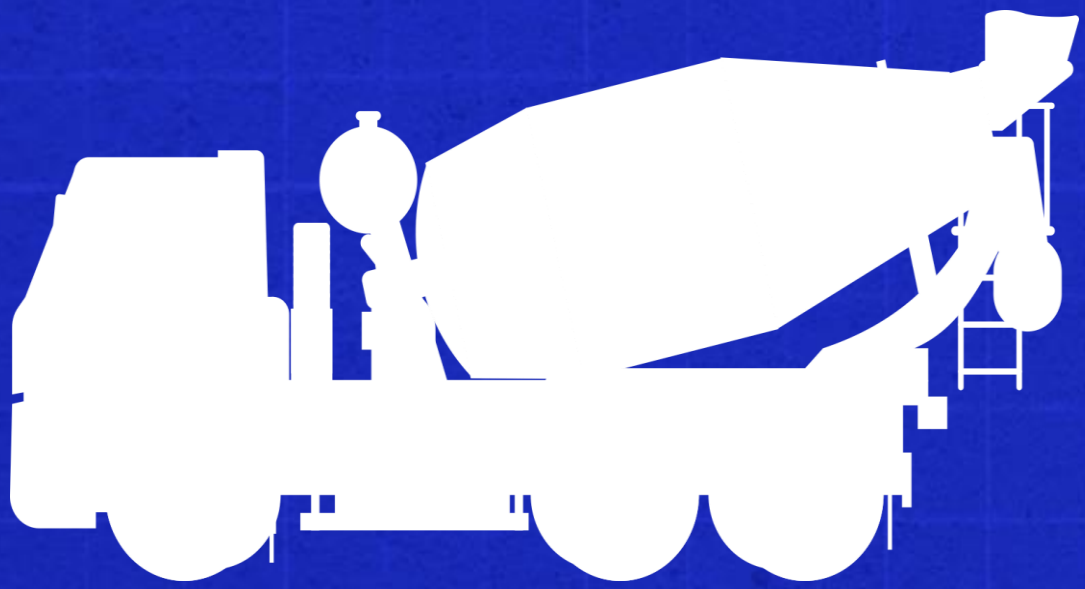
CEMEX

ENVIRONMENTAL PRODUCT DECLARATION



Environmental Product Declaration for ready mix concrete products produced by CEMEX México at their MX-PD051 ACUÑA facility in Coahuila, México.

FUTURE IN ACTION

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. 444 av. Constitución Pte, Col. Centro Monterrey, Nuevo León. www.cemexmexico.com Arturo Gaytan Covarrubias. arturo.gaytanc@cemex.com Maria Paulette Chambers Rubio mariapaulette.chambers@cemex.com
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.csaregistries.ca)
Date of Issue:	30 August 2024
Period of Validity:	5 years; valid until 30 August 2029
EPD Number:	869706de-f46d-4916-ab38-c45c1b7eab81

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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 48 concrete mixes manufactured at the CEMEX MX-PD051 ACUÑA concrete facility at Carretera Santa Eulalia Km. 4, Acuña, Coahuila, 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
1	Convencional - 100 - 28 días	9.81 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	9.81	28	1.22	Clásico
2	Convencional - 150 - 28 días	14.71 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	14.71	28	0.78	Clásico
3	Ligero - 150 - 28 días	14.71 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	14.71	28	0.46	
4	Mortero - 150 - 28 días	14.71 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	14.71	28	0.77	Clásico
5	Mortero estabilizado - 150 - 28 días	14.71 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	14.71	28	0.77	Clásico
6	Relleno fluido - 60 - 28 días	5.88 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	5.88	28	0.98	Plus
7	Vertua Materiales Reciclados - 060 - 28 días	5.88 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	5.88	28	0.98	Plus

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
8	Acelerado - 200 - 3 días	19.61 MPa 23d strength Ready Mix Concrete	Ready Mix Concrete	19.61	3	0.69	Clásico
9	Acelerado - 200 - 30 kg a 12 horas	19.61 MPa 12 hrs strength Ready Mix Concrete	Ready Mix Concrete	19.61	12 hrs	0.67	Plus
10	Acelerado - 200 - 60% a 2 días	19.61 MPa 2d strength Ready Mix Concrete	Ready Mix Concrete	19.61	2	0.71	Clásico
11	Convencional - 200 - 28 días	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61	28	0.69	Clásico
12	Hidratium - 200 - 28 días	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61	28	0.68	Clásico
13	Impercem - 200 - 28 días	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61	28	0.67	Clásico
14	Materiales Reciclados Llanta - 200 - 28 días	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61	28	0.65	Clásico
15	Materiales Reciclados Pet - 200 - 28 días	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61	28	0.65	Clásico
16	Materiales Reciclados Plástico de difícil	19.61 MPa 28d strength	Ready Mix Concrete	19.61	28	0.65	Clásico

