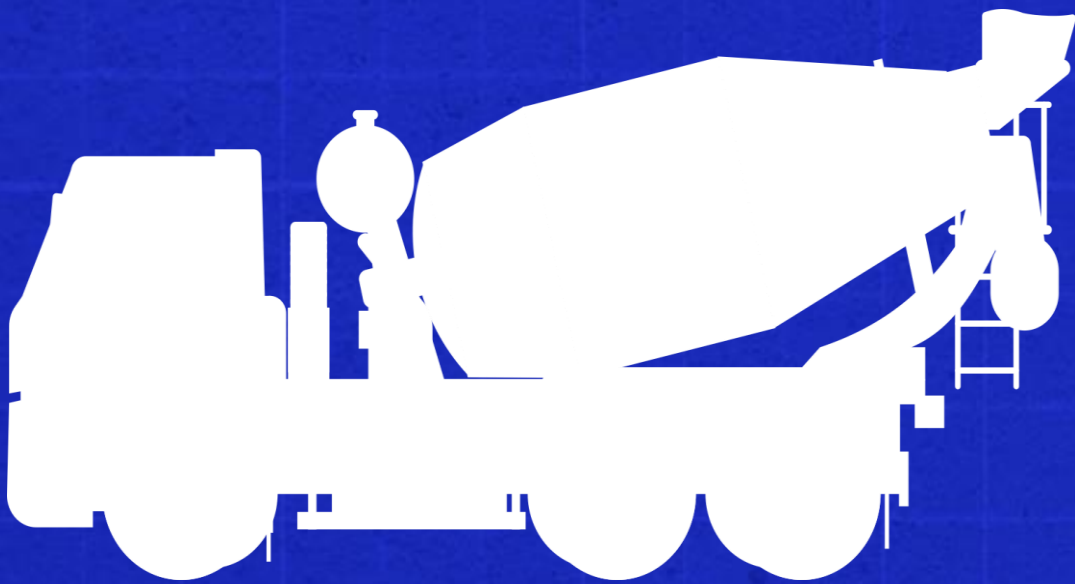




ENVIRONMENTAL PRODUCT DECLARATION



Environmental Product Declaration for ready mix concrete products produced by CEMEX México at their MX-PD0286 SAN MIGUEL DE ALLENDE facility in Guanajuato, México.

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ADMINISTRATIVE INFORMATION

International Certified Environmental Product Declaration

Declared Product:	This Environmental Product Declaration (EPD) covers ready mix concrete products produced by CEMEX Concretos S.A. de C.V. Declared unit: 1 m3 of concrete
Declaration Owner:	CEMEX Concretos S.A. de C.V./ CEMEX S.A.B. de C.V.
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	Monterrey, Nuevo León.
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Program Operator:	Labeling Sustainability
	Address, 11670 W Sunset Blvd.
	Los Angeles, CA
	www.labelingsustainability.com
Product Category Rule:	Core PCR: ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services SubPCR: NSF International (March 2020). Product Category Rule (PCR) for Environmental Product Declarations (EPD) PCR for Concrete, v2.1
	Sub PCR Program Operator: NSF International
	Sub-category PCR review was conducted by: Thomas P. Gloria, Ph. D. of Industrial Ecology Consultants: 35 Bracebridge, Rd., Newton, MA 02459-1728, t.gloria@industrial-ecology.com . Dr. Michael Overcash of Environmental Clarity: 2908 Chipmunk Lane, Raleigh, NC 27607-3117, mrovercash@earthlink.net . Mr. Bill Stough of Sustainable Research Group: PO Box 1684, Grand Rapids, MI 49501-1684, bstough@sustainableresearchgroup.com . Mr. Jack Geilbig, EcoForm: 2624 Abelia Way, Suite 611, Knoxville, TN 37931, jgeilbig@ecoform.com .
Independent LCA Reviewer and EPD Verifier:	This EPD was independently verified in accordance with ISO 14025 and ISO 21930. The life cycle assessment was independently reviewed in accordance ISO 14044 and the referenced PCR.
	Independent verification of the declaration, according to ISO 14025:2006
	External
	Third Party Verifier
	Geoffrey Guest, Certified 3rd Party Verifier under the International EPD Program (www.environdec.com), CSA Group (www.csaregistrries.ca)
Date of Issue:	30 September 2024
Period of Validity:	5 years; valid until 30 September 2029
EPD Number:	df8a0d62-8949-416e-b066-fae1c35430e9



TABLE OF CONTENTS

Administrative Information	1
Company Description	3
Study Goal	3
Description of Product and Scope	3
Ready Mix Concrete Design Summary	4
Ready Mix Concrete Design Composition	10
System Boundaries	11
Cut-Off Criteria	12
Data Sources and Data Quality Assessment	12
Raw material transport	12
Electricity	12
Process/space heating	12
Fuel required for machinery	12
Waste generation	12
Recovered energy	12
Recycled/reused material/components	13
Module A1 material losses	13
Direct A3 emissions accounting	13
Waste transport requirements	13
Product transport requirements	13
Data Quality Assessment	13
Environmental Indicators and Inventory Metrics	16
Limitations	17
Total Impact Summary	18
Other Environmental Info	23
A4 Diesel Emissions	25
CEMEX Calculated Simplified CO ₂ Emissions	25
References	27
ASTM // STM Standards	27
ISO Standards	28





COMPANY DESCRIPTION

CEMEX Concretos S.A. de C.V./ CEMEX S.A.B. de C.V. (CEMEX) is a global building materials company dedicated to building a better future through sustainable products and solutions. CEMEX is committed to achieving carbon neutrality through constant innovation and industry leadership in research and development. CEMEX is at the front of the circular economy within the construction value chain and promotes innovative processes with the use of advanced technologies to increase the use of waste as raw materials and alternative fuels in its operations. CEMEX provides cement, ready-mix concrete, aggregates, and urban solutions in fast-growing markets around the world, powered by a multinational workforce focused on delivering superior customer experience, using digital technologies.

STUDY GOAL

The intended application of this life cycle assessment (LCA) is to comply with the procedures for creating a Type III environmental product declaration (EPD) and publish the EPD for public review on the website, <http://labelingsustainability.com/>. This level of study is in accordance with EPD Product Category Rule (PCR) for Ready Mix Concrete published by NSF International (2019) and is a sub-PCR of International Standards Organization (ISO) 21930:2017 Sustainability in buildings and civil works - Core rules for EPDs of construction products and services; International Standards Organization (ISO) 14025:2006 Environmental labels and declarations, Type III environmental declarations-Principles and procedures; ISO 14044:2006 Environmental management, Life cycle assessment- Requirements and guidelines; and ISO 14040:2006 Environmental management, Life cycle assessment-Principles and framework. It is also aligned to the Guidelines for Providing Product Sustainability Information from United Nations Environmental Program. The performance of this study and its subsequent publishing is in alignment with the business-to-business (B2B) communication requirements for the environmental assessment of building products. The study does not intend to support comparative assertions and is intended to be disclosed to the public.

