ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2:2019/AC:2021 &
ISO 14025 / ISO 21930

SULPHATE-RESISTANT CEMENT (SRC)
CITY CEMENT COMPANY

Programme: The international EPD® system, www.environdec.com
Programme operator: EPD International AB
EPD registration number: S-P-11479
Publication date: 14-12- 2023
Valid until: 14-12- 2028
Geographical scope: Kingdom of Saudi Arabia (KSA)

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.

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ECO PLATFORM EPD VERIFIED

GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	City Cement Company
Address	Riyadh, Ar Riyad, Kingdom of Saudi Arabia (KSA)
Contact details	A.Abdelazim@citycement.sa
Website	https://www.citycement.sa/ENG/index.php

PRODUCT IDENTIFICATION

Product name	Sulphate-Resistant Cement (SRC)
Additional label(s)	
Product number / reference	ASTM Standard Specification for Portland Cement (ASTM C150) - Type II
Place(s) of production	Marat City, Kingdom of Saudi Arabia (KSA)
CPC code	374 – Plaster, lime and cement

The manufacturer 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.

EPD INFORMATION

EPD program operator	EPD MENA, The International EPD System
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the Int'l EPD System PCR 2019:14 Construction products, version 1.3.1 and c-PCR-001 Cement and building lime (EN 16908) (2022-05-18) are used.
EPD author	Nasser Ayoub and Asmaa El-Maghraby, DCarbon Egypt
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
Verification date	14-12- 2023
EPD verifier	Elisabet Amat, GREENIZE Projects
EPD number	S-P-11479
ECO Platform nr.	-
Publishing date	14-12- 2023
EPD valid until	14-12- 2028

CITY CEMENT COMPANY

City Cement Company, a Saudi Joint Stock Company, was established under Ministerial Decree 804, dated 12/05/1426 H, corresponding to 19/06/2005 G. Registered in Riyadh with Commercial Registration number 1010210441, dated 14/05/1426 H, or 21/06/2005 G, and licensed under number 1163S, dated 03/06/1426 H. The company boasts an authorized and paid-up capital of SAR 1,400,000,000.

City Cement Company is primarily involved in the manufacturing and sale of various cement types. The production facility is situated 135 kilometres away from Riyadh. Operations commenced in the final quarter of 2007, starting with a clinker production capacity of 5,000 tons per day, equivalent to an annual output of 1.75 million tons. In April 2015, the plant expanded its operations, adding a second production line with a capacity of 5,500 tons, resulting in a total daily clinker production of 10,500 tons and a cement grinding capacity of 16,000 tons per day.

PRODUCT INFORMATION

PRODUCT DESCRIPTION

SRC is a type of cement where its clinker is blended with specific proportions of gypsum and bypass materials. This combination not only makes it durable against sulfate-induced damage but also provides a strong and reliable construction material.

SRC distinguishes itself by its minimal Tri Calcium Aluminate (C3A) content, a crucial characteristic. C3A is a chemical reaction with sulfate ions found in soil and water, which can lead to concrete expansion and cracking. As sulfate attack progresses, the affected concrete's strength and durability can significantly decrease. Sulfate attack can also manifest as surface scaling and deterioration of the concrete.

The concrete may become discolored, pitted, and crumbly. If sulfate attack continues unabated, it can lead to structural issues, including reduced load-bearing capacity, which can compromise the safety and integrity of the concrete structure. This unique property of SRC plays a vital role in inhibiting such expansion and cracking, strength and durability deterioration, especially in areas where the soil has elevated sulfate levels.

PRODUCT APPLICATION

SRC is employed in a wide range of construction endeavors, including the infrastructure in sulphate-rich soils, construction of dams, coastal and marine structures like ports and platforms, sewage and Water treatment plants, repair and rehabilitation, underground Structures, and foundational work.