	reciclado - 200 - 28 días	Ready Mix Concrete					
17	Revenimiento total - 200 - 28 días	19.61 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	19.61	28	0.79	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
18	Acelerado - 250 - 3 días	24.52 MPa 3d strength Ready Mix Concrete	Ready Mix Concrete	24.52	3	0.61	Clásico
19	Acelerado - 250 - 30 kg a 12 horas	24.52 MPa 12hrs strength Ready Mix Concrete	Ready Mix Concrete	24.52	12 hrs	0.60	Plus
20	Acelerado - 250 - 60% a 2 días	24.52 MPa 2d strength Ready Mix Concrete	Ready Mix Concrete	24.52	2	0.62	Clásico
21	Antibacteriano - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.62	Clásico
22	Antihongo antialga - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.60	Clásico
23	Antitermita - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.62	Clásico
24	Aparentia - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.66	
25	Autocompactable - 250 - 28 días	24.52 MPa 28d strength	Ready Mix Concrete	24.52	28	0.51	

		Ready Mix Concrete					
26	Baja contracción - MR 35 - 28 días	20.86 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	20.86	28	0.51	Clásico
27	Convencional - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.61	Clásico
28	Duramax - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.46	
29	Duramax Autosellante - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.46	
30	Lanzado - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.49	Clásico
31	Pavicrete - MR 38 - 28 días	24.58 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.58	28	0.62	Plus
32	Pervia - MR 36 - 28 días	22.06 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	22.06	28	0.29	
33	Reducrack - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.62	Clásico
34	Reducrack Sin malla - 250 - 28 días	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.62	Clásico
35	Trabajabilidad extendida - 250 - 28 días, trab ext 3 horas	24.52 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	24.52	28	0.67	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
36	Acelerado - 300 - 30 kg a 12 horas	29.42 MPa 12hrs strength Ready Mix Concrete	Ready Mix Concrete	29.42	12hrs	0.54	Plus
37	Acelerado - 300 - 60% a 3 días	29.42 MPa 3d strength Ready Mix Concrete	Ready Mix Concrete	29.42	3	0.53	Clásico
38	Baja contracción - MR 40 - 28 días	27.24 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	27.24	28	0.54	Clásico
39	Pavicrete - MR 40 - 28 días	27.24 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	27.24	28	0.68	Clásico
40	Pesado - 300 - 28 días	29.42 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	29.42	28	0.43	

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
41	Antideslave - 350 - 28 días	34.32 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	34.32	28	0.40	
42	Contracción compensada - MR 42 - 28 días	30.03 MPa 28d strength	Ready Mix Concrete	30.03	28	0.66	Clásico

		Ready Mix Concrete					
43	Convencional - 350 - 28 días	34.32 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	34.32	28	0.50	Clásico
44	Estructural - 350 - 7 días	34.32 MPa 7d strength Ready Mix Concrete	Ready Mix Concrete	34.32	7	0.48	Clásico
45	Grout premezclado - 350 - 28 días	34.32 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	34.32	28	0.42	Plus
46	Pavicrete - MR 45 - 28 días	34.48 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	34.48	28	0.67	Clásico
47	Pavicrete - MR 45 - 3 días	34.48 MPa 3d strength Ready Mix Concrete	Ready Mix Concrete	34.48	3	0.61	Plus

Mix Designs: 36 to 40 MPa

Table 6: **Declared products with Mix designs: 36 to 40MPa 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
48	Alta resistencia - MR 48 - 60% a 2 días	39.23 MPa 28d strength Ready Mix Concrete	Ready Mix Concrete	39.23	28	0.62	Plus

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.

