71 E-02	4,38 E-02
POCP	kg NMVOC	8,28 E-01	7,66 E-03	1,06 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,18 E-01	6,38 E-02	2,64 E-01	3,12 E-02	2,01 E-02
ADPE	kg Sb eq	4,89 E-04	4,15 E-06	2,84 E-05	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	3,46 E-05	3,46 E-05	6,68 E-05	4,62 E-06	-9,81 E-05
ADPF	MJ	1,88 E+03	2,21 E+01	1,53 E+02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,84 E+02	1,84 E+02	4,07 E+02	7,25 E+01	-1,30 E+02
WDP	m3 depriv.	8,77 E+01	1,13 E-01	3,12 E+01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,44 E-01	9,44 E-01	-3,51 E+01	3,17 E+00	-2,77 E+01
PM	disease inc.	9,05 E-06	1,52 E-07	1,74 E-06	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,27 E-06	1,27 E-06	1,62 E-05	4,76 E-07	1,44 E-05
IR	kBq U-235 eq	4,64 E+00	1,95 E-02	2,25 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,63 E-01	1,63 E-01	7,78 E-01	4,62 E-02	-1,84 E+00
ETP - FW	CTUe	1,00 E+03	1,07 E+01	6,29 E+01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	8,89 E+01	8,89 E+01	3,23 E+02	1,98 E+01	-1,81 E+02
HTTP - C	CTUh	5,57 E-07	7,57 E-09	4,99 E-08	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,31 E-08	6,31 E-08	1,19 E-07	1,33 E-08	-1,43 E-07
HTTP - NC	CTUh	2,12 E-06	1,42 E-08	9,07 E-08	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,40 E-08	1,19 E-07	2,31 E-07	1,24 E-08	-1,39 E-07
SQP	Pt	9,27 E+02	2,22 E+01	1,85 E+01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	7,96 E+00	1,85 E+02	2,83 E+02	1,43 E+02	-2,07 E+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														
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.														

LCA Results

Resource Use																
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	6,06 E+01	2,81 E-01	3,81 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,76 E-01	2,34 E+00	1,22 E+03	6,51 E-01	-2,18 E+01
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	0,00 E+00	0,00 E+00	0,00 E+00	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	6,06 E+01	2,81 E-01	3,81 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,76 E-01	2,34 E+00	1,22 E+03	6,51 E-01	-2,18 E+01
PENRE	MJ	1,88 E+03	2,21 E+01	1,58 E+02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,13 E+02	1,84 E+02	4,07 E+02	7,25 E+01	-1,30 E+02
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	0,00 E+00	0,00 E+00	0,00 E+00	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	1,88 E+03	2,21 E+01	1,58 E+02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,13 E+02	1,84 E+02	4,07 E+02	7,25 E+01	-1,30 E+02
SM	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	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
RSF	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	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	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	0,00 E+00	0,00 E+00	0,00 E+00	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	2,92 E+02	0,00 E+00	6,69 E+02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
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.														

LCA Results

Waste & Output Flows																
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,54 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
NHWD	kg	1,47 E+01	0,00 E+00	7,09 E+01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
RWD	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	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	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	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MFR	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	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,73 E+02
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	0,00 E+00	0,00 E+00	0,00 E+00	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 (Electrical)	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	0,00 E+00	0,00 E+00	0,00 E+00	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 (Thermal)	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	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+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 (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.															

Additional Environmental Impact Indicators																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
*GHG-GWP	kg CO2 eq	2,17 E+02	1,52 E+00	1,33 E+01	8,95 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	8,66 E+00	1,27 E+01	2,90 E+01	2,96 E+00	-1,12 E+01
	kg CO2 eq	7,04 E-02	2,45 E-04	3,19 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,97 E-04	2,04 E-03	2,01 E-02	7,24 E-04	-1,79 E-02
	kg CO2 eq	5,49 E-02	6,10 E-04	2,44 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	7,52 E-04	5,08 E-03	4,02 E-02	1,52 E+03	-1,72 E-02
GWP-GHG = Global Warming Potential following IPCC AR6 methodology																

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 14044/44	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 .
EN 15804	EN 15804:2012+A2:2019 Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.
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
Holcim	www.holcim.com

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



Licensee

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



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 Gökteş
One Click LCA Ltd
Suvilahdenkatu 10 B
00500 Helsinki/Finland



LCA Study & EDP Design

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

