



THE INTERNATIONAL EPD® SYSTEM



THE INTERNATIONAL EPD SYSTEM

# Clinker, OPC

ARABIAN CEMENT  
COMPANY



## EPD ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

[CLINKER, OPC]

From:  
**ARABIAN CEMENT COMPANY**



**ARABIAN CEMENT**  
العربية للأسمنت

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

**Programme operator:** EPD International AB

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



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# GENERAL INFORMATION

## PROGRAMME INFORMATION

<b>Programme:</b>	The International EPD System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	www.environdec.com
<b>E-mail:</b>	info@environdec.com

### Accountabilities for PCR, LCA and independent, third-party verification

#### 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 1.3.2  
c-PCR-001 Cement and Building Lime (EN 16908:2017+A1:2022) 2022-05-18  
UN CPC 3743

PCR review was conducted by:  
The Technical Committee of the International EPD® System.  
A full list of members available on [www.environdec.com](http://www.environdec.com). The review panel may be contacted via [info@environdec.com](mailto:info@environdec.com).

#### Life Cycle Assessment (LCA)

LCA accountability:



#### Third-party verification

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



EPD verification by accredited certification body

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

Third party verification: EUROCERT S.A.



Chlois 89, Athina 144 52, Greece  
email: [info@eurocert.gr](mailto:info@eurocert.gr)  
[www.eurocert.gr](http://www.eurocert.gr)

EUROCERT S.A. is an approved certification body accountable for third-party verification

The certification body is accredited by: Hellenic Accreditation System SA (E.S.Y.D.), Accreditation No. 21

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

Yes  
 No

[Procedure for follow-up the validity of the EPD is at minimum required once a year with the aim of confirming whether the information in the EPD remains valid or if the EPD needs to be updated during its validity period. The follow-up can be organized entirely by the EPD owner or together with the original verifier via an agreement between the two parties. In both approaches, the EPD owner is responsible for the procedure being carried out. If a change that requires an update is identified, the EPD shall be re-verified by a verifier]

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, 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. For further information about comparability, see EN 15804 and ISO 14025.

### ADDITIONAL INFORMATION

Arabian Cement Company hereby declares that all cement products are in compliance with the REACH Regulation (EC) No 1907/2006, concerning the Registration, Evaluation, Authorization and Restriction of Chemicals. Cement does not contain any Substances of Very High Concern (SVHC) currently on the candidate list. REACH SVHC list is not static and is updated frequently thus the company will continue to evaluate, research and review to fulfil the demands of the regulation. More information about cement safety handling is available at the Safety Data Sheet (SDS) is sent to the customers with the product.

The EPD does not give information on release of dangerous substances to soil, water and indoor air because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not available.



# COMPANY INFORMATION

Owner of the EPD: [Arabian Cement Company]  
Contact: [Hazem Mosher]

Arabian Cement Company (ACC) is a fully integrated cement plant and a leading cement producer and seller in Egypt. The company was founded in 1997, and among the leading cement producers in Egypt. An Egyptian company dedicated to serving our customers and spare no effort in implementing the latest technologies for operations.



9001:2015



45001:2018



14001:2015



50001:2018



197-1:2012



197-1:2011

## BUILDING A BETTER WORLD

ACC has been continuously striving to improve energy and environmental performance supported by a strong top management commitment.

Our environmental policy is designed to contribute to building a better world. We operate our facilities in accordance with local laws, standards and regulations, applying state-of-the-art environmental management systems.

At ACC, we are always keen to minimize the use of non-renewable resources whenever possible. We also work on limiting the hazardous outcomes and other wastes of our operations. This could be achieved by using substitute raw materials and alternative fuels as well as disposing of wastes using safe and environment-friendly methods. It is our duty to conduct environmental audits for all facilities periodically.

We have implemented cutting-edge technologies and adopted organizational structures to facilitate the usage of many types of alternative fuels from scratch since 2013, achieving high substitution rates of alternative fuels over standard fuels. We are pioneering in the use of alternative energy in the Egyptian cement industry as the first cement company in Egypt to establish a solar power station inside its plant. In 2019, ACC won the first prize in this year's competition "1st Alternative Fuel Award 2019" from MVW – LECHTENBERG & PARTNER

## Product-related or management system-related certifications:

[ISO 9001:2015 Type Quality Management System, ISO 14001:2015 Environmental Management System, 45001:2018 Occupational Health and Safety Management System -certificates, EMAS-registrations, ISO 50001:2018 Energy Management System, NF mark 197-1:2012 and CE mark 197-1: 2011]

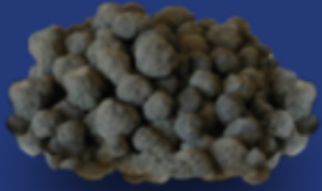
## Name and location of production site(s):

Arabian Cement Company - Ramleya Plant  
KM 94, Kattameya - Ein Sokhna Old Road -Suez



# PRODUCT INFORMATION

PRODUCT DESCRIPTIONS  
OPC CLINKER



## OPC CLINKER

It is the raw material for the production of Portland types of cement, used in different percentages depending on the properties sought for the final product.

