Environmental Product Declaration

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

Dry ground calcium carbonate (GCC-Dry) Fine - Sector EPD

from

Calcium Carbonate Association – Europe (CCA - Europe), Brussels

Programme:	The International EPD® System, www.environdec.com
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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

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
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CEN standard EN 15804 +A2 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): CONSTRUCTION PRODUCTS *PCR 2019:14, Version 1.11, 2021-02-05*
PCR review was conducted by: The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com. Chair of the PCR review: Claudia A. Peña. The review panel may be contacted via info@environdec.com.
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
External independent verifier: Håkan Stripple at IVL Swedish Environmental Research Institute e-mail: hakan.stripple@ivl.se In case of recognised individual verifiers: Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No

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

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:

AISBL Calcium Carbonate Association – Europe (CCA - Europe), Company VAT Number: BE0456204262, Rue des Deux Eglises 26 box 2, B – 1000 Brussels, Belgium. Contact person: Aurela Shtiza secretariat@ima-europe.eu

Description of the organisation:

The European calcium carbonate and dolomite producers established their own representation at EU level through CCA-Europe, a founding member of the Industrial Minerals Association Europe (IMA-Europe). CCA-Europe is a non-profit association, which ensures member companies cooperation on scientific and legislative issues of common interest related to the mineral calcium carbonate and dolomite. As a member of IMA-Europe, the CCA-Europe members benefit from a wide representation and strong voice at EU level and synergy on issues common to the industrial minerals sector as a whole. CCA-Europe membership comprises 25 companies of which 13 is direct memberships and 3 is through national associations.

Name and location of production site(s):

25 companies (13 direct membership & 3 through national associations) in European Union (EU) plus UK, Norway, and Turkey. Regional coverage: EU + EFTA, Market coverage: >85 % of the GCC volume placed on the EU & EFTA market.

Product information

Product name:

Dry ground calcium carbonate (GCC-Dry) Fine

Name	Purity	Particle size d_{50}	Form of delivery
GCC-Dry fine	Typically >98 % $CaCO_3$	5 - 25 µm	Dry

Product description:

Calcium carbonate is an natural mineral. The formula is $CaCO_3$ and covers a raw material, which is widespread throughout nature. However, although the deposits are plentiful, only a few are of sufficiently high quality to be worked and even a fewer number of deposits will provide raw materials for industrial and agricultural use other than the construction and roads building industry. Only if the purity, degree of whiteness, thickness and homogeneity are acceptable, commercial extraction can be worthwhile. After quarrying, further treatment is required to process natural calcium carbonates of the highest quality, known generically as Ground Calcium Carbonate (GCC) into final products.

Main applications of calcium carbonate covered by the EPD:
Construction/Architecture, Mortars, and Soil Stabilization.

UN CPC code: 1633 Chalk and dolomite, 16330 Chalk and dolomite, 15320 Pebbles, gravel, broken or crushed stone, macadam; granules, chippings and powder of stone.

LCA information

Functional unit / declared unit:
Declared unit used in the LCA study for each of the three products is 1 metric tonne (1 000 kg) of product.

Time representativeness:
Reference year for the CCA LCI study for GCC-Dry is 2020.

Database(s) and LCA software used:
For life cycle modeling of the considered products, the GaBi ts Software System for Life Cycle Engineering CUP2020.2, developed by Sphera, is used /GaBi ts /. The GaBi database contains consistent and documented datasets, which are documented in the online GaBi documentation http://www.gabi-software.com/support/gabi/gabi-database-2020-lci-documentation/. To ensure comparability of the results from the LCA, only the latest data from the GaBi database were used.

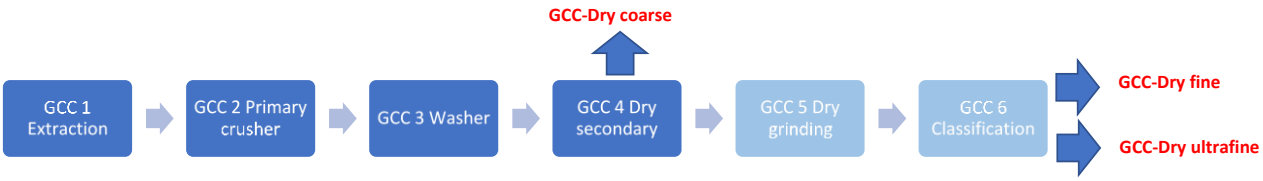
Description of system boundaries: Cradle to factory gate (A1–A3) as in the table below.

The EPD is of this type because the following three conditions are valid according to the PCR:

1. the product or material is physically integrated with other products during installation so they cannot be physically separated from them at end of life, and
2. the product or material is no longer identifiable at end of life as a result of a physical or chemical transformation process, and
3. the product or material does not contain biogenic carbon.

The product stage (module A1-A3) begins with the consideration of the production of all required raw materials including all upstream chains. All necessary transports for raw materials and ancillaries are considered in the LCA. The assessment also includes all manufacturing steps (energy carriers, emissions, water consumption, wastes, etc.) to produce the product ready for delivery at the plant gate.