TECHNICAL SPECIFICATIONS

Table 1:Chemical properties of the product (Test method ASTM-C-150)

Chemical Requirements	Unit	Value
Loss of ignition (L.O.I)	%	< 3.5
Insoluble residue (IR)	%	< 1.5
Sulfur Trioxide (SO_3)	%	< 3.5
Tricalcium silicate (C_3A)	%	< 5

PRODUCT STANDARDS

The product is manufactured based on ASTM Standard Specification for Portland Cement (ASTM C150) - Type II.

PHYSICAL PROPERTIES OF THE PRODUCT

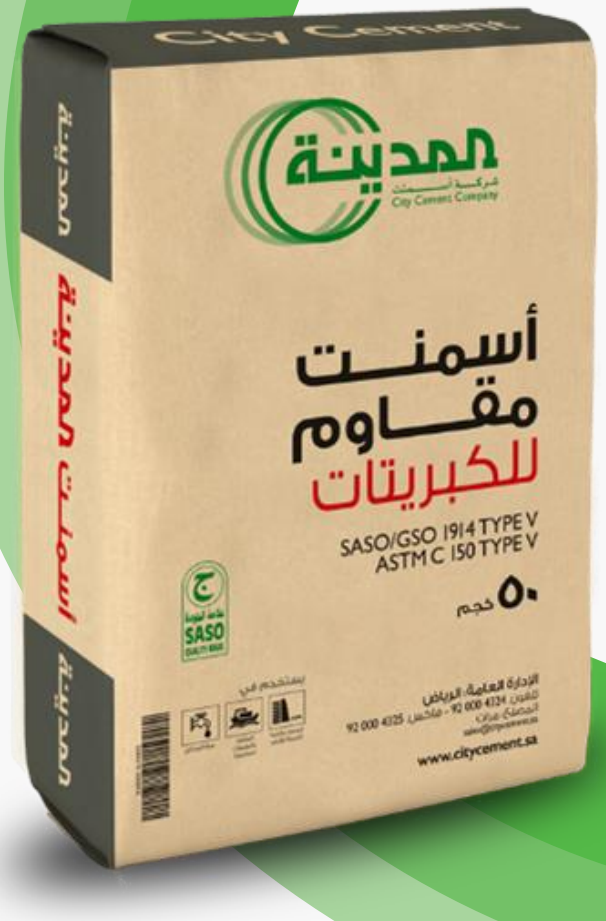
Table 2:Physical properties of the product

Physical Requirements	Unit	Value
Specific Surface (Blaine)	m^2/kg	340 ± 10
The Residue on a 45 µm	%	7.5 ± 1.5
1 day compressive strength	MPa	13.5 ± 0.3
3 days compressive strength	MPa	21.2 ± 0.5
7 days compressive strength	MPa	27.6 ± 0.5
28 days compressive strength	MPa	35.8 ± 0.5
Initial Setting Time	mins	140 ± 20
Final Setting Time	mins	170 ± 20
Soundness (Le Chatelier)	%	1.2 ± 0.5

PRODUCT RAW MATERIAL COMPOSITION

Table 3: Materials of SRC Product

Product Components	Weight , kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Limestone	763.31	0	0 resp. 0
Clay	99.50	0	0 resp. 0
Sandstone	21.92	0	0 resp. 0
Desert Sand	68.85	0	0 resp. 0
Iron Ore	13.32	0	0 resp. 0
Gypsum additive	19.08	0	0 resp. 0
Bypass additive	14.02	0	0 resp. 0
Total	1000	0	0 resp. 0
Packaging Materials	**Weight , kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Kraft Paper Brown	0.24	0.024	0.41 resp. 0.41
Total	0.24	0.024	0.41 resp. 0.41



SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The production process for City Cement Company's SRC involves the utilization of several raw materials, including limestone, clay, sandstone, desert sand, and iron ore in the initial clinker production stage. Subsequently, specific proportions of clinker are mixed with additives such as gypsum, and bypass.