In order to produce clinker, you should ground a mixture of  $\text{CaCO}_3$  (limestone),  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$  (clay, marl) and  $\text{Fe}_2\text{O}_3$  (roasted pyrites and rich clays) and provide energy to increase the temperature of the mixture above 1350 degrees, where the tri-calcium silicate ( $3\text{CaO}\cdot\text{SiO}_2$ ) and bi-calcium silicate are formed. Such compounds make the base for the strength of the clinker. Our clinker meets the most stringent standards and fulfills all the requirements of EN197-1 and BS19.



# LCA INFORMATION

## DECLARED UNIT

The declared unit is 1 tn (1.000 kg).

## GOAL AND SCOPE

This EPD evaluates the environmental impacts of the production of 1 ton Clinker, OPC from cradle to gate.

## BACKGROUND DATA

The most recent version of Ecoinvent database (v.3.8) was used as a source of background data.

## SOFTWARE

The software used for the production of the LCA results is GCCA's Industry EPD Tool for Cement and Concrete (v4.2)

## DATA QUALITY

ISO 9001 and ISO 50001 were applied in terms of data collection and quality requirements. The data concerning the modules A3 (product manufacturing) and A2 (transportation) were provided by Arabian Cement Company and involved all input and output materials to the plant, the consumed utilities (energy, water) and the distances and means of transport for each input stream. These data were representative for the full year 2023, The background data for the module A1 e.g. electricity generation, raw materials and fuels production were recovered from Ecoinvent database (v.3.8). Regarding electricity mix, guarantees of origin in combination with the latest (2023) national residual electricity mix as published in EPRD were utilized.

## ALLOCATIONS

Wherever possible allocation was avoided. The production was divided into two sub-processes, clinker and cement, and the related input and output data to each sub-process were collected. In some cases that data were not able to be attributed directly to the specific product production, they were allocated by physical properties (mass).

## ASSUMPTIONS

It is assumed that for the road and sea transportation a lorry 16-32 metric ton, bulk carrier for dry goods were used respectively. CUT-OFF RULES The cut-off rule for insufficient data or data gaps that are less than 1% of the total input mass and less than 5% of energy usage and mass per module was applied only to the grinding aid

## TIME REPRESENTIVENESS

All primary data used in this study is for the entire year 2023.

## GEOGRAPHICAL SCOPE

Worldwide





Indicator	Unit	A1	A2	A3	A1-A3 (Total)
Global Warming Potential, GHG	kg CO <sub>2</sub> eq.	4.60E+01	1.24E+01	9.03E+02	9.61E+02 **
Global Warming Potential, total	kg CO <sub>2</sub> eq.	4.60E+01	1.24E+01	9.03E+02	9.61E+02 *
Global Warming Potential, fossil fuels	kg CO <sub>2</sub> eq.	4.59E+01	1.24E+01	9.03E+02	9.61E+02 *
Global Warming Potential, biogenic	kg CO <sub>2</sub> eq.	2.11E-02	7.17E-03	9.67E-02	1.25E-01 *
Global Warming Potential, land use and land use change	kg CO <sub>2</sub> eq.	1.92E-02	5.50E-03	3.16E-02	5.63E-02
Depletion potential of the stratospheric ozone layer	kg CFC 11 eq.	6.07E-06	2.22E-06	3.76E-06	1.20E-05
Acidification potential, Accumulated Exceedance	mol H <sup>+</sup> eq.	3.28E-01	1.53E-01	2.52E+00	3.00E+00
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	kg P eq.	5.60E-02	1.20E-03	1.66E-02	7.41E-02
Eutrophication potential, fraction of nutrients reaching marine end compartment	kg N eq.	3.50E-03	9.59E-05	1.24E-03	4.84E-03
Eutrophication potential, Accumulated Exceedance	mol N eq.	7.47E-01	2.67E-01	6.11E+00	7.12E+00
Formation potential of tropospheric ozone	kg NMVOC eq.	1.92E-01	8.00E-02	1.42E+00	1.69E+00
Abiotic depletion potential for non- fossil resources ***	kg Sb eq.	7.83E-05	1.65E-05	4.16E-05	1.36E-04
Abiotic depletion potential for fossil resources potential ***	MJ, net calorific value	3.12E+03	1.88E+02	6.23E+02	3.93E+03
Water (user) deprivation potential, deprivation-weighted water consumption ***	m <sup>3</sup> world eq. deprived	7.24E+00	1.39E+00	1.66E+01	2.52E+01

\* The indicated values (gross values) include the greenhouse gas emissions from the incineration of secondary fuels at clinker production.

\*\* The indicated values (gross values) include the greenhouse gas emissions from the incineration of secondary fuels at clinker production.