System diagram of the production process:



More information:
LCA practitioner: Sphera Solutions GmbH, www.sphera.com

Additional information:
The electricity mix was modelled by using information/data from CCA and International Energy Agency (IEA) with the following shares: EU-28 90 %, Norway 2 %, and Turkey 8 %. The electricity used in the manufacturing process has 0.408 kg CO_2 eq./kWh according to IPCC AR5 GWP100 indicator.

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	**X**	**X**	**X**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geography	EU-28, NOR, TUR			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specific data used	>90 % for A1-A3			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	<10 % for A1-A3			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Geographical scopes: Europe, Norway and Turkey

Content information

The product properties are listed in the following table:

Name	Purity	Particle size d_{50}	Form of delivery
GCC-Dry fine	Typically >98 % $CaCO_3$	5 - 25 µm	Dry

Environmental Information

Impact assessment results are therefore relative statements and do not make any predictions about effects on impact endpoints, exceeding of thresholds, safety margins or risks.

Potential environmental impacts – mandatory indicators according to EN 15804

Results per functional or declared unit (per 1 metric tonne product)		
Indicator	**Unit**	**A1-A3**
		GCC-Dry fine
GWP-fossil	kg CO_2 eq.	4.39E+01
GWP-biogenic	kg CO_2 eq.	9.65E-02
GWP-luluc	kg CO_2 eq.	9.41E-02
GWP-total	kg CO_2 eq.	4.41E+01
ODP	kg CFC 11 eq.	6.04E-13
AP	mol H^+ eq.	1.84E-01
EP-freshwater	kg P eq.	9.87E-05
EP-marine	kg N eq.	5.56E-02
EP-terrestrial	mol N eq.	6.06E-01
POCP	kg NMVOC eq.	1.62E-01
ADP-minerals&metals*	kg Sb eq.	8.99E-06
ADP-fossil*	MJ	7.33E+02
WDP	m^3	8.65E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption	

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Potential environmental impacts – additional mandatory and voluntary indicators

Results per functional or declared unit (per 1 metric tonne product)		
Indicator	**Unit**	**A1-A3**
		GCC-Dry fine
GWP-GHG[1]	kg CO_2 eq.	4.33E+01

Use of resources

Results per functional or declared unit (per 1 metric tonne product)		
Indicator	**Unit**	**A1-A3**
		GCC-Dry fine
PERE	MJ	2.37E+02
PERM	MJ	0.00E+00
PERT	MJ	2.37E+02
PENRE	MJ	7.33E+02
PENRM	MJ.	0.00E+00
PENRT	MJ	7.33E+02
SM	kg	0.00E+00
RSF	MJ	0.00E+00
NRSF	MJ	0.00E+00
FW	m^3	3.10E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = 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 = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water	

[1] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Waste production and output flows

Waste production

Results per functional or declared unit (per 1 metric tonne product)		
Indicator	**Unit**	**A1-A3**
		GCC-Dry fine
Hazardous waste disposed	kg	7.23E-05
Non-hazardous waste disposed	kg	3.95E-01
Radioactive waste disposed*	kg	7.24E-02

*Radioactive waste due to nuclear electricity generation only, not caused directly by product production.

Output flows

Results per functional or declared unit (per 1 metric tonne product)		
Indicator	**Unit**	**A1-A3**
		GCC-Dry fine
Components for re-use	kg	0.00E+00
Material for recycling	kg	0.00E+00
Materials for energy recovery	kg	0.00E+00
Exported energy, electricity	MJ	0.00E+00
Exported energy, thermal	MJ	0.00E+00

Information on biogenic carbon content

Results per functional or declared unit (per 1 metric tonne product)		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	n/a

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

Information related to Sector EPD

The Sector EPD covers the production of GCC-Dry produced by the members of CCA-Europe and placed on the EU + EFTA Market. CCA-Europe membership comprises 25 companies, of which 13 direct memberships and 3 through national associations, in EU Europe, UK + Turkey + Norway. The market coverage is more than 85 % of the GCC volume placed on the EU and EFTA market.

The data providers/production sites have been chosen by the technical committee of CCA as representative for the reference year 2020, the declared products, and the respective GCC-Dry production. The average calculation was done according to the weighted production share of the data providing plants.

This EPD covers average values for the production of GCC-Dry with a representativeness of 85 % and, hence, the declared products are an average that is representative for the geographical area.

References

General Programme Instructions of the International EPD® System. Version 4.0. 2021-03-29
PCR 2019:14. Construction products. Version 1.11 2021-02-05

GaBi ts dataset documentation for the software-system and databases, LBP, University of Stuttgart and Sphera, Leinfelden-Echterdingen, 2020 (http://documentation.gabi-software.com/)

International Energy Agency (IEA), https://www.iea.org/, Data and statistics: Energy mixes 2020.

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