DECLARACIÓN AMBIENTAL DE PRODUCTO

CONCRETO
Planta Sur **/ Colombia**

SOSTENIBILIDAD COLOMBIA
2024

Declared product:

This Environmental Product Declaration (EPD) covers ready-mix concrete products manufactured by CEMEX Colombia in the Sur Plant.

Plant address: Autopista al Llano Km. 7 - Costado Oriental, Bogotá, Colombia.

Declared unit**:** 1 cubic meter of concrete

Declaration Owner:

CEMEX Colombia S.A.

Cl. 99 #9a 54, Bogotá, Colombia

SustainabilitySCA&C@cemex.com

www.cemexcolombia.com

Program Operator:

Labeling Sustainability

11670 W Sunset Blvd.

Los Angeles, CA

http://labelinsustainability.com/

ISO 21930:2017 Sustainability in Building Construction – Environmental Declaration of Building Products serves as the core PCR.

NSF PCR for Concrete (NSF, 2022v) serves as the subcategory PCR.

Subcategory PCR Review was conducted by:

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Independent verification of the declaration and data, according to ISO 21930:2017 and ISO 14025:2006

✓ External ☐ Internal

Third-party verifier:

Denice V. Staaf, Certified 3rd Party Verifier under Labeling Sustainability (www.labelingsustainability.com)

EPD Software Tool: GCCA Industry EPD Tool for Cement and Concrete (V4.2), North American version.

Date of Issue: 28 February 2025

Period of validity: 28 February 2030

EPD Number: CCO02282509

ENVIRONMENTAL PRODUCT DECLARATION
CEMEX COLOMBIA

1. Company Description

CEMEX S.A.B. de C.V. (CEMEX) is at global building materials company dedicated to building at 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.

Cemex Colombia's cement plants have an environmental management system certified under ISO 14001, which guarantees that the environmental impact is being rigorously measured, that pollution is being prevented, and that continuous improvement is enabled.

2. Study Goal

The intended application of this life cycle assessment (LCA) is to comply with the procedures for creating 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 Concrete (version 2.3, dated February 2024) and is at 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. EPDs for concrete that follow other PCRs may not be comparable.

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 differentiate CEMEX S.A.B. de C.V.

from their competition for the following reasons: generate an advantage for the organization; offer customers information to help them make informed product decisions; improve the environmental performance of 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; and to strengthen CEMEX S.A.B. de C.V. license to operate in the community. The intended audience for this LCA report is CEMEX S.A.B. de C.V. 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 of other facilities.

Only EPDs prepared from cradle-to-grave life-cycle results and based on the same function, reference service life, and quantified by the same functional unit, can be used to assist purchasers and users in making informed comparisons between products. Since EPDs developed under these PCR only cover the cradle-to-gate impacts of Ready-mix concrete, using at declared unit, the results cannot be used to compare products used in different mixtures and construction products. The results from Concrete EPD must be integrated into a comprehensive cradle-to-grave, ISO 14044-compliant LCA to compare between different products. The basis of at comparison, where applicable, shall include the product application in accordance with ISO 21930 ASTM (2014).

3. Product Information

3.1. Product Identification

This EPD is prepared for products classified as UN CPC Group 3744-Cement or CSI MasterFormat Division 03 30 00 Cast-in-Place Concrete.

3.2. Ready-mix Concrete Design Summary

The following table provides a list of the concrete products considered in this EPD along with key performance parameters.

Strength <15 Mpa

Table 1. Declared products considered in this Environmental Product Declaration

N°	Ready-mix	Description	Strength (MPa)	Age (Days)	Slump (cm)	Category
1	1-105-3-A-28-15-1-3-000	10.30 MPa at 28 Days Strength Ready Mix Concrete	10.3	28	15	Convencional
2	1-105-5-A-28-10-0-3-000	10.30 MPa at 28 Days Strength Ready Mix Concrete	10.3	28	10	Convencional
3	1-105-5-A-28-13-1-3-000	10.30 MPa at 28 Days Strength Ready Mix Concrete	10.3	28	13	Convencional
4	1-105-5-A-28-15-1-3-000	10.30 MPa at 28 Days Strength Ready Mix Concrete	10.3	28	15	Convencional