This project report was commissioned to offer customers information to help them make informed product decisions; improve the environmental performance of CEMEX Concretos S.A. de C.V. / CEMEX S.A.B. de C.V. by continuously measuring, controlling and reducing the environmental impacts of their products; help project facilitators working on Leadership in Energy and Environmental Design (LEED) projects achieve their credit goal among other certification rating systems; and to strengthen CEMEX's license to operate in the community. The intended audience for this LCA report is CEMEX Concretos S.A. de C.V.'s employees, their suppliers, project specifiers of their products, architects, and engineers. The EPD report is also available for policy makers, government officials interested in sustainability, academic professors, and LCA professionals. This LCA report does not include product comparisons from other facilities.

DESCRIPTION OF PRODUCT AND SCOPE

This EPD reports on 52 concrete mixes manufactured at the CEMEX MX-PD0286 SAN MIGUEL DE ALLENDE concrete facility at Carretera Salida A San Miguel De Al S/N, Guanajuato, 38224, México.

This LCA assumes the impacts from products manufactured in accordance with the standards outlined in this report. This LCA is a cradle-to-gate study, and therefore, stages extending beyond the plant gate are not included in this LCA. Transportation from the plant to the jobsite, Module A4, was hand



calculated using the proportion of diesel allotted to that stage from primary CEMEX records and diesel the emissions factor. Excluded stages include on-site construction processes and components; building (infrastructure) use and maintenance; and "end-of-life" effects.

READY MIX CONCRETE DESIGN SUMMARY

The following tables provide a list of the ready-mix concrete products considered in this EPD along with key performance parameters.

Mix Designs: 0 to 15 MPa

Table 1: Declared products with Mix designs: 0 to 15MPa considered in this environmental product declaration

Mix#	Unique name/ID	Short description	Product type	Compressive strength MPa	Day compressive strength	H2O to cement ratio	Level of vertua lower carbon
16	Convencional - 100 - 28 días	9.81 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	9.81		1.06	Clásico
17	Convencional - 150 - 28 días	14.71 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	14.71		0.91	Clásico
32	Ligero - 150 - 28 días	14.71 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	14.71		0.50	
36	Mortero - 150 - 28 días	14.71 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	14.71		0.71	Clásico
37	Mortero estabilizado - 150 - 28 días	14.71 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	14.71		0.70	Clásico
44	Relleno fluido - 100 - 28 días	9.81 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	9.81		0.94	Clásico
46	Trabajabilidad extendida - 150 - 28 días, trab ext 3 horas	14.71 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	14.71		0.84	Clásico



47	Trabajabilidad extendida - 150 - 3 días, trab ext 3 horas	14.71 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	14.71		0.57	
52	Vertua Materiales Reciclados - 100 - 28 días	9.81 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	9.81		0.90	Clásico

Mix Designs: 15 to 20 MPa

Table 2 Declared products with Mix designs: 15 to 20MPa considered in this environmental product declaration

Mix#	Unique name/ID	Short description	Product type	Compressive strength MPa	Day compressive strength	H2O to cement ratio	Level of vertua lower carbon
1	Acelerado - 200 - 3 días	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61		0.64	Clásico
18	Convencional - 200 - 28 días	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61		0.80	Clásico
19	Convencional - 200 - 7 días	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61		0.68	Clásico
30	Impercem - 200 - 28 días	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61		0.79	Clásico
48	Trabajabilidad extendida - 200 - 28 días, trab ext 3 horas	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61		0.75	Clásico



Mix Designs: 21 to 25 MPa

Table 3: Declared products with Mix designs: 21 to 25MPa considered in this environmental product declaration

Mix#	Unique name/ID	Short description	Product type	Compressive Strength MPa	Day compressive strength	H2O to cement ratio	Level of vertua lower carbon
2	Acelerado - 250 - 3 días, trab ext 3 horas	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	3	0.51	Clásico
6	Antibacteriano - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.74	Clásico
8	Antihongo antialga - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.74	Clásico
9	Antitermita - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.74	Clásico
10	Aparentia - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.73	Clásico
12	Autocompactable - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.50	Clásico
13	Baja contracción - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.52	Clásico
20	Convencional - 250 - 14 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	14	0.68	Clásico
21	Convencional - 250 - 28 días	24.52 MPa 28d strength	Ready Mix Concrete	24.52	28	0.72	Clásico



		Ready Mix Concrete					
22	Convencional - 250 - 7 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	7	0.63	Clásico
25	Duramax - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.50	Clásico
26	Duramax Autosellante - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.49	
27	Estructural - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.68	Clásico
29	Hidratium - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.74	Clásico
31	Lanzado - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.51	Clásico
33	Materiales Reciclados Llanta - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.71	Clásico
34	Materiales Reciclados Pet - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.71	Clásico
35	Materiales Reciclados Plástico de difícil reciclado - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.71	Clásico
38	Pavicrete - MR 35 - 28 días	20.86 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	20.86	28	0.72	Plus



40	Pervia - MR 36 - 28 días	22.06 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	22.06	28	0.30	Clásico
42	Reducrack - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.74	Clásico
43	Reducrack Sin malla - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.74	Clásico
45	Revenimiento total - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.77	Clásico
49	Trabajabilidad extendida - 250 - 14 días, trab ext 3 horas	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	14	0.65	Clásico
50	Trabajabilidad extendida - 250 - 28 días, trab ext 3 horas	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.68	Clásico
51	Trabajabilidad extendida - 250 - 7 días, trab ext 3 horas	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	7	0.59	Clásico

Mix Designs: 26 to 30 MPa

Table 4: Declared products with Mix designs: 26 to 30MPa considered in this environmental product declaration

Mix#	Unique name/ID	Short description	Product type	Compressive strength MPa	Day compressive strength	H2O to cement ratio	Level of vertua lower carbon
3	Acelerado - 300 - 3 días, trab ext 3 horas	29.42 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	29.42	3	0.47	Clásico
4	Acelerado - MR 40 - 3 días	27.24 MPa 28d strength	Ready Mix Concrete	27.24	3	0.52	Clásico



		Ready Mix Concrete					
11	Aparentia - MR 40 - 28 días	27.24 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	27.46	28	0.71	Clásico
23	Convencional - 280 - 28 días	27.46 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	27.46	28	0.68	Clásico
24	Convencional - 300 - 28 días	29.42 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	29.42	28	0.66	Clásico
41	Pesado - 300 - 28 días	29.42 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	29.42	28	0.47	

Mix Designs: 31 to 35 MPa

Table 5: Declared products with Mix designs: 31 to 35MPa considered in this environmental product declaration

Mix#	Unique name/ID	Short description	Product type	Compressive strength MPa	Day compressive strength	H2O to cement ratio	Level of vertua lower carbon
7	Antideslave - 350 - 28 días	34.32 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	34.32	28	0.45	
14	Baja contracción - MR 42 - 28 días	30.03 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	30.03	28	0.55	Clásico
15	Contracción compensada - MR 42 - 28 días	30.03 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	30.03	28	0.60	Clásico
28	Grout premezclado - 350 - 28 días	34.32 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	34.32	28	0.42	





39	Pavicrete - MR 42 - 28 días	30.03 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	30.03	28	0.65	Clásico
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Mix Designs: 41 to 45 MPa

Table 6: Declared products with Mix designs: 41 to 45MPa considered in this environmental product declaration

Mix#	Unique name/ID	Short description	Product type	Compressive strength MPa	Day compressive strength	H2O to cement ratio	Level of vertua lower carbon
5	Alta resistencia - 450 - 28 días	44.13 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	44.13	28	0.43	Clásico

READY MIX CONCRETE DESIGN COMPOSITION

The following figures provide mass breakdown (kg per functional unit) of the material composition of each ready mix concrete design considered. Please note that the presented breakdown has been randomly altered by +/-10%, and is therefore only an approximation; this manipulation is to ensure confidentiality.

