Environmental Product Declaration

Under PCR 2019:14 Construction products (EN 15804:A2); Version 1.3.4; 2024-04-30
and c-PCR-001 Cement and Building Lime (EN 16908:2019); 2024-04-30
PRODUCT GROUP CLASSIFICATION: UN CPC 3744
in accordance with ISO14025:2006 and 15804:2012+A2:2019/AC:2021 for:

ECOPlanet CEM V/A (Q-S) 42.5 N

Manufactured in Sagunto, Spain

Program:	The International EPD® System www.environdec.com
Program operator:	EPD International AB
EPD registration number:	EPD-IES-0016476:001
Issue date:	2024-12-03
Validity date:	2029-12-02 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.
Geographical scope:	Europe

PRESENTATION

This declaration contains the environmental performance of the production of cement **ECOPlanet CEM V/A (Q-S) 42.5 N** manufactured by **Holcim España, S.A.U.** in Spain, in the plant located in Sagunto, Valencia.

This EPD has been conducted according to the International EPD System regulation. This regulation is a system for the international use of Type III Environmental Declarations, according to ISO 14025:2006. Not only the system but also its applications are described in the General Programme Instructions (GPI 4). The report has been made following the specifications given in the CEN standard EN 15804:2012+A2:2019/AC:2021 and the Product Category Rule c-PCR-001 Cement and Building Lime EN16908:2019; 2024-04-30.

The assessed life cycle includes all the stages needed to manufacture the product and have it ready for the customer at the exit gate of the factory.

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

EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

GENERAL INFORMATION

Programme-related information and 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 (EN 15804:A2); Version 1.3.4; 2024-04-30 and c-PCR-001 Cement and Building Lime (EN 16908:2019); 2024-04-30
PCR review conducted by:
The Technical Committee of the International EPD® System. See https://www.environdec.com/ for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat https://www.environdec.com/contact

Verification
External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification through an individual EPD verification ☐ EPD verification through an EPD Process Certification* ☐ EPD verification through a pre-verified LCA/EPD tool
Third party verifier:
Marcel Gómez, Marcel Gómez Consultoría Ambiental S.L. – info@marcelgomez.com Approved by: The International EPD System
*EPD Process Certification involves an accredited certification body certifying and periodically auditing the EPD process and conducting external and independent verification of EPDs that are regularly published. More information can be found in the General Programme Instructions on www.envrondec.com. International EPD System
Procedure for follow-up of data during EPD validity involves third-party verifier: ☐ Yes ☒ No

EPD-related information

The owner of this EPD, **Holcim España, S.A.U.** has the sole ownership, liability, and responsibility on this EDP.

EPD owner

HOLCIM ESPAÑA S.A.U

Avda. de Manoteras, 20, Edificio Tokyo, 1ª planta – 28050 – Madrid – Spain
marketing.spain@Holcim.com
+34 91 213 31 00

Commissioned LCA practitioner:

SOLID FOREST S.L – C/ Circe 49A – 28022 – Madrid – Spain
info@solidforest.com

EPD version

This is the first version of the EPD

Sectorial EPD

This is not a sectorial EPD

EPD Comparability

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. Environmental declarations published within the same product category, though originating from different programs, 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 PCR or fully aligned PCR versions; cover products with identical functions, technical performance and use (e.g. identical declared/functional units); have equivalent system limits and data descriptions; apply equivalent data quality requirements, data collection methods, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content statements; and be valid at the time of comparison. For more information on comparability, see EN 15804 and ISO 14025.

COMPANY INFORMATION

Product Provider

Holcim España, S.A.U.

Avda. de Manoteras, 20

28050 Madrid

España

Holcim España owns five cement factories in Spain, with an installed capacity of more than seven million tons per year, more than 20 concrete plants, two mortar plants, six terminals and one waste recovery plant, employing more than 700 people.

Holcim España has a Research and Development Center for New Concretes and Mortars, where products are designed to meet the specific needs of customers. It also has a Central Quality Laboratory with an exclusive area dedicated to the analysis of alternative fuels.

Holcim España is part of **Holcim**, a world leader in innovative and sustainable construction solutions. **Holcim** is enabling the development of greener cities, smarter infrastructure and improving living standards around the world. With sustainability at the heart of its strategy, **Holcim** is creating the path to becoming a net-zero company, with its people and communities at the heart of its success. The company is driving the circular economy as a global leader in recycling to build more with less[1].