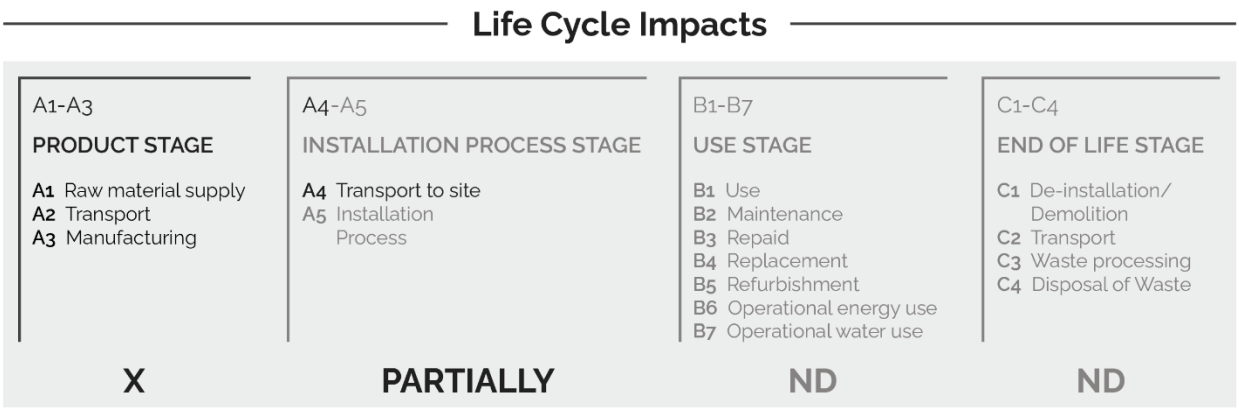

Figure 1: **General life cycle phases for consideration in a construction works system**

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.

System Boundary

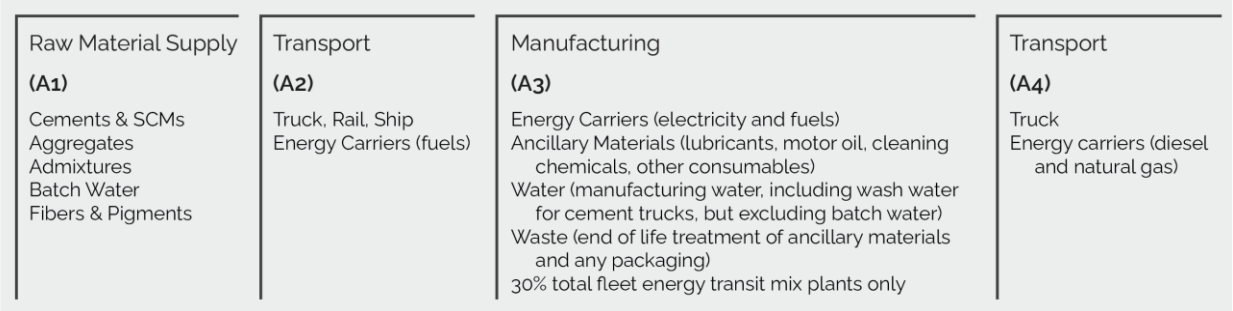

Figure 2: **General system inputs considered in the product system and categorized by modules in scope**

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-PD051 Acuña 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
Silica Sand	silica sand production/silica sand/RoW/kg; Note: modifications made (see ecoinvent activity changes table)	ecoinvent v3.10 in 2024	Mendoza	2024	2	3	1	3	3
Andesite Gravel	basalt quarry operation/basalt/RoW/kg; Note: modifications made (see ecoinvent activity changes table)	ecoinvent v3.10 in 2024	Nueveo León	2024	2	3	1	3	3
Water	tap water production, conventional treatment/tap water/RoW/kg	ecoinvent v3.10 in 2024	Coahuila	2024	2	3	1	3	3
Limestone gravel	limestone quarry operation/limestone, unprocessed/RoW/kg; Note: modifications made (see ecoinvent activity changes table)	ecoinvent v3.10 in 2024	Coahuila	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	Nuevo León	2024	2	3	1	3	3
Cement	Gris CPC 40	Progam Operator: Labeling Sustainability - EPD ID: 1f601e78-f88d-4740-9c28-75355e06be35	Nuevo León	13 July 2023	3	3	3	3	3
Ash	Waste input produced off-site	See A3 inputs	Coahuila	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 9: **Life cycle impact categories and life cycle inventory metrics**

ID	LCIA.indicators	Abbreviations	Units
1	Climate change: global warming potential (GWP100)	GWP100	kg CO2-eq
2	Ozone depletion: ozone depletion potential (ODP)	ODP	kg CFC-11-eq
3	Acidification: acidification potential (AP)	AP	kg SO2-eq
4	Eutrophication: eutrophication potential	EP	kg N-eq
5	Smog formation potential	SFP	kg O3-eq
6	Energy resources: non-renewable: abiotic depletion potential (ADP): fossil fuels	ADPfossil	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	m3
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