Table 7: Ready mix concrete composition.

Product Components	Product Components
Cement	Proprietary
Aggregates	30-60.00
Others	0.01-5.00
Total	100.00





SYSTEM BOUNDARIES

The following figure depicts the cradle-to-gate system boundary considered in this study.

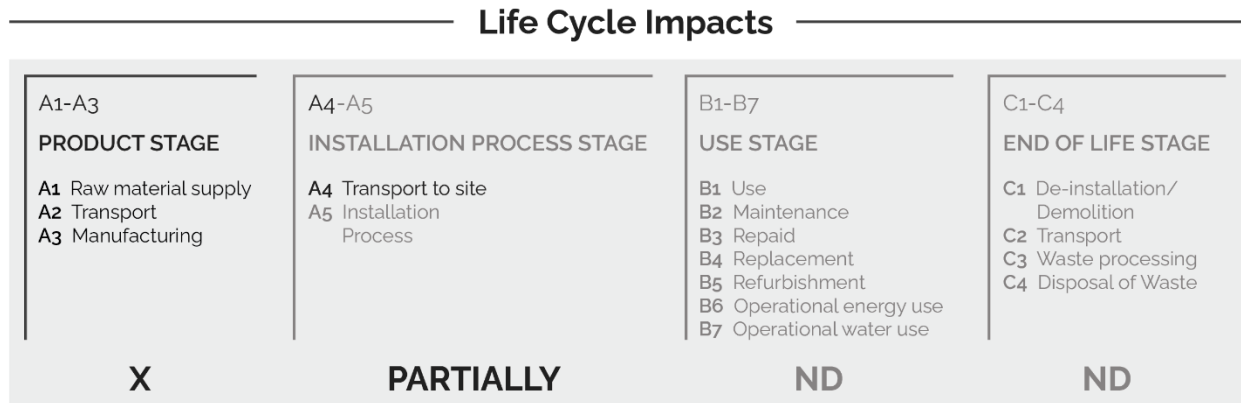


Figure 1: General life cycle phases for consideration in a construction works system

This is a Cradle-to-gate life cycle assessment and the following life cycle stages are included in the study:

- A1: Raw material supply (upstream processes) - Extraction, handling, and processing of the materials used in manufacturing the declared products in this LCA.
- A2: Transportation - Transportation of A1 materials from the supplier to the “gate” of the manufacturing facility (i.e., A3).
- A3: Manufacturing (core processes)- The energy and other utility inputs used to store, move, and manufacture the declared products and to operate the facility.
- A4: Concrete mixing and delivery to the job site

According to the PCR, the following figure illustrates the general activities and input requirements for producing ready mix concrete products and is not necessarily exhaustive.

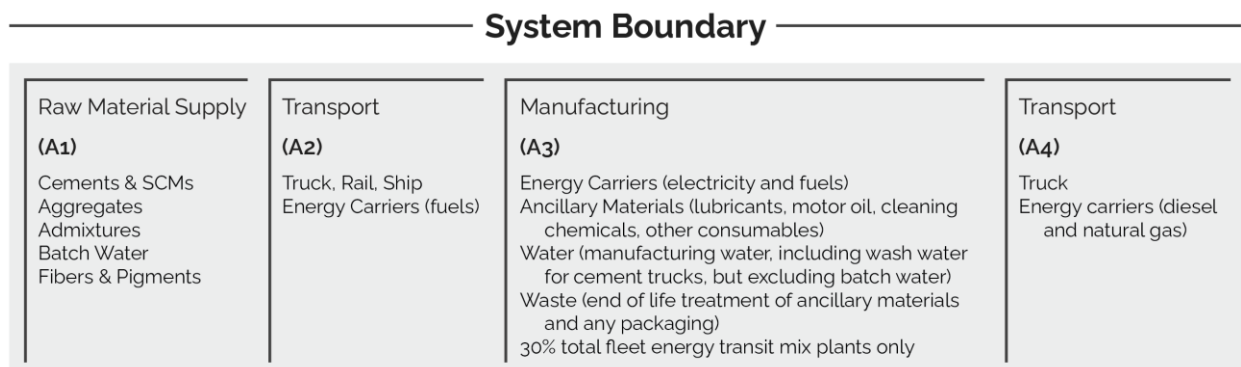


Figure 2: General system inputs considered in the product system and categorized by modules in scope

In addition, as according to the relevant PCR, the following requirements are excluded from this study:



- Production, manufacture and construction of A3 building/capital goods and infrastructure;
- Production and manufacture of steel production equipment, steel delivery vehicles, earth-moving equipment, and laboratory equipment;
- Personnel-related activities (travel, furniture, office supplies);
- Energy use related to company management and sales activities.

For this LCA the manufacturing plant, owned and operated by CEMEX is located at their MX-PD0286 SAN MIGUEL DE ALLENDE facility in México. All operating data is formulated using the actual data from CEMEX.'s plant at the above location, including water, energy consumption and waste generation. All inputs for this system boundary are calculated for the plant.

This life cycle inventory was organized in a spreadsheet and was then input into an RStudio environment where pre-calculated LCIA results for relevant products/activities stemming from the ecoinvent v3.10 database and a local EPD database in combination with primary data from CEMEX were utilized. Explanations of the contribution of each data source to this study are outlined in the section 'Data Sources and Quality'. Further LCI details for each declared product are provided in the sections 'Detailed LCI tables' and 'Transport tables' of the detailed LCA report. A parameter uncertainty analysis was also performed where key statistical results (e.g., min/mean/max etc.) are provided in the detailed LCA report.

CUT-OFF CRITERIA

ISO 14044:2006 and the focus PCR requires the LCA model to contain a minimum of 95% of the total inflows (mass and energy) to the upstream and core modules be included in this study. The cut-off criteria were applied to all other processes unless otherwise noted above as follows. A 1% cut-off is considered for all renewable and non-renewable primary energy consumption and the total mass of inputs within a unit process where the total of the neglected inputs does not exceed 5%.

DATA SOURCES AND DATA QUALITY ASSESSMENT

Raw material transport: A combination of actual mode/distance combinations were assumed for key bulk materials whereas ecoinvent default multi-modal market mix distances were assumed for other inputs where no original data could be provided.