Holcim España sustainable practices

Sustainability is at the heart of our strategy. **Holcim España** will continue to be at the forefront of sustainable construction solutions. On our journey to net zero, we are **decarbonizing our business end-to-end**, from our operations and products to the built environment.

Decarbonizing our operations: Through our **Geocycle** business we recycle materials at the end of their life cycle as a source of alternative fuels.

Decarbonizing our products: We offer the widest range of sustainable solutions, enabling low-carbon production at scale.

[1] Holcim Climate Report 2023

Decarbonizing our built environment: Working towards a built environment with zero net emissions, we play an essential role in the entire construction lifecycle[2].

We care about nature: we work to generate a measurable and positive impact on water and biodiversity, protecting and recovering the natural resources that surround us[3].

From our **ECOPlanet low CO2 cement** to our **ECOPact low CO2 concrete**, we offer the world's first global range of low-carbon building materials. With the industry's broadest formulation expertise, we tailor our solutions to local needs by enabling low-carbon construction at scale.

Product-related or management system-related certifications

Holcim España has an integrated management system certified according to ISO 9001:2015 "Quality Management" and ISO 14001:2015 "Environmental Management" standards.

The Greenhouse Gases Emissions Inventory of **Holcim España** is verified every year according to the requirements of the ISO 14064-1:2018 "Green House Gases" standard and is included in the Carbon Footprint National Registry of the *Ministerio para la Transición Ecológica y el Reto Demográfico* of Spain, obtaining the labels "*Calculo*", for calculated carbon footprint and "*Reduzco*" for achieving a substantial GHG emissions reduction in the last four years.

[2] Holcim Net-Zero Journey
[3] Holcim Nature Policy

PRODUCT INFORMATION

Product Identification

The system analyzed in this Declaration comprises the life cycle of the production of the cement ECOPlanet CEM V/A (Q-S) 42.5 N (CPC 3744: "Portland cement, aluminous cement, slag cement and similar hydraulic cements, except in the form of clinkers ") manufactured by **Holcim España** in Spain, in the factory located in Sagunto, Valencia.

Information about the product

The Declared Unit of this LCA is **one ton (1 000 kg) of product** ready to be sent to the customer. The product included in this declaration is ECOPlanet CEM V/A (Q-S) 42.5 N from Sagunto factory. All environmental impacts and use of resources, both direct and indirect, are reported to this unit.

The results of environmental impacts by declared unit are declared as an average, weighted according to the total production of each factory.

This assessment has been done using the production data of 2023.

Composition

COMPONENT	Weight, kg*	Post-consumer recycled material, weight%	Biogenic material, kg C/D.U.
Clinker	444	1.85%	0.00
Blast furnace slag	270	100%	0.00
Natural calcined pozzolana	222	0%	0.00
Natural gypsum	35	0%	0.00
Minor constituents	29	100%	0.00
TOTAL	**1000**	**31%**	**0.00**

*Including main components and additional constituents

This product is marketed in bulk, so there are no packaging materials.

Technical characteristics according to UNE-EN 197-1

Mechanical and physical properties	Amount	Unit
Compressive strength 2 days	≥ 10.0	MPa
Compressive strength 28 days	≥ 42.5 and ≤ 62.5	MPa
Initial setting time	≥ 60	min
Soundness	≤ 10	mm

During the life cycle of the product any hazardous substance listed in the "Candidate List of Substances of Very High Concern (SVHC) for authorization" has not been used in a percentage higher than 0,1% of the weight of the product.

LCA INFORMATION

Declared Unit

This EPD represents the environmental impacts of one ton (1 000 kg) of **ECOPlanet CEM V/A (Q-S) 42.5 N** manufactured by **Holcim España** in Sagunto, marketed in bulk, ready to send to customers.

A **reference service life** is not relevant due to this cradle-to-gate boundary conditions.

System boundaries

This EPD covers all product stages from "cradle to gate" (modules A1-A3), since the product fulfils all the conditions required by EN 15804:2012+A2:2019/AC:2021 regarding the exclusion of modules B1 to D:

1. The product is physically integrated with other products during installation so they cannot be physically separated at the end of life.
2. The product is no longer identified at the end of life as a result of a physical-chemical transformation process.
3. The product does not contain biogenic carbon.

This means that all processes up to the output gate of the manufacturer are included, from quarry works and components manufacturing, to transports of materials and fuels, factory process and final preparation. All direct and indirect environmental impacts have been calculated and are reported in this document.