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 these 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	GWP100	ODP	AP	EP	SFP	ADPfossil
Unit	**kg CO2-eq**	**kg CFC-11-eq**	**kg SO2-eq**	**kg N-eq**	**kg O3-eq**	**MJ**
Acelerado - 200 - 3 días	397	4.08E-06	0.528	0.286	10.3	3350
Acelerado - 200 - 30 kg a 12 horas	338	3.62E-06	0.485	0.253	9.62	3000
Acelerado - 200 - 60% a 2 días	402	4.00E-06	0.519	0.241	10.2	3310
Acelerado - 250 - 3 días	437	4.38E-06	0.554	0.307	10.7	3570
Acelerado - 250 - 30 kg a 12 horas	365	3.82E-06	0.501	0.267	9.86	3150
Acelerado - 250 - 60% a 2 días	437	4.26E-06	0.543	0.255	10.6	3510
Acelerado - 300 - 30 kg a 12 horas	398	4.05E-06	0.521	0.284	10.2	3320
Acelerado - 300 - 60% a 3 días	413	4.16E-06	0.527	0.292	10.2	3390
Alta resistencia - MR 48 - 60% a 2 días	436	4.29E-06	0.546	0.272	10.6	3520
Antibacteriano - 250 - 28 días	365	3.82E-06	0.5	0.271	9.83	3140
Antideslave - 350 - 28 días	524	5.09E-06	0.609	0.396	11.5	4060
Antihongo antialga - 250 - 28 días	381	4.10E-06	0.526	0.357	10.2	3320
Antitermita - 250 - 28 días	365	3.82E-06	0.5	0.271	9.83	3140
Aparentia - 250 - 28 días	453	5.52E-06	0.657	0.808	12.1	4180
Autocompactable - 250 - 28 días	438	4.45E-06	0.554	0.353	10.6	3590
Baja contracción - MR 35 - 28 días	439	4.37E-06	0.554	0.292	10.8	3570
Baja contracción - MR 40 - 28 días	464	4.52E-06	0.569	0.286	11	3700
Contracción compensada - MR 42 - 28 días	423	4.29E-06	0.554	0.303	10.8	3520
Convencional - 100 - 28 días	273	3.15E-06	0.449	0.219	9.13	2660
Convencional - 150 - 28 días	298	3.23E-06	0.446	0.226	8.95	2690

Convencional - 200 - 28 días	334	3.59E-06	0.485	0.252	9.59	2980
Convencional - 250 - 28 días	361	3.78E-06	0.498	0.265	9.82	3120
Convencional - 350 - 28 días	436	4.32E-06	0.541	0.304	10.4	3520
Duramax - 250 - 28 días	468	4.65E-06	0.572	0.352	10.9	3750
Duramax Autosellante - 250 - 28 días	468	4.65E-06	0.572	0.352	10.9	3750
Estructural - 350 - 7 días	553	5.23E-06	0.626	0.369	11.8	4200
Grout premezclado - 350 - 28 días	734	6.57E-06	0.736	0.5	13.3	5150
Hidratium - 200 - 28 días	346	3.67E-06	0.491	0.257	9.67	3040
Impercem - 200 - 28 días	348	3.69E-06	0.493	0.262	9.7	3050
Lanzado - 250 - 28 días	451	4.60E-06	0.569	0.384	10.9	3690
Ligero - 150 - 28 días	467	4.32E-06	0.532	0.334	9.74	3640
Materiales Reciclados Llanta - 200 - 28 días	354	3.67E-06	0.489	0.227	9.7	3060
Materiales Reciclados Pet - 200 - 28 días	354	3.67E-06	0.489	0.227	9.7	3060
Materiales Reciclados Plástico de difícil reciclado - 200 - 28 días	355	3.68E-06	0.49	0.228	9.73	3070
Mortero - 150 - 28 días	359	3.72E-06	0.485	0.261	9.52	3060
Mortero estabilizado - 150 - 28 días	362	3.81E-06	0.493	0.296	9.62	3110
Pavicrete - MR 38 - 28 días	359	3.77E-06	0.496	0.264	9.79	3110
Pavicrete - MR 40 - 28 días	396	4.07E-06	0.529	0.286	10.4	3350
Pavicrete - MR 45 - 28 días	405	4.14E-06	0.534	0.29	10.4	3390
Pavicrete - MR 45 - 3 días	440	4.40E-06	0.556	0.309	10.8	3580
Pervia - MR 36 - 28 días	538	5.09E-06	0.599	0.391	11.1	4040
Pesado - 300 - 28 días	546	5.81E-06	0.754	0.451	14.7	4790
Reducrack - 250 - 28 días	365	3.82E-06	0.5	0.271	9.83	3140
Reducrack Sin malla - 250 - 28 días	366	3.84E-06	0.505	0.274	9.89	3160
Relleno fluido - 60 - 28 días	238	2.72E-06	0.388	0.185	7.89	2310
Revenimiento total - 200 - 28 días	370	3.77E-06	0.492	0.265	9.66	3090
Trabajabilidad extendida - 250 - 28 días, trab ext 3 horas	412	4.23E-06	0.54	0.317	10.5	3450
Vertua Materiales Reciclados - 060 - 28 días	227	2.56E-06	0.36	0.174	7.28	2160

b) Resource Inventory Metrics:

Indicator/LCI Metric	RPRE	PRM	NRPRE	NRPRM	SM	RSF	RE	FW
Unit	**MJ**	**MJ**	**MJ**	**kg**	**MJ**	**MJ**	**MJ**	**m3**
Acelerado - 200 - 3 días	84.5	1.27	84.3	742	1.17	0.0137	0.546	0.632
Acelerado - 200 - 30 kg a 12 horas	73.5	1.19	73.5	582	1.09	0.0131	0.512	0.588
Acelerado - 200 - 60% a 2 días	84.3	1.28	84.2	752	1.15	0.0135	0.52	0.619
Acelerado - 250 - 3 días	91.9	1.32	91.7	856	1.21	0.014	0.565	0.656
Acelerado - 250 - 30 kg a 12 horas	78.6	1.23	78.5	661	1.12	0.0132	0.523	0.604
Acelerado - 250 - 60% a 2 días	90.7	1.33	90.6	848	1.19	0.0138	0.536	0.633
Acelerado - 300 - 30 kg a 12 horas	84.6	1.27	84.4	754	1.15	0.0134	0.537	0.623
Acelerado - 300 - 60% a 3 días	87.5	1.3	87.3	804	1.15	0.0134	0.539	0.64
Alta resistencia - MR 48 - 60% a 2 días	90.9	1.33	90.7	846	1.2	0.0139	0.545	0.639
Antibacteriano - 250 - 28 días	78.6	1.23	78.6	664	1.11	0.0132	0.523	0.611
Antideslave - 350 - 28 días	109	1.45	109	1130	1.28	0.0143	0.616	0.726
Antihongo antialga - 250 - 28 días	83.5	1.24	83.3	725	1.15	0.0135	0.571	0.662
Antitermita - 250 - 28 días	78.6	1.23	78.6	664	1.11	0.0132	0.523	0.611
Aparentia - 250 - 28 días	107	1.3	106	1020	1.32	0.015	0.818	0.938
Autocompactable - 250 - 28 días	93.2	1.33	93	883	1.19	0.0137	0.577	0.684
Baja contracción - MR 35 - 28 días	91.9	1.33	91.8	856	1.21	0.0141	0.559	0.643
Baja contracción - MR 40 - 28 días	96.1	1.36	95.9	919	1.24	0.0143	0.564	0.647
Contracción compensada - MR 42 - 28 días	89.8	1.3	89.6	806	1.21	0.0145	0.587	0.681
Convencional - 100 - 28 días	61.4	1.09	61.4	388	1.04	0.0129	0.489	0.554
Convencional - 150 - 28 días	65.9	1.14	65.9	494	0.995	0.0121	0.467	0.551
Convencional - 200 - 28 días	73.1	1.18	73	568	1.09	0.0131	0.529	0.595
Convencional - 250 - 28 días	77.7	1.22	77.6	647	1.11	0.0132	0.521	0.602