Electricity: Electricity consumption values are for Cemex in calendar year 2023. These values were direct reported from Cemex records. The unit process "market for electricity, medium voltage/electricity, medium voltage/MX/kWh" was used to represent the Mexico grid electricity used by the concrete plant. 92% is the wind energy.

Process/space heating: No fuel is used for space heating at this plant.

Fuel required for machinery: Machinery-related fuel requirements were determined from direct CEMEX information for the reference year 2023.

Waste generation: Not applicable

Recovered energy: There was no recovered energy on-site.



Recycled/reused material/components: The amount of returned concrete is based on CEMEX primary data for the reference year, 2023.

Module A1 material losses: Due to lack of data, default loss factors were assumed.

Direct A3 emissions accounting: Direct emissions are modeled using fuel and technology appropriate ecoinvent activities. See LCI input tables for details.

Waste transport requirements: Transportation distances are using estimated values. The waste hauler cannot guarantee the exact distances traveled due to the variation of route and actual location of disposal. Most waste disposal sites are near the plant therefore the 25 km distance is a representative estimate.

Product transport requirements: Truck-related fuel requirements were determined from direct CEMEX information for the reference year 2023. The PCR states that 30% of the truck’s fuel is used to mix the material and should be allocated to A3. CEMEX operations conducted several tests on their equipment to find the actual amount of fuel used for mixing the materials. The “worst scenario” produced a fuel consumption of 16.9934% of the total fuel used for mixing the material. The truck used 15.3 liters of diesel per 60 minutes at the highest mixing speed, 14 RPMs. In those 60 minutes, the mixing used 2.6 liters of fuel. As a result, 16.99% of the total fuel consumption has been used instead of the 30% as described in the PCR for concrete.

The following tables depict a list of assumed life cycle inventory utilized in the LCA modeling to generate the impact results across the life cycle modules in scope. An assessment of the quality of each LCI activities utilized from various sources is also provided.

Table 8: LCI inputs assumed for module A1 (i.e., raw material supply) *Data Quality Assessment Key Fair=1, Good=2, Very Good =3.*

Input	LCI.activity	Data.source	Geo	Year	Technology	Time	Geography	Reliability	Completeness
Micro Silica	silica sand production/silica sand/RoW/kg; Note: modifications made (see ecoinvent activity changes table)	ecoinvent v3.10 in 2024	Chihuahua	2024	2	3	1	3	3
Basalt Gravel	basalt quarry operation/basalt/RoW/kg; Note: modifications made (see ecoinvent activity changes table)	ecoinvent v3.10 in 2024	Guanajuato	2024	2	3	1	3	3
Water	tap water production, conventional treatment/tap water/RoW/kg	ecoinvent v3.10 in 2024	Guanajuato	2024	2	3	1	3	3



Sand	limestone quarry operation/limestone, unprocessed/RoW/kg; Note: modifications made (see ecoinvent activity changes table)	ecoinvent v3.10 in 2024	Querétaro	2024	2	3	1	3	3
Additives	chemical production, organic/chemical, organic/GLO/kg	ecoinvent v3.10 in 2024	Edo. Mex.	2024	2	3	1	3	3
Hidratium	chemical production, inorganic/chemical, inorganic/GLO/kg	ecoinvent v3.10 in 2024	Hidalgo	2024	2	3	1	3	3
Polystyrene perlite	polystyrene production, general purpose/polystyrene, general purpose/RoW/kg	ecoinvent v3.10 in 2024	Querétaro	2024	2	3	1	3	3
Cement	Gris CPC 40RS	Progam Operator: Labeling Sustainability - EPD ID: c9067c84-e015-42a1-8c45-c389cb8fa0a4	Hidalgo	07 June 2023	3	3	3	3	3
Volcanic Sand	sand quarry operation, extraction from river bed/sand/BR/kg; Note: modifications made (see ecoinvent activity changes table)	ecoinvent v3.10 in 2024	Guanajuato	2024	2	3	1	3	3
Tyres	Waste input produced off-site	See A3 inputs	Guanajuato	See A3 inputs	2	A3	1	A3	A3

DATA QUALITY ASSESSMENT

Data quality/variability requirements, as specified in the PCR, are applied. This section describes the achieved data quality relative to the ISO 14044:2006 requirements. Data quality is judged based on its precision (measured, calculated, or estimated), completeness (e.g., unreported emissions), consistency (degree of uniformity of the methodology applied within a study serving as a data source) and representativeness (geographical, temporal, and technological).

Precision: Through measurement and calculation, the manufacturers collected and provided primary data on their annual production. For accuracy, the LCA practitioner and 3rd Party Verifier validated the plant gate-to-gate data.

Completeness: All relevant specific processes, including inputs (raw materials, energy, and ancillary materials) and outputs (emissions and production volume) were considered and modeled to represent the specified and declared products. Most relevant background materials and processes were taken

from ecoinvent v3.10 LCI datasets where relatively recent region-specific electricity inputs were utilized. The most relevant EPDs requiring key A1 inputs were also utilized where readily available.

Consistency: To ensure consistency, the same modeling structure across the respective product systems was utilized for all inputs, which consisted of raw material inputs and ancillary material, energy flows, water resource inputs, product, and co-products outputs, returned and recovered Ready mix concrete materials, emissions to air, water and soil, and waste recycling and treatment. The same background LCI datasets from the ecoinvent v3.10 database were used across all product systems. Crosschecks concerning the plausibility of mass and energy flows were continuously conducted. The LCA team conducted mass and energy balances at the plant and selected process levels to maintain a high level of consistency.

Reproducibility: Internal reproducibility is possible since the data and the models are stored and available in a machine-readable project file for all foreground and background processes, and in Labeling Sustainability's proprietary Ready Mix Concrete LCA calculator* for all production facility and product-specific calculations. A considerable level of transparency is provided throughout the detailed LCA report as the specifications and material quantity make-up for the declared products are presented and key primary and secondary LCI data sources are summarized. The provision of more detailed publicly accessible data to allow full external reproducibility was not possible due to reasons of confidentiality.

*Labeling Sustainability has developed a proprietary tool that allows the calculation of PCR-compliant LCA results for ready mix concrete product designs. The tool auto-calculates results by scaling base-unit technosphere inputs (i.e., 1 kg sand, 1 kWh electricity, etc.) to replicate the reference flow conversions that take place in any typical LCA software like openLCA or SimaPro. The tool was tested against several LCAs performed in openLCA and the tool generated identical results to those realized in openLCA across every impact category and inventory metric (where comparisons could be readily made).

Representativeness: The representativeness of the data is summarized as follows.

- Time related coverage of the manufacturing processes' primary collected data from 2023-01-01 to 2023-12-31.
- Upstream (background) LCI data was either the PCR specified default (if applicable) or more appropriate LCI datasets as found in the country-adjusted ecoinvent v3.10 database.
- Geographical coverage for inputs required by the A3 facility(ies) is representative of its region of focus; other upstream and background processes are based on US, North American, or global average data and adjusted to regional electricity mixes when relevant.
- Technological coverage is typical or average and specific to the participating facilities for all primary data.