Holcim España has a complete control over all the processes within the factory and the quarry of main raw materials.

The LCI includes, in accordance with EN 15804, a minimum of 95% of the total input flows (mass and energy) per module (e.g. A1-A3). In addition, the PCR applies the expanded cut-off rule of the ISO 21930 standard, which establishes at least 95% of the environmental impact per module.

The only processes that are not controlled directly by the company are the production of main fuels, electricity, some additions, the transport of the raw materials, and minor inputs excluded according to the cut-off rules.

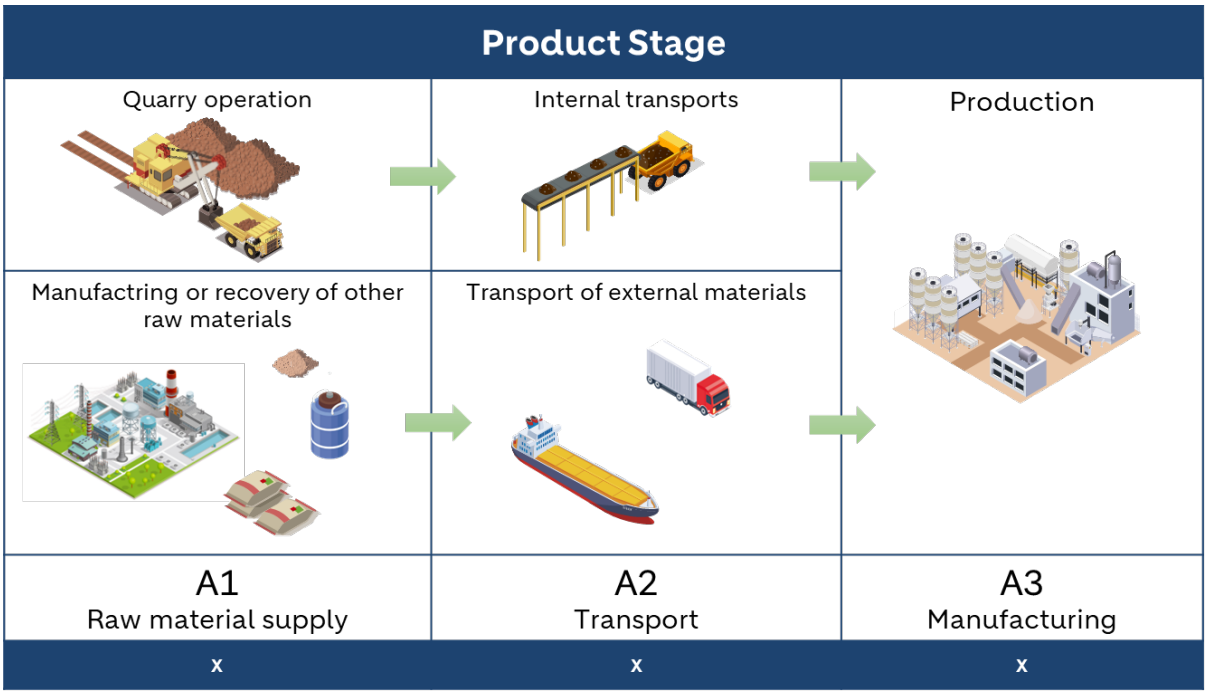
According to the PCR, the following elements or processes have also been excluded:

- Manufacture of the equipment used in the production, buildings, or any other capital goods.
- Transport of people to the manufacturing plants.
- Transport of people inside the manufacturing plants.
- R+D activities.
- Long-term emissions.

To model the impacts of the electricity used in the plant, the mix of the electricity company, using 100% of renewable sources, has been used. This electricity mix has a Climate Change impact of 0.079 kg CO2e/kWh (GWP100-GHG).

A simplified model of the process of cement manufacturing is described in the following diagrams, enumerating the main activities included in the system boundaries. The process and installations are also linked to the phases of the product life cycle (A1-A3).

	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	GLO	GLO	ES	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specific data used	>95% GWP			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variations - products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variations - sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-



In the A1 module the components and materials are extracted in a quarry or manufactured in a third-party location (ie. manufacture of fuels). Raw materials that are not produced in the plant are transported to the plant by ship and truck (A2 module). In the manufacturing stage (A3), the

components of the clinker are heated and once the clinker is produced it is mixed with the additions and grinded to produce the final cement.