Table 1. Declared products considered in this Environmental Product Declaration						
N°	**Ready-mix**	**Description**	**Strength (MPa)**	**Age (Days)**	**Slump (cm)**	**Category**
5	**1-105-5-A-28-20-1-3-000**	10.30 MPa at 28 Days Strength Ready Mix Concrete	10.3	28	20	Convencional
6	**1-140-3-A-28-13-1-3-000**	13.73 MPa at 28 Days Strength Ready Mix Concrete	13.7	28	13	Convencional
7	**1-140-3-A-28-15-1-3-000**	13.73 MPa at 28 Days Strength Ready Mix Concrete	13.7	28	15	Convencional
8	**1-140-5-A-28-10-0-3-000**	13.73 MPa at 28 Days Strength Ready Mix Concrete	13.7	28	10	Convencional
9	**1-140-5-A-28-13-1-3-000**	13.73 MPa at 28 Days Strength Ready Mix Concrete	13.7	28	13	Convencional
10	**1-140-5-A-28-15-1-3-000**	13.73 MPa at 28 Days Strength Ready Mix Concrete	13.7	28	15	Convencional
11	**1-140-5-A-28-20-1-3-000**	13.73 MPa at 28 Days Strength Ready Mix Concrete	13.7	28	20	Convencional
12	**M-105-0-A-28-15-1-3-000**	10.30 MPa at 28 Days Strength Ready Mix Concrete	10.3	28	15	Mortero
13	**M-125-0-A-28-15-1-3-000**	12.26 MPa at 28 Days Strength Ready Mix Concrete	12.3	28	15	Mortero
14	**P-036-5-A-28-10-0-3-026**	3.53 MPa at 28 Days Strength Ready Mix Concrete	3.5	28	10	Pavimento
15	**P-039-5-A-28-13-0-3-000**	3.82 MPa at 28 Days Strength Ready Mix Concrete	3.8	28	13	Pavimento
16	**P-039-5-A-28-15-1-3-000**	3.82 MPa at 28 Days Strength Ready Mix Concrete	3.8	28	15	Pavimento
17	**P-041-5-A-03-13-0-3-000**	4.02 MPa at 03 Days Strength Ready Mix Concrete	4.0	3	13	Pavimento
18	**P-041-5-A-28-13-0-3-000**	4.02 MPa at 28 Days Strength Ready Mix Concrete	4.0	28	13	Pavimento
19	**P-041-5-A-28-15-1-3-000**	4.02 MPa at 28 Days Strength Ready Mix Concrete	4.0	28	15	Pavimento
20	**P-042-5-A-28-15-1-3-000**	4.12 MPa at 28 Days Strength Ready Mix Concrete	4.1	28	15	Pavimento
21	**P-043-5-A-03-13-0-3-000**	4.22 MPa at 03 Days Strength Ready Mix Concrete	4.2	3	13	Pavimento
22	**P-043-5-A-28-13-0-3-000**	4.22 MPa at 28 Days Strength Ready Mix Concrete	4.2	28	13	Pavimento
23	**P-045-5-A-03-13-0-3-000**	4.41 MPa at 03 Days Strength Ready Mix Concrete	4.4	3	13	Pavimento
24	**P-045-5-A-03-13-0-3-534**	4.41 MPa at 03 Days Strength Ready Mix Concrete	4.4	3	13	Pavimento
25	**P-045-5-A-07-13-0-3-000**	4.41 MPa at 07 Days Strength Ready Mix Concrete	4.4	7	13	Pavimento
26	**P-045-5-A-07-13-0-3-534**	4.41 MPa at 07 Days Strength Ready Mix Concrete	4.4	7	13	Pavimento
27	**P-045-5-A-14-13-0-3-000**	4.41 MPa at 14 Days Strength Ready Mix Concrete	4.4	14	13	Pavimento
28	**P-045-5-A-14-13-0-3-534**	4.41 MPa at 14 Days Strength Ready Mix Concrete	4.4	14	13	Pavimento
29	**P-045-5-A-28-10-0-3-000**	4.41 MPa at 28 Days Strength Ready Mix Concrete	4.4	28	10	Pavimento