ENVIRONMENTAL INDICATORS AND INVENTORY METRICS

Per the PCR, this EPD supports the life cycle impact assessment indicators and inventory metrics as listed in the tables below. As specified in the PCR, the most recent US EPA Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI), impact categories were utilized as they provide a North American context for the mandatory category indicators to be included in the EPD. Additionally, the PCR requires a set of inventory metrics to be reported with the LCIA indicators.

Table g: Life cycle impact categories and life cycle inventory metrics

ID	LCIA.indicators	Abbreviations	Units
1	Climate change: global warming potential (GWP100)	GWP100	kg CO ₂ -eq
2	Ozone depletion: ozone depletion potential (ODP)	ODP	kg CFC-11-eq
3	Acidification: acidification potential (AP)	AP	kg SO ₂ -eq
4	Eutrophication: eutrophication potential	EP	kg N-eq
5	Smog formation potential	SFP	kg O ₃ -eq
6	Energy resources: non-renewable: abiotic depletion potential (ADP): fossil fuels	ADP _{fossil}	MJ
Inventory metrics			
7	Inventory indicators ISO21930: Cumulative Energy Demand - renewable energy resources	RPRE	MJ
8	Inventory indicators ISO21930: Renewable primary resources with energy content used as material (i.e., PERM)	PRM	MJ
9	Inventory indicators ISO21930: Cumulative Energy Demand - non-renewable energy resources	NRPRE	MJ
10	Inventory indicators ISO21930: Non-renewable primary resources with energy content used as material (i.e., PENRM)	NRPRM	kg
11	Inventory indicators ISO21930: use of secondary material	SM	MJ
12	Inventory indicators ISO21930: use of renewable secondary fuels	RSF	MJ
13	Inventory indicators ISO21930: recovered energy	RE	MJ
14	Inventory indicators ISO21930: use of net fresh water	FW	m ³
15	Inventory indicators ISO21930: hazardous waste disposed	HWD	kg
16	Inventory indicators ISO21930: non-hazardous waste disposed	NHWD	kg
17	Inventory indicators ISO21930: high-level radioactive waste disposed	HLRW	kg
18	Inventory indicators ISO21930: intermediate and low-level radioactive waste disposed	ILLRW	kg
19	Inventory indicators ISO21930: materials for recycling	MR	kg
20	Inventory indicators ISO21930: materials for energy recovery	MER	kg
21	inventory indicators ISO21930: exported energy - electricity	EE _{el}	MJ
22	inventory indicators ISO21930: exported energy - heat	EE _{heat}	MJ



It should be noted that emerging LCA impact categories and inventory items are still under development and can have high levels of uncertainty that preclude international acceptance pending further development. Use caution when interpreting data in any of the following categories.

- Renewable primary energy resources as energy (fuel);
- Renewable primary resources as material;
- Non-renewable primary resources as energy (fuel);
- Non-renewable primary resources as material;
- Secondary Materials;
- Renewable secondary fuels;
- Non-renewable secondary fuels;
- Recovered energy;
- Abiotic depletion potential for non-fossil mineral resources.
- Land use related impacts, for example on biodiversity and/or soil fertility;
- Toxicological aspects;
- Emissions from land use change [GWP 100 (land-use change)];
- Hazardous waste disposed;
- Non-hazardous waste disposed;
- High-level radioactive waste;
- Intermediate and low-level radioactive waste;
- Components for reuse;
- Materials for recycling;
- Materials for energy recovery;
- Recovered energy exported from the product system.

LIMITATIONS

This EPD is a declaration of potential environmental impact and does not support or provide definitive comparisons of the environmental performance of specific products. Only EPDs prepared from cradle-to-grave life cycle results and based on the same function and reference service life and quantified by the same functional unit can be used to assist purchasers and users in making informed comparisons between products.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. Further, LCA offers a wide array of environmental impact indicators, and this EPD reports a collection of those, as specified by the PCR.

In addition to the impact results, this EPD provides several metrics related to resource consumption and waste generation. While this data may be informational in other ways, they do not provide a measure of impact on the environment.

TOTAL IMPACT SUMMARY

The following table reports the total LCA results for each product produced at the given ready mix concrete facility on a per 1m³ of concrete basis.

Table 10: **Total life cycle (across modules in scope) impact results for all mix designs, assuming the geometric mean point values on a per 1 m³ of concrete basis.**

a) Midpoint Impact Categories:

Indicator/LCI Metric	GWP ₁₀₀	ODP	AP	EP	SFP	ADP _{fossil}
Unit	kg CO ₂ -eq	kg CFC-11-eq	kg SO ₂ -eq	kg N-eq	kg O ₃ -eq	MJ
Acelerado - 200 - 3 días	353	2.7e-06	0.389	0.261	7.68	2140
Acelerado - 250 - 3 días, trab ext 3 horas	418	3.05e-06	0.447	0.283	8.63	2440
Acelerado - 300 - 3 días, trab ext 3 horas	445	3.21e-06	0.465	0.297	8.89	2560
Acelerado - MR 40 - 3 días	419	2.95e-06	0.448	0.271	8.72	2370
Alta resistencia - 450 - 28 días	487	3.42e-06	0.494	0.332	9.4	2710
Antibacteriano - 250 - 28 días	299	2.33e-06	0.378	0.21	7.58	1890
Antideslave - 350 - 28 días	439	3.35e-06	0.48	0.348	9.12	2650
Antihongo antialga - 250 - 28 días	304	2.53e-06	0.395	0.288	7.82	2010
Antitermita - 250 - 28 días	299	2.33e-06	0.378	0.21	7.58	1890
Aparentia - 250 - 28 días	331	3.35e-06	0.472	0.641	8.93	2460
Aparentia - MR 40 - 28 días	333	2.8e-06	0.427	0.39	8.33	2170
Autocompactable - 250 - 28 días	453	5.2e-06	0.636	1.16	11.1	3660
Baja contracción - 250 - 28 días	347	2.66e-06	0.417	0.239	8.24	2150
Baja contracción - MR 42 - 28 días	328	2.49e-06	0.405	0.214	8.11	2030
Contracción compensada - MR 42 - 28 días	335	2.47e-06	0.408	0.227	8.19	2010
Convencional - 100 - 28 días	213	1.82e-06	0.326	0.165	6.89	1510
Convencional - 150 - 28 días	238	1.97e-06	0.342	0.178	7.12	1620
Convencional - 200 - 28 días	262	2.11e-06	0.356	0.19	7.34	1730
Convencional - 200 - 7 días	327	2.37e-06	0.389	0.208	7.86	1930