This declaration is referred to the product marketed in bulk.

The scenarios included are currently in use and are representative for one of the most probable alternatives.

Technical Information

Calculation Methodology

This EPD represents Type III Environmental Declarations according to ISO 14025:2006. The inherent Life Cycle Assessment (LCA) has been developed according to ISO 14040 and ISO 14044 International Standards, and following the International EPD System General Programme Instruction (GPI 4), the PCR 2019:14 Construction products (EN 15804:A2); Version 1.3.4; 2024-04-30 and c-PCR-001 Cement and Building Lime (EN 16908:2019) 2024-04-30.

Version 3.17 of software Air.e LCA™ with Ecoinvent™ 3.10 (system model Allocation, cut-off, EN15804) database has been used for LCA modelling and impacts calculations.

The following impacts and units have been used, calculated according to the models in EF 3.1:

Impact	Unit
Global Warming Potential (GWP Total)	kg of CO_2 equivalent
Global Warming Potential (GWP Fossil)	kg of CO_2 equivalent
Global Warming Potential (GWP Biogenic)	kg of CO_2 equivalent
Global Warming Potential (GWP LULUC)	kg of CO_2 equivalent
Ozone depletion	kg of CFC11 equivalent
Acidification	mol of H+ equivalent
Eutrophication fresh water	kg of P equivalent
Eutrophication marine water	kg of N equivalent
Eutrophication terrestrial	mol of N equivalent
Photochemical ozone creation	kg of NMVOC equivalent
Depletion of abiotic resources (elements)*	kg of Sb equivalent
Depletion of abiotic resources (fossil fuels)*	MJ net calorific value
Water scarcity*	m^3 world equivalent

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

All processes related to the product have been included in the assessment.

According to EN 15804:2012+A2:2019/AC:2021 and EN 16908:2017, some components with less than 1% impact or use of co-products with no significant economic value have been excluded from the assessment.

All transportation and components have been included in this LCA, considering real loads and distances traveled by the materials used between January 2023 and December 2023. The main means of transportation have been included for the purchase of fuel and external raw materials. Operations in the port have been excluded.

The distances by road and sea have been mainly provided by each factory according to their own records.

Assignments have been avoided where possible. Allocation was only used for verified direct emissions of the furnace, where the clinker produced can subsequently be used to produce different cements.

Cut-off rules: more than 95% of the total input flows (mass and energy) per module (e.g. A1-A3) have been included. In addition, the PCR applies the expanded cut-off rule of the ISO 21930 standard, which establishes at least 95% of the environmental impact per module.

The recycled components are considered from the selection and processing plant of the recovered materials.

The Polluter Payer Principle and the Modularity Principle had been followed.

Emission Factors and Tools

The emission factors and environmental impacts of the elements in the life cycles that are not controlled by **Holcim España**, or direct emissions that has not measured or calculated, come from Ecoinvent database, version 3.10, using the cut-off EN 15804 criteria of that database.

The LCA has been developed using the software Air.e LCA v3.17.

Data quality

According to the environmental footprint product category rules quality data criteria, and considering that the data used for the processes is representative of the geography scope declared, that there was no need to significantly modify technical aspects and that the data is from the last complete year, and considering that the direct emissions of the manufacturing plant are third-party verified and included in the PRTR (Spanish National Emissions and Contaminant Sources Registry) and specifically the GHG emissions are included in the EU Emissions Trade System, the data quality is considered as **high**.

ENVIRONMENTAL PERFORMANCE

The following tables present the results of totalized potential environmental impacts and for each stage of the life cycle of "**one ton (1 000 kg) of ECOPlanet CEM V/A (Q-S) 42.5 N manufactured by Holcim España in Sagunto, marketed in bulk, ready to send to customers**". The estimated impact results are only relative statements that do not indicate the end points of the impact categories, exceeding threshold values, safety margins, or risks.