Table 1. Declared products considered in this Environmental Product Declaration						
N°	**Ready-mix**	**Description**	**Strength (MPa)**	**Age (Days)**	**Slump (cm)**	**Category**
30	**P-045-5-A-28-10-0-3-534**	4.41 MPa at 28 Days Strength Ready Mix Concrete	4.4	28	10	Pavimento
31	**P-045-5-A-28-13-0-3-534**	4.41 MPa at 28 Days Strength Ready Mix Concrete	4.4	28	13	Pavimento
32	**P-045-5-A-28-18-0-3-530**	4.41 MPa at 28 Days Strength Ready Mix Concrete	4.4	28	18	Pavimento

Strength 15 to 20 Mpa

Table 2. Declared products considered in this Environmental Product Declaration						
N°	**Ready-mix**	**Description**	**Strength (MPa)**	**Age (Days)**	**Slump (cm)**	**Category**
33	**1-175-3-A-28-13-1-3-000**	17.16 MPa at 28 Days Strength Ready Mix Concrete	17.2	28	13	Convencional
34	**1-175-3-A-28-15-1-3-000**	17.16 MPa at 28 Days Strength Ready Mix Concrete	17.2	28	15	Convencional
35	**1-175-3-A-28-20-1-3-000**	17.16 MPa at 28 Days Strength Ready Mix Concrete	17.2	28	20	Convencional
36	**1-175-5-A-28-10-0-3-000**	17.16 MPa at 28 Days Strength Ready Mix Concrete	17.2	28	10	Convencional
37	**1-175-5-A-28-10-0-3-001**	17.16 MPa at 28 Days Strength Ready Mix Concrete	17.2	28	10	Convencional
38	**1-175-5-A-28-13-1-3-000**	17.16 MPa at 28 Days Strength Ready Mix Concrete	17.2	28	13	Convencional
39	**1-175-5-A-28-15-1-3-000**	17.16 MPa at 28 Days Strength Ready Mix Concrete	17.2	28	15	Convencional
40	**1-175-5-A-28-20-1-3-000**	17.16 MPa at 28 Days Strength Ready Mix Concrete	17.2	28	20	Convencional

Strength 20 to 35 Mpa

Table 3. Declared products considered in this Environmental Product Declaration						
N°	**Ready-mix**	**Description**	**Strength (MPa)**	**Age (Days)**	**Slump (cm)**	**Category**
41	**1-210-3-A-03-13-1-3-000**	20.59 MPa at 03 Days Strength Ready Mix Concrete	20.6	3	13	Acelerado
42	**1-210-3-A-03-13-1-3-001**	20.59 MPa at 03 Days Strength Ready Mix Concrete	20.6	3	13	Acelerado
43	**1-210-3-A-03-15-1-3-000**	20.59 MPa at 03 Days Strength Ready Mix Concrete	20.6	3	15	Acelerado
44	**1-210-3-A-03-20-1-3-000**	20.59 MPa at 03 Days Strength Ready Mix Concrete	20.6	3	20	Acelerado
45	**1-210-3-A-07-13-1-3-000**	20.59 MPa at 07 Days Strength Ready Mix Concrete	20.6	7	13	Acelerado
46	**1-210-3-A-07-13-1-3-001**	20.59 MPa at 07 Days Strength Ready Mix Concrete	20.6	7	13	Acelerado