These raw materials are primarily sourced from a nearby quarry, and they are stored in the form of heaps. Iron ore, on the other hand, is transported from a source located approximately 400 kilometers away. Importantly, the only raw material imported from outside the Kingdom of Saudi Arabia is used kraft paper for packaging, which is sourced from Jordan.

The transportation of these raw materials from the storage area to the first production unit, which involves crushing and grinding, is carried out using heavy mobile equipment. The cement production process commences with the crushing and grinding of these raw materials, during which any moisture content is evaporated by heating the materials to 100°C. This results in the formation of a homogeneous stockpile consisting primarily of limestone, clay, and iron ore, with smaller proportions of gypsum, limestone, and bypass, depending on the intended product. The stockpile is regularly analyzed and adjusted with corrective additives to meet the raw mix design requirements in terms of chemistry.

The next step involves grinding the materials in the raw mill to produce a fine powder known as raw meal. This raw meal is then fed into the pre-heater, where the bypass dust is reclaimed. From the pre-heater, the materials are directed to the rotary kiln for sintering, where the temperature rises to approximately 1450°C due to the combustion of fuels, and clinkerization reactions occur.

At the end of the kiln, the sintered material undergoes rapid cooling, resulting in the formation of clinker. Finally, cement is produced in the cement mills, where clinker is ground with gypsum and other additives before being stored in silos. Additionally, portions of the bypass dust exiting from the pre-heater are utilized in the cement mills to ensure the final cement product complies with composition standards.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Only distribution to end customers is considered (A4). Transportation happens by truck to client in KSA; we considered factors such as the distance to the primary market where City Cement Company predominantly sells its products, as well as the vehicle's capacity. We based our modelling on the most frequently chosen route option for this situation. around 200 km away. Additionally, the treatment of the kraft paper packaging in which the cement is packaged in, is considered in A5 stage.