Potential Environmental Impact

		A1	A2	A3	Total
Global Warming Potential (GWP100) (kg of CO2 equivalent)	Total	6.15	34.24	340.46	**380.85***
	Fossil	22.66	34.22	323.65	**380.53****
	Biogenic	-16.51	0.00	16.59	**0.07*****
	LULUC	0.01	0.02	0.22	**0.25**
Ozone depletion (kg of CFC11 equivalent)		$1.68e^{-06}$	$5.85e^{-07}$	$1.06e^{-07}$	**$2.37e^{-06}$**
Acidification (mol of H+ equivalent)		0.13	0.54	0.61	**1.29**
Eutrophication fresh water (kg of P equivalent)		$1.73e^{-03}$	$1.77e^{-03}$	$1.83e^{-03}$	**$5.32e^{-03}$**
Eutrophication marine water (kg of N equivalent)		$2.90e^{-02}$	$1.26e^{-01}$	$3.11e^{-01}$	**$4.66e^{-01}$**
Eutrophication terrestrial (mol of N equivalent)		0.35	1.39	3.44	**5.19**
Photochemical ozone creation (kg of NMVOC equivalent)		0.22	0.42	0.85	**1.49**
Depletion of abiotic resources (elements) (kg of Sb equivalent)		$7.40e^{-05}$	$6.39e^{-05}$	$2.26e^{-04}$	**$3.64e^{-04}$**
Depletion of abiotic resources (fossil fuels) (MJ net calorific value)		1163.37	484.43	90.50	**1738.30**
Water depletion (m3 world equivalent)		4.88	2.17	5.22	**12.26**

*Net Emissions. Gross Emissions (including secondary fuels) = 417.08 kg CO_2e

**Net Emissions. Gross Emissions (including secondary fuels) = 416.76 kg CO_2e

*** The negative value in A1 corresponds to that absorbed by biogenic fuels during formation. This absorbed CO_2 is released mainly in the form of CO_2 and to a lesser extent in CH_4 in A3.

Use of resources

MJ, net calorific value	A1	A2	A3	TOTAL
PERE: Use of RENEWABLE primary energy excluding renewable primary energy resources used as raw materials	6.07	5.62	166.19	177.88
PERM: Use of RENEWABLE primary energy resources used as raw materials	0.00	0.00	0.00	0.00
PERT: Total use of RENEWABLE primary energy resources (primary energy and primary energy resources used as raw materials)	6.07	5.62	166.19	177.88

MJ, net calorific value	A1	A2	A3	TOTAL
PENRE: Use of NON-RENEWABLE primary energy excluding non-renewable primary energy resources used as raw materials	399.15	459.42	349.10	1207.66
PENRM: Use of NON-RENEWABLE primary energy resources used as raw materials	0.00	0.00	0.00	0.00
PENRT: Total use of NON-RENEWABLE primary energy resources (primary energy and primary energy resources used as raw materials)	399.15	459.42	349.10	1207.66

t	A1	A2	A3	TOTAL
SM: Use of secondary material	0.31	0.00	0.00	0.31

MJ	A1	A2	A3	TOTAL
RSF: Use of renewable secondary fuels	0.00	0.00	167.94	167.94
NRSF: Use of non-renewable secondary fuels	0.00	0.00	1243.61	1243.61

m^3	A1	A2	A3	TOTAL
Use of net fresh water	0.12	0.05	0.13	0.30

Additional environmental information

Additional mandatory environmental impacts

Results per declared unit		
Indicator	Unit	Total A1-A3
GWP-GHG*	kg CO_2 eq.	417.01

* 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. Gross emissions (including secondary fuels).

Waste production

Results per declared unit		
Indicator	Unit	Total A1-A3
Hazardous waste disposed	kg	0.01
Non-hazardous waste disposed	kg	0.38
Radioactive waste disposed	kg	9.06E-04

Output flows

Results per declared unit		
Indicator	Unit	Total A1-A3
Components for re-use (CRU)	kg	0.00
Materials for recycling (MFR)	kg	0.05
Materials for energy recovery (MER)	kg	0.33
Exported electrical energy (EEE)	MJ	0.34
Exported thermal energy (ETE)	MJ	1.21