Table 3. Declared products considered in this Environmental Product Declaration						
N°	**Ready-mix**	**Description**	**Strength (MPa)**	**Age (Days)**	**Slump (cm)**	**Category**
47	**1-210-3-A-07-15-1-3-000**	20.59 MPa at 07 Days Strength Ready Mix Concrete	20.6	7	15	Acelerado
48	**1-210-3-A-14-13-1-3-000**	20.59 MPa at 14 Days Strength Ready Mix Concrete	20.6	14	13	Acelerado
49	**1-210-3-A-28-10-0-3-000**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	10	Convencional
50	**1-210-3-A-28-13-1-3-000**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	13	Convencional
51	**1-210-3-A-28-15-1-3-000**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	15	Convencional
52	**1-210-3-A-28-20-1-3-000**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	20	Convencional
53	**1-210-3-A-28-20-1-3-003**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	20	Convencional
54	**1-210-3-A-28-20-1-3-004**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	20	Convencional
55	**1-210-5-A-03-13-1-3-000**	20.59 MPa at 03 Days Strength Ready Mix Concrete	20.6	3	13	Acelerado
56	**1-210-5-A-03-15-1-3-000**	20.59 MPa at 03 Days Strength Ready Mix Concrete	20.6	3	15	Acelerado
57	**1-210-5-A-07-13-1-3-000**	20.59 MPa at 07 Days Strength Ready Mix Concrete	20.6	7	13	Acelerado
58	**1-210-5-A-07-15-1-3-000**	20.59 MPa at 07 Days Strength Ready Mix Concrete	20.6	7	15	Acelerado
59	**1-210-5-A-14-13-1-3-004**	20.59 MPa at 14 Days Strength Ready Mix Concrete	20.6	14	13	Acelerado
60	**1-210-5-A-14-15-1-3-000**	20.59 MPa at 14 Days Strength Ready Mix Concrete	20.6	14	15	Acelerado
61	**1-210-5-A-28-10-0-3-000**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	10	Convencional
62	**1-210-5-A-28-13-1-3-000**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	13	Convencional
63	**1-210-5-A-28-15-1-3-000**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	15	Convencional
64	**1-210-5-A-28-15-1-3-061**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	15	Convencional
65	**1-210-5-A-28-20-1-3-000**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	20	Convencional
66	**1-245-3-A-03-15-1-3-000**	24.03 MPa at 03 Days Strength Ready Mix Concrete	24.0	3	15	Acelerado
67	**1-245-3-A-03-20-1-3-000**	24.03 MPa at 03 Days Strength Ready Mix Concrete	24.0	3	20	Acelerado
68	**1-245-3-A-07-15-1-3-000**	24.03 MPa at 07 Days Strength Ready Mix Concrete	24.0	7	15	Acelerado
69	**1-245-3-A-07-15-1-3-004**	24.03 MPa at 07 Days Strength Ready Mix Concrete	24.0	7	15	Acelerado
70	**1-245-3-A-07-20-1-3-000**	24.03 MPa at 07 Days Strength Ready Mix Concrete	24.0	7	20	Acelerado

Table 3. Declared products considered in this Environmental Product Declaration						
N°	**Ready-mix**	**Description**	**Strength (MPa)**	**Age (Days)**	**Slump (cm)**	**Category**
71	**1-245-3-A-07-20-1-3-004**	24.03 MPa at 07 Days Strength Ready Mix Concrete	24.0	7	20	Acelerado
72	**1-245-3-A-14-15-1-3-000**	24.03 MPa at 14 Days Strength Ready Mix Concrete	24.0	14	15	Acelerado
73	**1-245-3-A-14-15-1-3-004**	24.03 MPa at 14 Days Strength Ready Mix Concrete	24.0	14	15	Acelerado
74	**1-245-3-A-28-15-1-3-000**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	15	Convencional
75	**1-245-3-A-28-15-1-3-003**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	15	Convencional
76	**1-245-3-A-28-15-1-3-004**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	15	Convencional
77	**1-245-3-A-28-15-1-3-020**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	15	Convencional
78	**1-245-3-A-28-20-1-3-000**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	20	Convencional
79	**1-245-3-A-28-20-1-3-004**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	20	Convencional
80	**1-245-5-A-03-13-1-3-000**	24.03 MPa at 03 Days Strength Ready Mix Concrete	24.0	3	13	Acelerado
81	**1-245-5-A-28-13-1-3-000**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	13	Convencional
82	**1-245-5-A-28-13-1-3-060**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	13	Convencional
83	**1-245-5-A-28-15-1-3-000**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	15	Convencional
84	**1-245-5-A-28-20-1-3-000**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	20	Convencional
85	**1-280-3-A-03-13-1-3-000**	27.46 MPa at 03 Days Strength Ready Mix Concrete	27.5	3	13	Acelerado
86	**1-280-3-A-03-15-1-3-000**	27.46 MPa at 03 Days Strength Ready Mix Concrete	27.5	3	15	Acelerado
87	**1-280-3-A-03-15-1-3-001**	27.46 MPa at 03 Days Strength Ready Mix Concrete	27.5	3	15	Acelerado
88	**1-280-3-A-07-15-1-3-000**	27.46 MPa at 07 Days Strength Ready Mix Concrete	27.5	7	15	Acelerado
89	**1-280-3-A-28-13-1-3-000**	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	13	Convencional
90	**1-280-3-A-28-13-1-3-001**	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	13	Convencional
91	**1-280-3-A-28-15-1-3-000**	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Convencional
92	**1-280-3-A-28-15-1-3-001**	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Convencional
93	**1-280-3-A-28-15-1-3-061**	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Convencional
94	**1-280-3-A-28-20-1-3-000**	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	20	Convencional