Convencional - 250 - 14 días	314	2.41e-06	0.384	0.214	7.7	1950
Convencional - 250 - 28 días	284	2.24e-06	0.37	0.201	7.53	1830
Convencional - 250 - 7 días	347	2.49e-06	0.403	0.218	8.07	2020
Convencional - 280 - 28 días	298	2.32e-06	0.378	0.208	7.66	1890
Convencional - 300 - 28 días	308	2.38e-06	0.384	0.213	7.75	1930
Duramax - 250 - 28 días	355	2.65e-06	0.417	0.219	8.25	2160
Duramax Autosellante - 250 - 28 días	375	3.18e-06	0.465	0.413	8.91	2470
Estructural - 250 - 28 días	301	2.34e-06	0.379	0.209	7.67	1900
Grout premezclado - 350 - 28 días	597	4.29e-06	0.551	0.416	10	3370
Hidratium - 250 - 28 días	299	2.33e-06	0.378	0.21	7.58	1890
Impercem - 200 - 28 días	281	2.34e-06	0.378	0.252	7.58	1880
Lanzado - 250 - 28 días	382	3.09e-06	0.455	0.35	8.7	2440
Ligero - 150 - 28 días	412	2.94e-06	0.434	0.306	7.9	2520
Materiales Recicladados Llanta - 250 - 28 días	296	2.32e-06	0.38	0.211	7.66	1890
Materiales Recicladados Pet - 250 - 28 días	296	2.32e-06	0.38	0.211	7.66	1890
Materiales Recicladados Plástico de difícil reciclado - 250 - 28 días	298	2.36e-06	0.385	0.213	7.76	1920
Mortero - 150 - 28 días	288	2.27e-06	0.305	0.215	6.13	1790
Mortero estabilizado - 150 - 28 días	300	2.44e-06	0.321	0.266	6.34	1890
Pavicrete - MR 35 - 28 días	296	2.19e-06	0.374	0.196	7.67	1800
Pavicrete - MR 42 - 28 días	325	2.36e-06	0.392	0.209	7.93	1930
Pervia - MR 36 - 28 días	412	2.98e-06	0.448	0.327	8.48	2350
Pesado - 300 - 28 días	410	3.29e-06	0.498	0.337	9.81	2640
Reducrack - 250 - 28 días	299	2.33e-06	0.378	0.21	7.58	1890
Reducrack Sin malla - 250 - 28 días	299	2.33e-06	0.378	0.21	7.59	1900
Relleno fluido - 100 - 28 días	250	1.96e-06	0.278	0.156	5.68	1570
Revenimiento total - 250 - 28 días	306	2.35e-06	0.374	0.209	7.52	1910
Trabajabilidad extendida - 150 - 28 días, trab ext 3 horas	251	2.07e-06	0.352	0.194	7.27	1690



Trabajabilidad extendida - 150 - 3 días, trab ext 3 horas	364	2.73e-06	0.418	0.255	8.23	2200
Trabajabilidad extendida - 200 - 28 días, trab ext 3 horas	276	2.22e-06	0.367	0.207	7.5	1810
Trabajabilidad extendida - 250 - 14 días, trab ext 3 horas	327	2.51e-06	0.394	0.234	7.86	2030
Trabajabilidad extendida - 250 - 28 días, trab ext 3 horas	298	2.34e-06	0.38	0.219	7.69	1900
Trabajabilidad extendida - 250 - 7 días, trab ext 3 horas	344	2.58e-06	0.404	0.226	8.04	2090
Vertua Materiales Reciclados - 100 - 28 días	256	1.97e-06	0.275	0.158	5.53	1580

b) Resource Inventory Metrics:

Indicator/LCI	RPRE	PRM	NRPRE	NRPRM	SM	RSF	RE	FW
Metric	MJ	MJ	MJ	kg	MJ	MJ	MJ	m3
Unit	MJ	MJ	MJ	kg	MJ	MJ	MJ	m3
Acelerado - 200 - 3 días	69.7	2.99	69.9	752	0.568	0.00656	0.295	0.684
Acelerado - 250 - 3 días, trab ext 3 horas	82.6	2.99	82.9	901	0.617	0.0069	0.327	0.592
Acelerado - 300 - 3 días, trab ext 3 horas	87.4	2.99	87.6	967	0.638	0.00704	0.338	0.601
Acelerado - MR 40 - 3 días	85	2.99	85.2	911	0.575	0.00633	0.314	0.595
Alta resistencia - 450 - 28 días	97.4	2.99	97.6	1090	0.637	0.00679	0.352	0.64
Antibacteriano - 250 - 28 días	61.5	2.99	61.7	594	0.535	0.00647	0.3	0.538
Antideslave - 350 - 28 días	87.8	2.99	88	952	0.679	0.00793	0.396	0.654
Antihongo anti-alga - 250 - 28 días	64.3	2.99	64.5	627	0.554	0.00665	0.34	0.583
Antitermita - 250 - 28 días	61.5	2.99	61.7	594	0.535	0.00647	0.3	0.538
Aparentia - 250 - 28 días	79.8	2.99	80	806	0.595	0.00673	0.488	0.806
Aparentia - MR 40 - 28 días	74.1	2.99	74.3	740	0.545	0.00628	0.381	0.671
Autocompactable - 250 - 28 días	109	2.99	109	1210	0.853	0.00928	0.794	1.05



Baja contracción - 250 - 28 días	69.6	2.99	69.8	705	0.593	0.00698	0.313	0.478
Baja contracción - MR 42 - 28 días	66.7	2.99	66.9	654	0.565	0.00672	0.298	0.457
Contracción compensada - MR 42 - 28 días	71	2.99	71.1	689	0.527	0.00654	0.314	0.57
Convencional - 100 - 28 días	46	2.99	46.1	375	0.472	0.00606	0.253	0.473
Convencional - 150 - 28 días	50.5	2.99	50.7	439	0.49	0.00617	0.262	0.484
Convencional - 200 - 28 días	54.9	2.99	55.1	501	0.507	0.00627	0.27	0.494
Convencional - 200 - 7 días	68.4	2.99	68.5	676	0.503	0.00586	0.273	0.553
Convencional - 250 - 14 días	63.7	2.99	63.9	631	0.542	0.00646	0.285	0.529
Convencional - 250 - 28 días	58.8	2.99	58.9	555	0.523	0.00637	0.278	0.504
Convencional - 250 - 7 días	72	2.99	72.2	726	0.518	0.00596	0.28	0.555
Convencional - 280 - 28 días	61.2	2.99	61.3	589	0.533	0.00643	0.283	0.51
Convencional - 300 - 28 días	63	2.99	63.1	614	0.541	0.00648	0.286	0.515
Duramax - 250 - 28 días	70.4	2.99	70.5	717	0.594	0.00698	0.304	0.468
Duramax Autosellante - 250 - 28 días	78.6	2.99	78.9	819	0.647	0.00745	0.404	0.582
Estructural - 250 - 28 días	61.8	2.99	62	599	0.535	0.00643	0.283	0.514
Grout premezclado - 350 - 28 días	114	2.99	114	1350	0.813	0.00949	0.476	0.933
Hidratium - 250 - 28 días	61.5	2.99	61.7	594	0.535	0.00647	0.3	0.538
Impercem - 200 - 28 días	59.6	2.99	59.8	561	0.534	0.00652	0.32	0.555
Lanzado - 250 - 28 días	78	2.99	78.2	812	0.653	0.00781	0.394	0.585
Ligero - 150 - 28 días	80.1	2.99	80.3	1010	0.554	0.00591	0.307	0.67
Materiales Reciclados Llanta - 250 - 28 días	61.2	2.99	61.4	584	0.535	0.00651	0.303	0.525
Materiales Reciclados Pet - 250 - 28 días	61.2	2.99	61.4	584	0.536	0.00651	0.303	0.525
Materiales Reciclados Plástico de difícil	61.7	2.99	61.9	584	0.551	0.00671	0.31	0.53