Convencional - 350 - 28 días	91.8	1.33	91.6	872	1.17	0.0135	0.548	0.654
Duramax - 250 - 28 días	98.4	1.37	98.1	962	1.23	0.014	0.585	0.686
Duramax Autosellante - 250 - 28 días	98.4	1.37	98.1	962	1.23	0.014	0.585	0.686
Estructural - 350 - 7 días	113	1.49	113	1190	1.32	0.0147	0.614	0.732
Grout premezclado - 350 - 28 días	149	1.75	149	1740	1.46	0.0162	0.751	0.946
Hidratium - 200 - 28 días	75.3	1.2	75.2	604	1.1	0.0131	0.532	0.607
Impercem - 200 - 28 días	75.8	1.2	75.7	611	1.1	0.0132	0.535	0.61
Lanzado - 250 - 28 días	96.2	1.34	95.9	922	1.22	0.014	0.597	0.699
Ligero - 150 - 28 días	97	1.4	96.6	1120	1.04	0.0114	0.498	0.779
Materiales Reciclados Llanta - 200 - 28 días	75.7	1.21	75.7	619	1.1	0.0132	0.503	0.586
Materiales Reciclados Pet - 200 - 28 días	75.7	1.21	75.7	619	1.1	0.0132	0.504	0.586
Materiales Reciclados Plástico de difícil reciclado - 200 - 28 días	75.9	1.21	75.8	619	1.11	0.0132	0.506	0.587
Mortero - 150 - 28 días	77.5	1.23	77.4	662	1.08	0.0127	0.504	0.64
Mortero estabilizado - 150 - 28 días	78.7	1.23	78.6	676	1.09	0.0128	0.522	0.659
Pavicrete - MR 38 - 28 días	77.4	1.22	77.3	644	1.11	0.0132	0.519	0.602
Pavicrete - MR 40 - 28 días	84.3	1.27	84.2	739	1.17	0.0137	0.546	0.63
Pavicrete - MR 45 - 28 días	86	1.28	85.9	767	1.17	0.0138	0.549	0.636
Pavicrete - MR 45 - 3 días	92.5	1.33	92.4	867	1.21	0.014	0.565	0.66
Pervia - MR 36 - 28 días	112	1.48	111	1190	1.24	0.0136	0.608	0.647
Pesado - 300 - 28 días	118	1.38	118	980	1.69	0.0198	0.836	0.822
Reducrack - 250 - 28 días	78.6	1.23	78.6	664	1.11	0.0132	0.523	0.611

Reducrack Sin malla - 250 - 28 días	79.3	1.23	79.2	664	1.12	0.0133	0.546	0.622
Relleno fluido - 60 - 28 días	54.5	1.07	54.6	337	0.903	0.0112	0.423	0.522
Revenimiento total - 200 - 28 días	79.3	1.25	79.2	700	1.07	0.0126	0.5	0.615
Trabajabilidad extendida - 250 - 28 días, trab ext 3 horas	87.9	1.29	87.7	795	1.18	0.0138	0.562	0.657
Vertua Materiales Reciclados - 060 - 28 días	52.4	1.07	52.5	337	0.832	0.0102	0.389	0.497

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	5.09	108	0.00021	0.000625	0.0367	0.000157
Acelerado - 200 - 30 kg a 12 horas	4.68	97.9	0.000189	0.000547	0.0321	0.000147
Acelerado - 200 - 60% a 2 días	4.92	104	0.000205	0.000616	0.0368	0.000152
Acelerado - 250 - 3 días	5.33	114	0.000224	0.000678	0.0399	0.000162
Acelerado - 250 - 30 kg a 12 horas	4.83	102	0.000198	0.000582	0.0342	0.000151
Acelerado - 250 - 60% a 2 días	5.13	109	0.000217	0.00066	0.0395	0.000157
Acelerado - 300 - 30 kg a 12 horas	5.02	107	0.000209	0.000624	0.0367	0.000154
Acelerado - 300 - 60% a 3 días	5.08	109	0.000213	0.000643	0.0379	0.000155
Alta resistencia - MR 48 - 60% a 2 días	5.19	110	0.000219	0.000664	0.0395	0.000159
Antibacteriano - 250 - 28 días	4.83	102	0.000198	0.000583	0.0342	0.00015
Antideslave - 350 - 28 días	5.94	130	0.000259	0.000802	0.0468	0.000174
Antihongo antialga - 250 - 28 días	5.22	112	0.000215	0.00063	0.036	0.00016
Antitermita - 250 - 28 días	4.83	102	0.000198	0.000583	0.0342	0.00015
Aparentia - 250 - 28 días	7.2	162	0.000301	0.000863	0.0446	0.000207
Autocompactable - 250 - 28 días	5.43	117	0.000229	0.000692	0.0402	0.000163
Baja contracción - MR 35 - 28 días	5.3	113	0.000223	0.000676	0.04	0.000162
Baja contracción - MR 40 - 28 días	5.4	115	0.00023	0.000702	0.0418	0.000164