Table 3. Declared products considered in this Environmental Product Declaration						
N°	Ready-mix	Description	Strength (MPa)	Age (Days)	Slump (cm)	Category
95	1-280-3-A-28-20-1-3-003	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	20	Convencional
96	1-280-3-A-28-20-1-3-004	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	20	Convencional
97	1-280-5-A-03-13-1-3-000	27.46 MPa at 03 Days Strength Ready Mix Concrete	27.5	3	13	Acelerado
98	1-280-5-A-03-13-1-3-001	27.46 MPa at 03 Days Strength Ready Mix Concrete	27.5	3	13	Acelerado
99	1-280-5-A-03-15-1-3-000	27.46 MPa at 03 Days Strength Ready Mix Concrete	27.5	3	15	Acelerado
100	1-280-5-A-07-13-1-3-000	27.46 MPa at 07 Days Strength Ready Mix Concrete	27.5	7	13	Acelerado
101	1-280-5-A-07-13-1-3-001	27.46 MPa at 07 Days Strength Ready Mix Concrete	27.5	7	13	Acelerado
102	1-280-5-A-07-15-1-3-000	27.46 MPa at 07 Days Strength Ready Mix Concrete	27.5	7	15	Acelerado
103	1-280-5-A-07-20-1-3-000	27.46 MPa at 07 Days Strength Ready Mix Concrete	27.5	7	20	Acelerado
104	1-280-5-A-14-13-1-3-000	27.46 MPa at 14 Days Strength Ready Mix Concrete	27.5	14	13	Acelerado
105	1-280-5-A-14-15-1-3-000	27.46 MPa at 14 Days Strength Ready Mix Concrete	27.5	14	15	Acelerado
106	1-280-5-A-28-10-0-3-000	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	10	Convencional
107	1-280-5-A-28-13-1-3-000	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	13	Convencional
108	1-280-5-A-28-13-1-3-001	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	13	Convencional
109	1-280-5-A-28-13-1-3-060	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	13	Convencional
110	1-280-5-A-28-15-1-3-000	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Convencional
111	1-280-5-A-28-15-1-3-001	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Convencional
112	1-280-5-A-28-15-1-3-01P	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Convencional
113	1-280-5-A-28-15-1-3-060	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Convencional
114	1-280-5-A-28-15-1-3-061	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Convencional
115	1-280-5-A-28-20-1-3-000	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	20	Convencional
116	1-280-5-A-28-20-1-3-001	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	20	Convencional
117	1-315-5-A-28-15-1-3-000	30.89 MPa at 28 Days Strength Ready Mix Concrete	30.9	28	15	Convencional
118	1-315-5-A-28-15-1-3-001	30.89 MPa at 28 Days Strength Ready Mix Concrete	30.9	28	15	Convencional