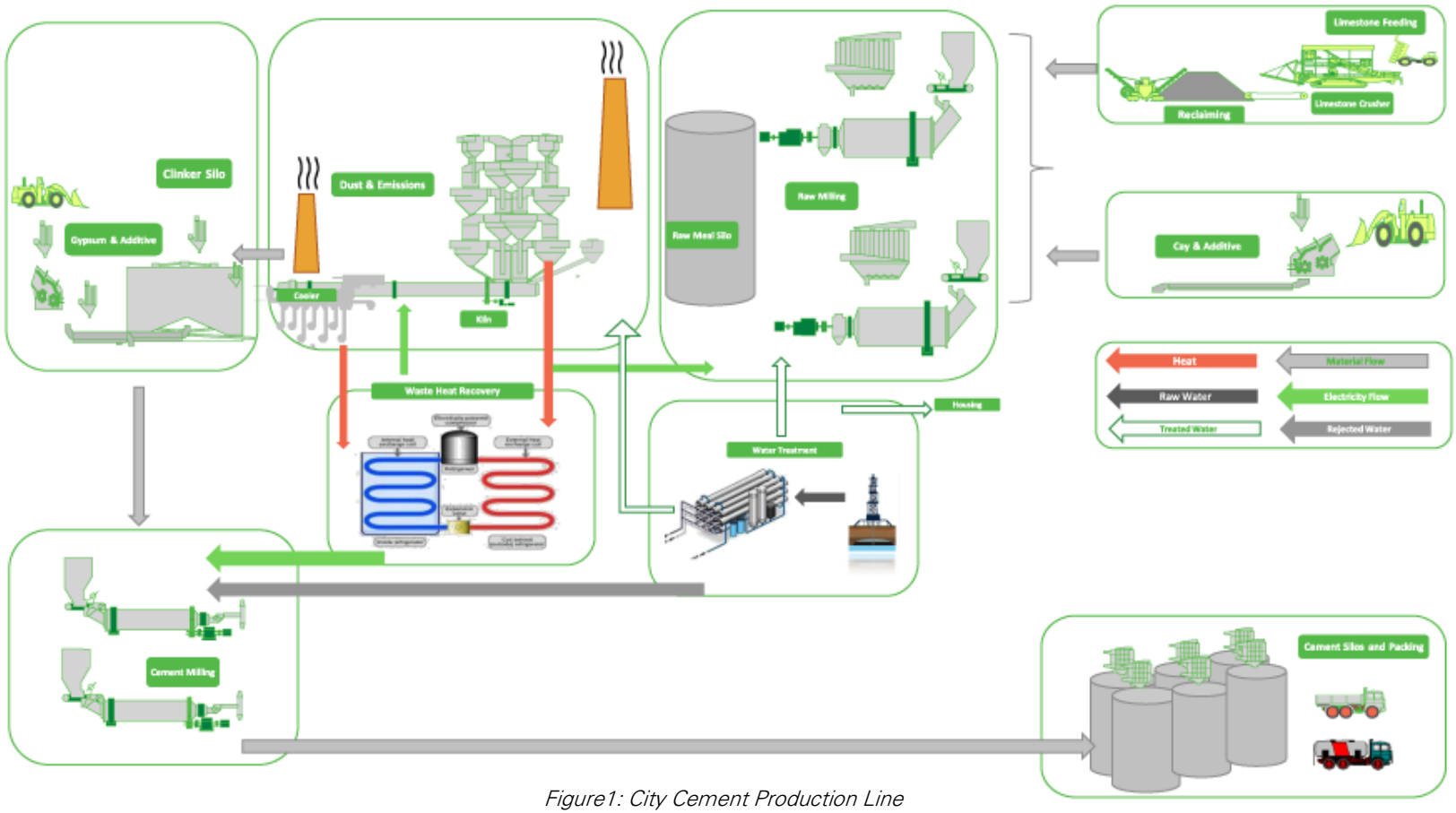


Figure1: City Cement Production Line

PRODUCT USE AND MAINTENANCE (B1-B7)

As cement is an intermediate product, no other lifecycle phases are relevant to cover.
Hence, the use and maintenance have not been studied. So, they are marked as “Modules Not Relevant”.

PRODUCT END OF LIFE (C1-C4, D)

The end-of-life modules (C1-C4, and D) are omitted as the material fulfils the exemption criteria based on EN 15804+A2.

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	from 1/1/2022 to 31/12/2022

DECLARED AND FUNCTIONAL UNIT

Declared unit	1 tonne	**Mass per declared unit**	1000 kg

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.0961

SYSTEM BOUNDARY

According to EN 15804 Section 5.2, this EPD is a type e) Cradle to gate with options (A1–A3 and additional modules A4 and A5).
The omission of other modules met the following conditions:

- the product is physically integrated with other products during installation so it cannot be physically separated from them at the end-of-life,
- it is no longer identifiable at the end-of-life as a result of a physical transformation processes (e.g., mixing with other aggregates and building material components), and
- it does not contain biogenic carbon.

Product stage			**Assembly stage**		**Use stage**							**End of life stage**			**Beyond the system boundaries**			
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Geography, by two-letter ISO country code or regions. The International EPD System only.																		
SA	SA	SA	SA	SA	-	-	-	-	-	-	-	-	-	-	-	-		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./ demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption.

All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per EN 15804, allocation is conducted in the following order.