reciclado - 250 - 28 días								
Mortero - 150 - 28 días	55	2.99	55.2	611	0.493	0.00579	0.237	0.714
Mortero estabilizado - 150 - 28 días	58.2	2.99	58.4	652	0.511	0.00594	0.264	0.745
Pavicrete - MR 35 - 28 días	63.3	2.99	63.4	598	0.482	0.00574	0.265	0.529
Pervia - MR 36 - 28 días	86.3	2.99	86.5	925	0.545	0.00586	0.347	0.463
Pesado - 300 - 28 días	83.7	2.99	83.9	839	0.729	0.00855	0.407	0.629
Reducrack - 250 - 28 días	61.5	2.99	61.7	594	0.535	0.00647	0.3	0.538
Reducrack Sin malla - 250 - 28 días	61.5	2.99	61.7	594	0.536	0.00648	0.3	0.538
Relleno fluido - 100 - 28 días	47.2	2.99	47.3	501	0.46	0.00556	0.208	0.641
Revenimiento total - 250 - 28 días	62.2	2.99	62.4	616	0.53	0.00631	0.278	0.542
Trabajabilidad extendida - 150 - 28 días, trab ext 3 horas	53.2	2.99	53.3	475	0.502	0.00625	0.271	0.494
Trabajabilidad extendida - 150 - 3 días, trab ext 3 horas	73.3	2.99	73.5	762	0.58	0.0067	0.31	0.555
Trabajabilidad extendida - 200 - 28 días, trab ext 3 horas	57.6	2.99	57.8	538	0.521	0.00637	0.281	0.506
Trabajabilidad extendida - 250 - 14 días, trab ext 3 horas	66.5	2.99	66.7	669	0.555	0.00654	0.296	0.542
Trabajabilidad extendida - 250 - 28 días, trab ext 3 horas	61.5	2.99	61.7	593	0.535	0.00645	0.288	0.516
Trabajabilidad extendida - 250 - 7 días, trab ext 3 horas	69.3	2.99	69.5	707	0.564	0.0066	0.295	0.532
Vertua Materiales Reciclados - 100 - 28 días	48.2	2.99	48.3	523	0.448	0.00532	0.204	0.618



c) Waste/output Inventory Metrics:

Indicator/LCI Metric	HWD	NHWD	HLRW	ILLRW	MR	MER
Unit	kg	kg	kg	kg	kg	kg
Acelerado - 200 - 3 días	3.4	77.8	0.000167	0.000544	0.0304	8.18e-05
Acelerado - 250 - 3 días, trab ext 3 horas	3.9	88.5	0.000198	0.000644	0.0361	9.07e-05
Acelerado - 300 - 3 días, trab ext 3 horas	4.06	92.3	0.000207	0.000679	0.0381	9.38e-05
Acelerado - MR 40 - 3 días	3.89	88.6	0.000208	0.000667	0.0367	8.47e-05
Alta resistencia - 450 - 28 días	4.36	99.9	0.000233	0.000757	0.0418	9.51e-05
Antibacteriano - 250 - 28 días	3.24	72.8	0.00016	0.000495	0.0272	7.93e-05
Antideslave - 350 - 28 días	4.32	98	0.000213	0.000688	0.0381	0.00013
Antihongo antialga - 250 - 28 días	3.54	80.7	0.000173	0.000528	0.0282	8.67e-05
Antitermita - 250 - 28 días	3.24	72.8	0.00016	0.000495	0.0272	7.93e-05
Aparentia - 250 - 28 días	4.85	116	0.000241	0.000701	0.0331	0.000112
Aparentia - MR 40 - 28 días	4.01	93.6	0.000206	0.000619	0.0315	9.13e-05
Autocompactable - 250 - 28 días	7.21	176	0.000331	0.000978	0.0448	0.000178
Baja contracción - 250 - 28 días	3.56	79.3	0.000176	0.000555	0.031	8.69e-05
Baja contracción - MR 42 - 28 días	3.43	76	0.000172	0.000535	0.0297	8.23e-05
Contracción compensada - MR 42 - 28 días	3.51	78.6	0.000184	0.000567	0.0306	0.000109
Convencional - 100 - 28 días	2.72	60.1	0.000132	0.000385	0.0208	6.83e-05
Convencional - 150 - 28 días	2.86	63.5	0.00014	0.000417	0.0227	7.1e-05
Convencional - 200 - 28 días	3	66.8	0.000148	0.000448	0.0245	7.36e-05
Convencional - 200 - 7 días	3.3	74.6	0.000176	0.000546	0.0297	7.29e-05
Convencional - 250 - 14 días	3.26	73.2	0.000163	0.000509	0.0282	7.85e-05
Convencional - 250 - 28 días	3.13	69.7	0.000155	0.000476	0.0261	7.59e-05
Convencional - 250 - 7 días	3.42	77.4	0.000184	0.000573	0.0313	7.52e-05
Convencional - 280 - 28 días	3.2	71.5	0.000159	0.000493	0.0272	7.73e-05
Convencional - 300 - 28 días	3.26	72.9	0.000163	0.000506	0.0279	7.85e-05