Table 3. Declared products considered in this Environmental Product Declaration						
N°	Ready-mix	Description	Strength (MPa)	Age (Days)	Slump (cm)	Category
119	1-350-3-A-03-13-1-3-000	34.32 MPa at 03 Days Strength Ready Mix Concrete	34.3	3	13	Acelerado
120	1-350-3-A-03-13-1-3-001	34.32 MPa at 03 Days Strength Ready Mix Concrete	34.3	3	13	Acelerado
121	1-350-3-A-07-15-1-3-000	34.32 MPa at 07 Days Strength Ready Mix Concrete	34.3	7	15	Acelerado
122	1-350-3-A-28-15-1-3-000	34.32 MPa at 28 Days Strength Ready Mix Concrete	34.3	28	15	Convencional
123	1-350-3-A-28-20-1-3-000	34.32 MPa at 28 Days Strength Ready Mix Concrete	34.3	28	20	Convencional
124	1-350-5-A-03-13-1-3-000	34.32 MPa at 03 Days Strength Ready Mix Concrete	34.3	3	13	Acelerado
125	1-350-5-A-03-13-1-3-001	34.32 MPa at 03 Days Strength Ready Mix Concrete	34.3	3	13	Acelerado
126	1-350-5-A-07-13-1-3-001	34.32 MPa at 07 Days Strength Ready Mix Concrete	34.3	7	13	Acelerado
127	1-350-5-A-28-10-0-3-000	34.32 MPa at 28 Days Strength Ready Mix Concrete	34.3	28	10	Convencional
128	1-350-5-A-28-10-0-3-001	34.32 MPa at 28 Days Strength Ready Mix Concrete	34.3	28	10	Convencional
129	1-350-5-A-28-13-1-3-000	34.32 MPa at 28 Days Strength Ready Mix Concrete	34.3	28	13	Convencional
130	1-350-5-A-28-13-1-3-001	34.32 MPa at 28 Days Strength Ready Mix Concrete	34.3	28	13	Convencional
131	1-350-5-A-28-15-1-3-000	34.32 MPa at 28 Days Strength Ready Mix Concrete	34.3	28	15	Convencional
132	1-350-5-A-28-20-1-3-000	34.32 MPa at 28 Days Strength Ready Mix Concrete	34.3	28	20	Convencional
133	3-280-5-A-28-13-1-3-001	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	13	Durabilidad
134	3-280-5-A-28-15-1-3-000	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Durabilidad
135	3-280-5-A-28-15-1-3-001	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Durabilidad
136	3-280-5-A-28-20-1-3-009	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	20	Durabilidad
137	3-315-5-A-28-15-1-3-000	30.89 MPa at 28 Days Strength Ready Mix Concrete	30.9	28	15	Durabilidad
138	8-280-3-A-28-13-1-3-000	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	13	Especial
139	8-280-3-A-28-20-1-3-000	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	20	Especial
140	8-315-5-A-28-20-1-3-000	30.89 MPa at 28 Days Strength Ready Mix Concrete	30.9	28	20	Especial
141	8-350-3-A-28-20-1-3-000	34.32 MPa at 28 Days Strength Ready Mix Concrete	34.3	28	20	Especial
142	C-245-3-A-28-25-1-3-000	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	25	Especial

Table 3. Declared products considered in this Environmental Product Declaration						
N°	**Ready-mix**	**Description**	**Strength (MPa)**	**Age (Days)**	**Slump (cm)**	**Category**
143	**F-210-3-A-18-65-1-3-000**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	65	Especial
144	**F-210-3-A-18-65-1-3-061**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	65	Especial
145	**F-280-3-A-18-65-1-3-000**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	65	Especial
146	**F-280-3-A-18-65-1-3-061**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	65	Especial
147	**F-315-3-A-18-65-1-3-000**	30.89 MPa at 18 Days Strength Ready Mix Concrete	30.9	18	65	Especial
148	**F-350-3-A-18-65-1-3-000**	34.32 MPa at 18 Days Strength Ready Mix Concrete	34.3	18	65	Especial
149	**F-350-3-A-18-65-1-3-061**	34.32 MPa at 18 Days Strength Ready Mix Concrete	34.3	18	65	Especial
150	**J-210-3-A-28-65-1-3-000**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	65	Especial
151	**J-210-3-A-28-65-1-3-460**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	65	Especial
152	**J-245-3-A-28-65-1-3-000**	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	65	Especial
153	**M-210-0-A-28-15-1-3-000**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	15	Mortero
154	**M-210-0-A-28-15-1-3-004**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	15	Mortero
155	**M-210-0-A-28-15-1-3-020**	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	15	Mortero
156	**N-280-3-A-28-15-1-3-004**	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	15	Especial
157	**O-210-3-A-18-13-1-3-000**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	13	Industrializado
158	**O-210-3-A-18-13-1-3-061**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	13	Industrializado
159	**O-210-3-A-18-15-1-3-000**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	15	Industrializado
160	**O-210-3-A-18-18-1-3-000**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	18	Industrializado
161	**O-210-3-A-18-18-1-3-060**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	18	Industrializado
162	**O-210-3-A-18-20-1-3-000**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	20	Industrializado
163	**O-210-3-A-18-23-1-3-000**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	23	Industrializado
164	**O-210-5-A-18-13-1-3-000**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	13	Industrializado
165	**O-210-5-A-18-13-1-3-061**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	13	Industrializado
166	**O-210-5-A-18-15-1-3-000**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	15	Industrializado