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

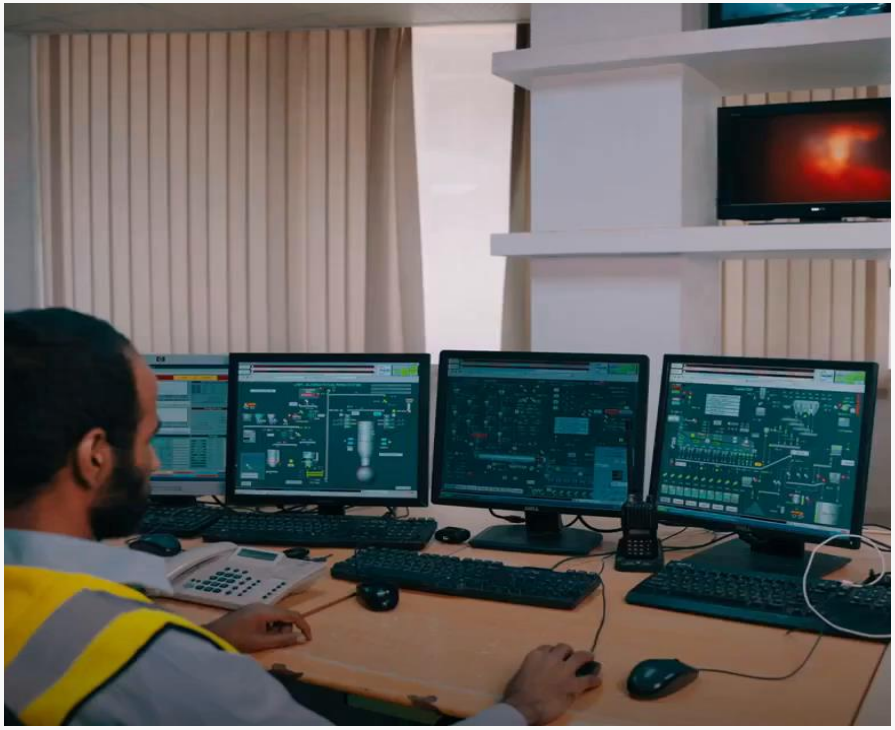
The allocation could not be avoided for raw, ancillary material, energy consumption and waste production as some information was only measured on a factory level and in other cases some unit processes have more than one output flow. The inputs were physically allocated to the studied product based on annual production volume.

Allocation used in Ecoinvent 3.8 environmental data sources follows the methodology ‘allocation, cut-off by classification’. This methodology is in line with the requirements of the EN 15804 -standard.

AVERAGES AND VARIABILITY

The International EPD System additional data requirements
Data specificity and GWP-GHG variability for GWP-GHG for A1-A3.

Supply-chain specific data for GWP-GHG	>90%
Variation in GWP-GHG between products	- %
Variation in GWP-GHG between sites	- %



ENVIRONMENTAL IMPACT DATA

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.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO_2e	8,96E+02	1,88E+01	4,79E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
GWP – fossil	kg CO_2e	8,96E+02	1,88E+01	9,71E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
GWP – biogenic	kg CO_2e	-2,49E-01	7,26E-03	4,69E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
GWP – LULUC	kg CO_2e	9,35E-02	6,92E-03	8,67E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Ozone depletion pot.	kg $CFC\text{-}_{11}e$	7,08E-05	4,32E-06	1,90E-09	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Acidification potential	mol H+e	2,10E+00	7,95E-02	7,92E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP-freshwater	kg Pe	6,56E-04	1,54E-04	1,90E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP-marine	kg Ne	5,37E-01	2,36E-02	3,98E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
EP-terrestrial	mol Ne	5,90E+00	2,61E-01	1,89E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP (“smog”)	kg NMVOCe	1,57E+00	8,34E-02	1,81E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADP-minerals & metals	kg Sbe	1,37E-03	4,40E-05	2,90E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADP-fossil resources	MJ	4,71E+03	2,82E+02	1,55E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Water use	m^3e depr.	1,71E+01	1,26E+00	1,24E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