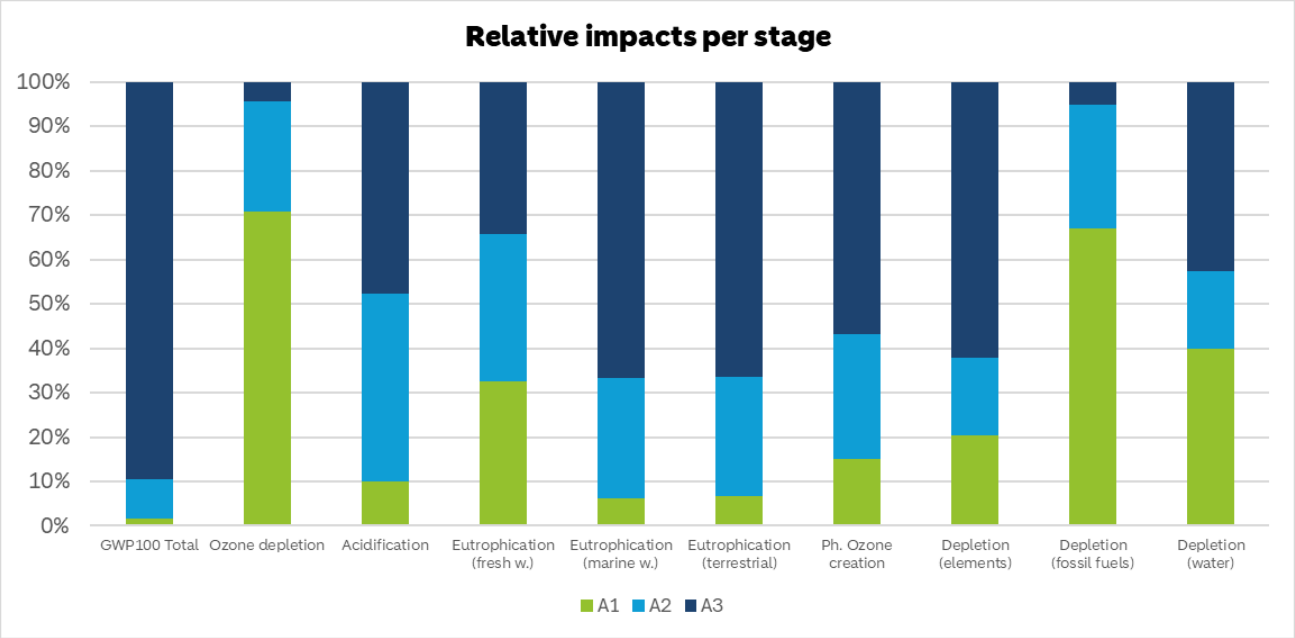
Information on biogenic carbon content

Results per declared unit		
Indicator	Unit	Total A1-A3
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	0

Interpretation

As shown in the following chart. most of the environmental impacts occur during the manufacturing stage (A3). This is due to the energy required in the furnace and the chemical processes occurring in it (mainly decarbonation of limestone).

Thanks to the use of alternative materials and fuels and to the high efficiency of the furnace. the emissions usually linked to the traditional processes can be reduced significantly. mainly those related to the direct GHG emissions in the manufacturing of Portland clinker.



The impacts where the raw materials stage (A1) is more relevant are those related to the extraction of fuels: depletion of abiotic resources (fossil fuels) and ozone depletion. Those impacts are not relevant in the A3 stage because no CFCs are present during the manufacturing process and the extraction of fossil fuels is accounted in the A1 stage.

REFERENCES

This declaration has been developed according to the General Programme Instructions of the International EPD® System. Version 4.

PCR 2019:14 Construction products (EN 15804:A2); Version 1.3.4; 2024-04-30

European standard 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 16908:2019) 2024-04-130.

ISO 14040:2006 Environmental management - Life Cycle Assessment - Principles and framework.

ISO 14044:2006 Environmental management - Life Cycle Assessment - Requirements and guidelines.

ISO 14020:2000 Environmental statements and programmes for products — Principles and general requirements

ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures

Registro Estatal de Emisiones y Fuentes Contaminantes (prtr-es.es).

Holcim Climate Report 2023 (https://www.holcim.com/sites/holcim/files/2023-03/31032023-holcim-climate-report-2023-7392605829.pdf)

Holcim Net Zero Journey (https://www.holcim.com/sustainability/climate-action/our-net-zero-journey)

Holcim Nature Policy (https://www.holcim.com/sites/holcim/files/2022-06/holcim_nature_policy.pdf)

Software: Air.e LCA rev. 3.17 (www.solidforest.com).

Main database: Ecoinvent 3.10 (www.ecoinvent.org).

Geographical scope of the EPD: Europe.

Note: Environmental declarations published within the same product category. though originating from different programs. 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 PCR or fully aligned PCR versions; cover products with identical functions. technical performance and use (e.g. identical declared/functional units); have equivalent system limits and data descriptions; apply equivalent data quality requirements. data collection methods. and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content statements; and be valid at the time of comparison. For more information on comparability. see EN 15804 and ISO 14025.