Contracción compensada - MR 42 - 28 días	5.34	113	0.000221	0.000662	0.0389	0.000191
Convencional - 100 - 28 días	4.33	88.7	0.000167	0.000463	0.027	0.000141
Convencional - 150 - 28 días	4.24	88.5	0.000169	0.000486	0.0286	0.000135
Convencional - 200 - 28 días	4.71	98.6	0.000189	0.000545	0.0318	0.000149
Convencional - 250 - 28 días	4.81	101	0.000196	0.000576	0.0338	0.00015
Convencional - 350 - 28 días	5.21	112	0.000221	0.000672	0.0397	0.000157
Duramax - 250 - 28 días	5.57	120	0.000238	0.000726	0.0424	0.000166
Duramax Autosellante - 250 - 28 días	5.57	120	0.000238	0.000726	0.0424	0.000166
Estructural - 350 - 7 días	6.02	131	0.000264	0.000828	0.0489	0.000176
Grout premezclado - 350 - 28 días	7.17	161	0.000329	0.00107	0.0631	0.000276
Hidratium - 200 - 28 días	4.76	100	0.000192	0.00056	0.0327	0.00015
Impercem - 200 - 28 días	4.79	101	0.000194	0.000564	0.0329	0.000151
Lanzado - 250 - 28 días	5.61	121	0.000238	0.000717	0.0413	0.000168
Ligero - 150 - 28 días	4.99	109	0.000218	0.000688	0.0408	0.000141
Materiales Reciclados Llanta - 200 - 28 días	4.66	97.4	0.00019	0.000557	0.0331	0.000147
Materiales Reciclados Pet - 200 - 28 días	4.66	97.4	0.00019	0.000557	0.0331	0.000147
Materiales Reciclados Plástico de difícil reciclado - 200 - 28 días	4.68	97.8	0.00019	0.000559	0.0332	0.000148
Mortero - 150 - 28 días	4.68	99.6	0.000193	0.00057	0.0336	0.000145
Mortero estabilizado - 150 - 28 días	4.82	103	0.000198	0.000584	0.034	0.000148
Pavicrete - MR 38 - 28 días	4.79	101	0.000195	0.000574	0.0337	0.000149
Pavicrete - MR 40 - 28 días	5.09	108	0.00021	0.000625	0.0367	0.000157
Pavicrete - MR 45 - 28 días	5.14	109	0.000213	0.000636	0.0374	0.000158
Pavicrete - MR 45 - 3 días	5.35	114	0.000225	0.000682	0.0401	0.000162
Pervia - MR 36 - 28 días	5.84	128	0.000259	0.000813	0.0476	0.000169
Pesado - 300 - 28 días	7.7	161	0.000329	0.000939	0.0521	0.000234
Reducrack - 250 - 28 días	4.83	102	0.000198	0.000583	0.0342	0.00015
Reducrack Sin malla - 250 - 28 días	4.92	104	0.000201	0.000589	0.0344	0.000153
Relleno fluido - 60 - 28 días	3.75	77.4	0.000145	0.000402	0.0237	0.000122

Revenimiento total - 200 - 28 días	4.68	99.7	0.000194	0.00058	0.0343	0.000144
Trabajabilidad extendida - 250 - 28 días, trab ext 3 horas	5.24	112	0.000219	0.000652	0.0381	0.00016
Vertua Materiales Reciclados - 060 - 28 días	3.47	72.2	0.000135	0.000379	0.0225	0.000112

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 kgCO2 / LITER	Total kg CO2 eq (A4)	Total kg CO2 eq/m³ (A4)
MX-PD051 ACUÑA	45,683.00	2.596	118,593.07	5.20

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 (kgCO2/m³)	Gross (kgCO2/m³)
Acelerado - 200 - 3 días	182	203
Acelerado - 200 - 30 kg a 12 horas	142	159
Acelerado - 200 - 60% a 2 días	189	211

Acelerado - 250 - 3 días	209	234
Acelerado - 250 - 30 kg a 12 horas	162	181
Acelerado - 250 - 60% a 2 días	213	238
Acelerado - 300 - 30 kg a 12 horas	185	207
Acelerado - 300 - 60% a 3 días	197	220
Alta resistencia - MR 48 - 60% a 2 días	211	236
Antibacteriano - 250 - 28 días	162	181
Antideslave - 350 - 28 días	271	303
Antihongo antialga - 250 - 28 días	169	189
Antitermita - 250 - 28 días	162	181
Aparentia - 250 - 28 días	199	222
Autocompactable - 250 - 28 días	211	236
Baja contracción - MR 35 - 28 días	211	236
Baja contracción - MR 40 - 28 días	229	256
Contracción compensada - MR 42 - 28 días	197	221
Convencional - 100 - 28 días	95	106
Convencional - 150 - 28 días	121	135
Convencional - 200 - 28 días	139	156
Convencional - 250 - 28 días	158	177
Convencional - 350 - 28 días	213	239
Duramax - 250 - 28 días	232	260
Duramax Autosellante - 250 - 28 días	232	260
Estructural - 350 - 7 días	291	326
Grout premezclado - 350 - 28 días	422	473
Hidratium - 200 - 28 días	148	165
Impercem - 200 - 28 días	149	167
Lanzado - 250 - 28 días	218	244
Ligero - 150 - 28 días	246	276
Materiales Reciclados Llanta - 200 - 28 días	155	173
Materiales Reciclados Pet - 200 - 28 días	155	173
Materiales Reciclados Plástico de difícil reciclado - 200 - 28 días	155	173
Mortero - 150 - 28 días	162	181
Mortero estabilizado - 150 - 28 días	162	181
Pavicrete - MR 38 - 28 días	158	176
Pavicrete - MR 40 - 28 días	181	202
Pavicrete - MR 45 - 28 días	188	210
Pavicrete - MR 45 - 3 días	212	237
Pervia - MR 36 - 28 días	289	323
Pesado - 300 - 28 días	236	264
Reducrack - 250 - 28 días	162	181
Reducrack Sin malla - 250 - 28 días	162	181
Relleno fluido - 60 - 28 días	83	93
Revenimiento total - 200 - 28 días	171	192
Trabajabilidad extendida - 250 - 28 días, trab ext 3 horas	192	215
Vertua Materiales Reciclados - 060 - 28 días	83	93