Table 3. Declared products considered in this Environmental Product Declaration						
N°	**Ready-mix**	**Description**	**Strength (MPa)**	**Age (Days)**	**Slump (cm)**	**Category**
167	**O-210-5-A-18-15-1-3-061**	20.59 MPa at 18 Days Strength Ready Mix Concrete	20.6	18	15	Industrializado
168	**O-245-3-A-18-13-1-3-000**	24.03 MPa at 18 Days Strength Ready Mix Concrete	24.0	18	13	Industrializado
169	**O-245-3-A-18-15-1-3-000**	24.03 MPa at 18 Days Strength Ready Mix Concrete	24.0	18	15	Industrializado
170	**O-245-5-A-18-13-1-3-000**	24.03 MPa at 18 Days Strength Ready Mix Concrete	24.0	18	13	Industrializado
171	**O-280-3-A-18-13-1-3-000**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	13	Industrializado
172	**O-280-3-A-18-15-1-3-000**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	15	Industrializado
173	**O-280-3-A-18-15-1-3-061**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	15	Industrializado
174	**O-280-3-A-18-18-1-3-000**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	18	Industrializado
175	**O-280-3-A-18-18-1-3-001**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	18	Industrializado
176	**O-280-3-A-18-20-1-3-000**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	20	Industrializado
177	**O-280-3-A-18-23-1-3-000**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	23	Industrializado
178	**O-280-5-A-18-13-1-3-000**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	13	Industrializado
179	**O-280-5-A-18-13-1-3-001**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	13	Industrializado
180	**O-280-5-A-18-13-1-3-061**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	13	Industrializado
181	**O-280-5-A-18-15-1-3-000**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	15	Industrializado
182	**O-280-5-A-18-15-1-3-061**	27.46 MPa at 18 Days Strength Ready Mix Concrete	27.5	18	15	Industrializado
183	**O-315-3-A-18-13-1-3-000**	30.89 MPa at 18 Days Strength Ready Mix Concrete	30.9	18	13	Industrializado
184	**O-315-3-A-18-15-1-3-000**	30.89 MPa at 18 Days Strength Ready Mix Concrete	30.9	18	15	Industrializado
185	**O-315-5-A-18-13-1-3-000**	30.89 MPa at 18 Days Strength Ready Mix Concrete	30.9	18	13	Industrializado
186	**O-315-5-A-18-15-1-3-000**	30.89 MPa at 18 Days Strength Ready Mix Concrete	30.9	18	15	Industrializado
187	**O-350-3-A-18-13-1-3-000**	34.32 MPa at 18 Days Strength Ready Mix Concrete	34.3	18	13	Industrializado
188	**O-350-3-A-18-15-1-3-000**	34.32 MPa at 18 Days Strength Ready Mix Concrete	34.3	18	15	Industrializado
189	**O-350-3-A-18-18-1-3-000**	34.32 MPa at 18 Days Strength Ready Mix Concrete	34.3	18	18	Industrializado
190	**O-350-5-A-18-13-1-3-000**	34.32 MPa at 18 Days Strength Ready Mix Concrete	34.3	18	13	Industrializado

Table 3. Declared products considered in this Environmental Product Declaration						
N°	Ready-mix	Description	Strength (MPa)	Age (Days)	Slump (cm)	Category
191	O-350-5-A-18-15-1-3-000	34.32 MPa at 18 Days Strength Ready Mix Concrete	34.3	18	15	Industrializado
192	O-350-5-A-18-15-1-3-61U	34.32 MPa at 18 Days Strength Ready Mix Concrete	34.3	18	15	Industrializado
193	T-210-3-A-28-20-1-3-000	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	20	Tremie
194	T-210-5-A-28-20-1-3-000	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	20	Tremie
195	T-210-5-A-28-20-1-3-200	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	20	Tremie
196	T-210-5-A-28-20-1-3-464	20.59 MPa at 28 Days Strength Ready Mix Concrete	20.6	28	20	Tremie
197	T-245-3-A-28-20-1-3-000	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	20	Tremie
198	T-245-5-A-28-20-1-3-000	24.03 MPa at 28 Days Strength Ready Mix Concrete	24.0	28	20	Tremie
199	T-280-3-A-28-20-1-3-000	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	20	Tremie
200	T-280-5-A-28-20-1-3-000	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	20	Tremie
201	T-350-5-A-28-20-1-3-000	34.32 MPa at 28 Days Strength Ready Mix Concrete	34.3	28	20	Tremie
202	V-280-3-A-03-65-1-3-000	27.46 MPa at 03 Days Strength Ready Mix Concrete	27.5	3	65	Especial
203	V-280-3-A-28-65-1-3-000	27.46 MPa at 28 Days Strength Ready Mix Concrete	27.5	28	65	Especial