\*\*\* The results of the environmental impact indicators ADPE, ADPF and WDP shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

### Parameters Describing Resource Use

Indicator	Unit	A1	A2	A3	A1-A3 (Total)
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value	2.25E+01	5.25E+00	7.35E+01	1.01E+02
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ, net calorific value	2.25E+01	5.25E+00	7.35E+01	1.01E+02
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	3.12E+03	1.88E+02	6.23E+02	3.93E+03
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ, net calorific value	3.12E+03	1.88E+02	6.23E+02	3.93E+03
Use of secondary materials	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ, net calorific value	2.40E+02	0.00E+00	0.00E+00	2.40E+02
Use of non-renewable secondary fuels	MJ, net calorific value	2.98E+02	0.00E+00	0.00E+00	2.98E+02
Net use of fresh water	m <sup>3</sup>	1.88E-01	4.25E-02	4.04E-01	6.34E-01

### Other Environmental Information Describing Waste Categories

Indicator	Unit	A1	A2	A3	A1-A3 (Total)
Hazardous waste disposed	kg	0.00E+00	0.00E+00	6.32E-04	6.32E-04
Non-hazardous waste disposed	kg	0.00E+00	0.00E+00	5.46E-02	5.46E-02
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00

### Environmental information describing output flows

Indicator	Unit	A1	A2	A3	A1-A3 (Total)
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	1.17E-01	1.17E-01
Materials for energy recovery	kg	0.00E+00	0.00E+00	1.48E-02	1.48E-02
Exported energy	MJ per energy carrier	0.00E+00	0.00E+00	0.00E+00	0.00E+00

### Extra Indicators

Indicator	Unit	A1	A2	A3	A1-A3 (Total)
Emissions from calcination and removals from carbonation	kg CO <sub>2</sub> eq.	0.00E+00	0.00E+00	5.55E+02	5.55E+02
Emissions from combustion of secondary fuels from renewable sources used in production processes	kg CO <sub>2</sub> eq.	0.00E+00	0.00E+00	1.03E-01	1.03E-01
Emissions from combustion of secondary fuels from non-renewable sources used in production processes	kg CO <sub>2</sub> eq.	0.00E+00	0.00E+00	1.63E+01	1.63E+01
Removals and emissions associated with biogenic carbon content of the bio-based product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Removals and emissions associated with biogenic carbon content of the bio-based packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ACC is utilizing its electrical consumption 97% from National Grid and 3% from its Solar Power Plant considering the national grid emission factor for the grid electricity.

	GWP-GHG	Units
A1-A3   Manufacturing	9.26E+02	kg CO <sub>2</sub> eq.
Electricity, purchased from the grid	4.79E+01	kg CO <sub>2</sub> eq.
Electricity, produced on-site	1.76E-01	kg CO <sub>2</sub> eq.

GWP-GHG intensity of electricity: 7.5E-1 kg CO<sub>2</sub> eq./kWh

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





# REFERENCES

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- GPI V.4.0:2021-03-29 GENERAL PROGRAMME INSTRUCTIONS OF THE INTERNATIONAL EPD® SYSTEM
- PCR 2019:14 V.1.3.2 PRODUCT CATEGORY RULES | CONSTRUCTION PRODUCTS | THE INTERNATIONAL EPD® SYSTEM 2023-12-08
- EN 15804:2012+A2:2019/AC:2021 SUSTAINABILITY OF CONSTRUCTION WORKS - ENVIRONMENTAL PRODUCT DECLARATIONS - CORE RULES FOR THE PRODUCT CATEGORY OF CONSTRUCTION PRODUCTS
- C-PCR-001 CEMENT AND BUILDING LIME (EN 16908:2017) | THE INTERNATIONAL EPD® SYSTEM
- EN 16908:2017+A1:2022 CEMENT AND BUILDING LIME - ENVIRONMENTAL PRODUCT DECLARATIONS - PRODUCT
- CATEGORY RULES COMPLEMENTARY TO EN 15804
- EN 197-1:2011 COMPOSITION, SPECIFICATIONS AND CONFORMITY CRITERIA
- ISO 14020:2000 ENVIRONMENTAL LABELS AND DECLARATIONS - GENERAL PRINCIPLES
- ISO 14025:2006 ENVIRONMENTAL LABELS AND DECLARATIONS - TYPE III ENVIRONMENTAL DECLARATIONS - PRINCIPLES AND PROCEDURES
- ISO 14040:2006 ENVIRONMENTAL MANAGEMENT - LIFE CYCLE ASSESSMENT - PRINCIPLES AND FRAMEWORK
- ISO 14044:2006 ENVIRONMENTAL MANAGEMENT - LIFE CYCLE ASSESSMENT - REQUIREMENTS AND GUIDELINES
- ECOINVENT CENTRE | [WWW.ECO-INVENT.ORG](http://WWW.ECO-INVENT.ORG)
- GCCA'S INDUSTRY EPD TOOL FOR CEMENT AND CONCRETE (V4.2)