Duramax - 250 - 28 días	3.52	78.1	0.000175	0.000556	0.0313	8.56e-05
Duramax Autosellante - 250 - 28 días	4.3	98.4	0.000209	0.000646	0.0342	0.000104
Estructural - 250 - 28 días	3.22	71.9	0.00016	0.000497	0.0274	7.76e-05
Grout premezclado - 350 - 28 días	5.1	117	0.000249	0.000853	0.0487	0.000198
Hidratium - 250 - 28 días	3.24	72.8	0.00016	0.000495	0.0272	7.93e-05
Impercem - 200 - 28 días	3.33	75.4	0.000162	0.000491	0.0263	8.22e-05
Lanzado - 250 - 28 días	4.13	93.6	0.000199	0.000626	0.0341	0.000125
Ligero - 150 - 28 días	3.73	84.8	0.000185	0.000614	0.0346	8.43e-05
Materiales Reciclados Llanta - 250 - 28 días	3.26	73	0.000161	0.000495	0.0271	7.96e-05
Materiales Reciclados Pet - 250 - 28 días	3.26	73	0.000161	0.000495	0.0271	7.96e-05
Materiales Reciclados Plástico de difícil reciclado - 250 - 28 días	3.32	74.2	0.000163	5e-04	0.0274	8.19e-05
Mortero - 150 - 28 días	2.67	61.8	0.000124	0.000418	0.024	6.77e-05
Mortero estabilizado - 150 - 28 días	2.9	67.7	0.000134	0.000449	0.0252	7.31e-05
Pavicrete - MR 35 - 28 días	3.16	71.2	0.000169	0.000513	0.0276	7.01e-05
Pavicrete - MR 42 - 28 días	3.32	74.9	0.000178	0.000548	0.0297	7.32e-05
Pervia - MR 36 - 28 días	4.04	92.5	0.000218	0.000688	0.0368	8.73e-05
Pesado - 300 - 28 días	4.47	99.5	0.000219	0.000679	0.0369	0.00011
Reducrack - 250 - 28 días	3.24	72.8	0.00016	0.000495	0.0272	7.93e-05
Reducrack Sin malla - 250 - 28 días	3.25	72.9	0.00016	0.000495	0.0273	7.94e-05
Relleno fluido - 100 - 28 días	2.35	53.8	0.000106	0.000358	0.0211	6.14e-05
Revenimiento total - 250 - 28 días	3.19	71.9	0.000159	0.000497	0.0276	7.67e-05
Trabajabilidad extendida - 150 - 28 días, trab ext 3 horas	2.97	66.2	0.000146	0.000438	0.0238	7.33e-05
Trabajabilidad extendida - 150 - 3 días, trab ext 3 horas	3.61	81.6	0.000182	0.00058	0.0322	8.52e-05
Trabajabilidad extendida - 200 - 28 días, trab ext 3 horas	3.12	69.7	0.000154	0.00047	0.0256	7.61e-05
Trabajabilidad extendida - 250 - 14 días, trab ext 3 horas	3.39	76.2	0.000169	0.000531	0.0293	8.12e-05
Trabajabilidad extendida - 250 - 28 días, trab ext 3 horas	3.24	72.6	0.000161	0.000497	0.0273	7.84e-05



Trabajabilidad extendida - 250 - 7 días, trab ext 3 horas	3.44	77.2	0.000174	0.000549	0.0306	8.16e-05
Vertua Materiales Reciclados - 100 - 28 días	2.33	53.8	0.000107	0.000364	0.0214	6.02e-05

OTHER ENVIRONMENTAL INFO

A4 Diesel Emissions

The following table below is the GWP100 for the A4 diesel emissions. These emissions were calculated from primary CEMEX data on the exact diesel usage for the mixing trucks, minus 16.99% which was allotted to A3 for mixing the concrete.

Table 11: A4 Diesel Emissions

PLANT NAME	L DIESEL NOT INCLUDING A3	GWP FACTOR kgCO ₂ / LITER	Total kg CO ₂ eq (A4)	Total kg CO ₂ eq/m ³ (A4)
MX-PD0286 SAN MIGUEL DE ALLENDE	22.457	2.596	58.298.37	4.41

CEMEX Calculated Simplified CO₂ Emissions

Under the auspices of the Global Commitment, the Global Cement and Concrete Association (GCCA) endeavors to establish a standardized methodology for assessing carbon dioxide (CO₂) emissions with a view to facilitating effective comparative analyses. The association's computation model currently operates on a simplified premise, predominantly focusing on the efficiency of cement production within the concrete mix design.

The GCCA mandates the dual reporting of both Net Emissions and Gross Emissions, differentiating the impact of alternative fuel utilization in the cement production process. Net Emissions pertain to the CO₂ emissions generated without considering the carbon offset potential of alternative fuels used in the production process. On the other hand, Gross Emissions account for this factor, recognizing the carbon neutrality or even carbon negativity that can be achieved through the strategic use of such alternative fuels. This dual-pronged reporting approach provides a more nuanced understanding of the industry's carbon footprint, thereby better informing efforts towards emissions reduction.

These calculations do not intend to replace CO₂ footprint calculations. It is a starting point to monitor CO₂ emissions in concrete while transitioning to a more comprehensive indicator based on the Life Cycle Assessment, such as the CO₂ footprint or the Global Warming Potential indicator.

Table 12: Simplified CO₂

NEW ID	Net (kgCO ₂ /m ³)	Gross (kgCO ₂ /m ³)
Acelerado - 200 - 3 días	202	236
Acelerado - 250 - 3 días, trab ext 3 horas	246	287
Acelerado - 300 - 3 días, trab ext 3 horas	264	308
Acelerado - MR 40 - 3 días	251	293



Alta resistencia - 450 - 28 días	296	345
Antibacteriano - 250 - 28 días	163	190
Antideslave - 350 - 28 días	254	296
Antihongo antialga - 250 - 28 días	163	190
Antitermita - 250 - 28 días	163	190
Aparentia - 250 - 28 días	172	201
Aparentia - MR 40 - 28 días	184	215
Autocompactable - 250 - 28 días	228	267
Baja contracción - 250 - 28 días	193	226
Baja contracción - MR 42 - 28 días	181	212
Contracción compensada - MR 42 - 28 días	190	222
Convencional - 100 - 28 días	103	120
Convencional - 150 - 28 días	120	140
Convencional - 200 - 28 días	137	160
Convencional - 200 - 7 días	188	219
Convencional - 250 - 14 días	173	202
Convencional - 250 - 28 días	153	178
Convencional - 250 - 7 días	202	236
Convencional - 280 - 28 días	162	189
Convencional - 300 - 28 días	169	197
Duramax - 250 - 28 días	199	233
Duramax Autosellante - 250 - 28 días	205	240
Estructural - 250 - 28 días	165	192
Grout premezclado - 350 - 28 días	363	423
Hidratium - 250 - 28 días	163	190
Impercem - 200 - 28 días	148	173
Lanzado - 250 - 28 días	212	247
Ligero - 150 - 28 días	242	282
Materiales Reciclados Llanta - 250 - 28 días	160	187
Materiales Reciclados Pet - 250 - 28 días	160	187
Materiales Reciclados Plástico de difícil reciclado - 250 - 28 días	160	187
Mortero - 150 - 28 días	163	190
Mortero estabilizado - 150 - 28 días	169	197
Pavicrete - MR 35 - 28 días	166	194
Pavicrete - MR 42 - 28 días	186	217
Pervia - MR 36 - 28 días	248	289
Pesado - 300 - 28 días	224	261
Reducrack - 250 - 28 días	163	190
Reducrack Sin malla - 250 - 28 días	163	190
Relleno fluido - 100 - 28 días	138	161
Revenimiento total - 250 - 28 días	169	198
Trabajabilidad extendida - 150 - 28 días, trab ext 3 horas	129	151
Trabajabilidad extendida - 150 - 3 días, trab ext 3 horas	208	243
Trabajabilidad extendida - 200 - 28 días, trab ext 3 horas	147	171
Trabajabilidad extendida - 250 - 14 días, trab ext 3 horas	183	213
Trabajabilidad extendida - 250 - 28 días, trab ext 3 horas	162	189





Trabajabilidad extendida - 250 - 7 días, trab ext 3 horas	195	227
Vertua Materiales Reciclados - 100 - 28 días	144	168

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