REFERENCES

ASTM // NMX Standards:

- ASTM C33/C33M Standard Specification for Concrete Aggregates // NMX-C-111-ONNCCE-2018 Construction Industry - Aggregates for hydraulic concrete - Specifications and Test Methods
- ASTM C94 Standard Specification for Ready-Mixed Concrete //NMX-C-155-ONNCCE-2004 Construction Industry - Hydraulic Concrete - Mass dosed - Specifications and Test Methods
- ASTM C150/C150M Standard Specification for Portland Cement // NMX-C-414-ONNCCE-2017 Construction Industry - Hydraulic Cements - Specifications and Test Methods
- ASTM C260/C260M Standard Specification for Air-Entraining Admixtures for Concrete // NMX-C-255-ONNCCE-2006 Construction Industry - Concrete Chemical Admixtures - Specifications, sampling and test methods
- ASTM C595 Standard Specification for Blended Hydraulic Cements // NMX-C-414-ONNCCE-2017 Construction Industry - Hydraulic Cements-Specifications and Test Methods
- ASTM C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete // NMX-C-146-ONNCCE-2000 Construction Industry - Concrete additives raw or calcined natural pozzolana and fly ash for use as a mineral admixture in Portland cement concrete - Specifications
- ASTM C979/C979M Standard Specification for Pigments for Integrally Colored Concrete // NMX-C-313-1981 Construction Industry - Cement Portland - Color of mortars and concrete
- ASTM C989/C989M Standard Specification for Slag Cement for Use in Concrete and Mortars
- ASTM C1017/C1017M Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete // NMX-C-255-ONNCCE-2006 Construction Industry - Concrete Chemical Admixtures - Specifications, sampling and test methods
- ASTM C1116/C1116M Standard Specification for Fiber-Reinforced Concrete
- ASTM C1157/C1157M Standard Performance Specification for Hydraulic Cement // NMX-C-414-ONNCCE-2017 Construction Industry - Hydraulic Cements - Specifications and Test Methods
- ASTM C1240 Standard Specification for Silica Fume Used in Cementitious Mixtures // NMX-C-273-ONNCCE-2010 Construction Industry - Hydraulic Cements - Determination of hydraulic activity of additions with Ordinary Portland Cement
- ASTM C1602/C1602M Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete // NMX-C-122-ONNCCE-2019 Construction Industry - Water for Concrete - Specifications
- ASTM G109 Standard Test Method for Determining Effects of Chemical Admixtures on Corrosion of Embedded Steel Reinforcement in Concrete Exposed to Chloride Environments
- ASTM C330/C330M Standard Specification for Lightweight Aggregates for Structural Concrete // NMX-C-299-ONNCCE-2010 Construction Industry - Structural Hydraulic Concrete - Lightweight aggregates-specifications and test methods

- ASTM C494/C494M Standard Specification for Chemical Admixtures for Concrete // NMX-C-255-ONNCCE-2006 Construction Industry - Concrete Chemical Admixtures - Specifications, sampling and test methods

ISO Standards:

- ISO 6707-1: 2014 Buildings and Civil Engineering Works - Vocabulary - Part 1: General Terms
- ISO 14021:1999 Environmental Labels and Declarations - Self-declared Environmental Claims (Type II Environmental Labeling)
- 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
- ISO 14067:2018 Greenhouse Gases - Carbon Footprint of Products - Requirements and Guidelines for Quantification
- ISO 14050:2009 Environmental Management - Vocabulary
- ISO 21930:2017 Sustainability in Building Construction - Environmental Declaration of Building Products