GWP = Global Warming Potential; **EP** = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; **POCP** = Photochemical ozone formation; **ADP** = Abiotic depletion potential; EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	2,46E+01	3,18E+00	5,37E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Renew. PER as material	MJ	4,60E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Total use of renew. PER	MJ	2,92E+01	3,18E+00	5,37E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-re. PER as energy	MJ	1,97E+03	2,82E+02	1,55E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-re. PER as material	MJ	2,74E+03	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Total use of non-re. PER	MJ	4,71E+03	2,82E+02	1,55E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Secondary materials	kg	3,55E-01	7,83E-02	4,27E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Renew. secondary fuels	MJ	3,74E-02	7,90E-04	1,03E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-ren. secondary fuels	MJ	7,93E+02	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Use of net fresh water	m^3	4,38E-01	3,65E-02	8,59E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,24E+01	3,74E-01	9,46E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Non-hazardous waste	kg	2,41E+01	6,14E+00	2,32E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Radioactive waste	kg	2,87E-02	1,89E-03	4,77E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	Kg	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Materials for recycling	Kg	1,17E-01	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Materials for energy rec	Kg	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG	kg CO_2e	8,96E+02	1,88E+01	9,71E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

ENVIRONMENTAL IMPACTS - EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	8,94E+02	1,86E+01	3,57E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Ozone depletion Pot.	kg $CFC\text{-}_{11}e$	5,59E-05	3,42E-06	1,51E-09	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Acidification	kg SO_2e	1,68E+00	6,17E-02	6,42E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Eutrophication	kg PO_4^3e	2,26E-01	1,41E-02	6,53E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
POCP (“smog”)	kg C_2H_4e	5,35E-02	2,41E-03	7,72E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADP-elements	kg Sbe	2,62E-04	4,26E-05	2,83E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
ADP-fossil	MJ	4,71E+03	2,82E+02	1,55E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Market for electricity, medium voltage (KSA)
Electricity (kg CO_2e / kWh)	1.01

BIBLIOGRAPHY

- ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.
- ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.
- ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.
- Ecoinvent database v3.8 (2021) and One Click LCA database.
- EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.
- Int'l EPD System PCR 2019:14 Construction products, version 1.3.1
- c-PCR-001 Cement and building lime (EN 16908) (2022-05-18)
- EPD International (2021). General Programme Instructions of the international EPD® system. Version 4.0. www.environdec.com.
- Sulphate-Resistant Cement (SRC) LCA background report 17.10.2023

EPD AUTHORS AND CONTRIBUTORS

Manufacturer	City Cement Company
EPD author	Nasser Ayoub and Asmaa El-Maghraby, DCarbon Egypt
EPD verifier	Elisabet Amat, GREENIZE Projects
EPD program operator	EPD MENA, The International EPD System
Background data	This EPD is based on Ecoinvent 3.8 (Allocation, cut-off, EN15804) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator.

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with EN 15804, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The background report (project report) for this EPD

Why does verification transparency matter? Read more online.

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

EPD verification information	Answer
Independent EPD verifier 3rd-party verifier for EPD	Elisabet Amat
EPD verification started on	2023.10.31
EPD verification completed on	2023.12.14
Supply-chain specific data %	>90%
Approver of the EPD verifier	The International EPD System

Author & tool verification	Answer
EPD author	Nasser Ayoub and Asmaa El-Maghraby, DCarbon Egypt
EPD author training completion	2021-10-26

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of:

- the data collected and used in the LCA calculations,
- the way the LCA-based calculations have been carried out,
- the presentation of environmental data in the EPD, and
- other additional environmental information, as present

with respect to the procedural and methodological requirements in ISO 14025:2010 and EN 15804:2012+A2:2019.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Signature

VERIFICATION AND REGISTRATION (INTERNATIONAL EPD SYSTEM)

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)	
PCR	PCR 2019:14 Construction products, version 1.3.1 c-PCR-001 Cement and building lime (EN 16908) (2022-05-18)
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Independent third-party verification of the declaration and data, according to ISO 14025:2006:	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
Third party verifier	Elisabet Amat, GREENIZE Projects
	Approved by: The International EPD® System Technical Committee, supported by the Secretariat
Procedure for follow-up during EPD validity involves third party verifier	☐ yes ☑ no

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