Strength >35 Mpa

Table 4. Declared products considered in this Environmental Product Declaration						
N°	Ready-mix	Description	Strength (MPa)	Age (Days)	Slump (cm)	Category
205	1-420-3-A-03-13-1-3-001	41.19 MPa at 03 Days Strength Ready Mix Concrete	41.2	3	13	Acelerado
206	1-420-3-A-28-15-1-3-000	41.19 MPa at 28 Days Strength Ready Mix Concrete	41.2	28	15	Convencional
207	1-420-5-A-03-13-1-3-001	41.19 MPa at 03 Days Strength Ready Mix Concrete	41.2	3	13	Acelerado
208	1-420-5-A-14-13-1-3-000	41.19 MPa at 14 Days Strength Ready Mix Concrete	41.2	14	13	Acelerado
209	1-420-5-A-28-10-0-3-000	41.19 MPa at 28 Days Strength Ready Mix Concrete	41.2	28	10	Convencional
210	1-420-5-A-28-13-1-3-000	41.19 MPa at 28 Days Strength Ready Mix Concrete	41.2	28	13	Convencional
211	1-420-5-A-28-13-1-3-001	41.19 MPa at 28 Days Strength Ready Mix Concrete	41.2	28	13	Convencional
212	AT-490-3-A-28-15-1-3-551	48.05 MPa at 28 Days Strength Ready Mix Concrete	48.1	28	15	Alta resistencia

Table 4. Declared products considered in this Environmental Product Declaration						
N°	**Ready-mix**	**Description**	**Strength (MPa)**	**Age (Days)**	**Slump (cm)**	**Category**
213	**AT-490-5-A-28-15-1-3-551**	48.05 MPa at 28 Days Strength Ready Mix Concrete	48.1	28	15	Alta resistencia
214	**F-420-3-A-18-65-1-3-000**	41.19 MPa at 18 Days Strength Ready Mix Concrete	41.2	18	65	Especial
215	**F-490-3-A-18-65-1-3-524**	48.05 MPa at 18 Days Strength Ready Mix Concrete	48.1	18	65	Especial
216	**O-420-3-A-18-18-1-3-000**	41.19 MPa at 18 Days Strength Ready Mix Concrete	41.2	18	18	Industrializado
217	**O-420-3-A-18-23-1-3-000**	41.19 MPa at 18 Days Strength Ready Mix Concrete	41.2	18	23	Industrializado
218	**O-490-3-A-18-15-1-3-406**	48.05 MPa at 18 Days Strength Ready Mix Concrete	48.1	18	15	Industrializado
219	**O-490-3-A-18-18-1-3-407**	48.05 MPa at 18 Days Strength Ready Mix Concrete	48.1	18	18	Industrializado
220	**O-490-3-A-18-23-1-3-407**	48.05 MPa at 18 Days Strength Ready Mix Concrete	48.1	18	23	Industrializado

The following table provides the mass breakdown (kg per functional unit) of the material composition of each ready-mix concrete design considered. Please note that the breakdown has been randomly altered and is therefore only an approximation; this manipulation is to ensure confidentiality.

Table 5. Ready-mix Concrete Composition	
Product Components	**Raw Material, weight (%)**
Cement	Proprietary
Aggregates	30 - 60
Water	10-15
Others	0.01 – 5.00
Total	100.00

This EPD was calculated using manufacturer-specific cement data from Cemex, representing 100% of the total cement used in each mix included in this EPD. The cement data used in the concrete mixes is Cemex' cement products EPDs, which are supplied from Caracolito Plant[1] in Ibagué and Santa Rosa Plant[2] in La Calera. The GCCA Industry EPD tool uses the results from the clinker and cement life cycle assessment to generate results.

4. Life Cycle Assessment (LCA)

4.1 Declared Unit

This Environmental Product Declaration refers to **one cubic meter of ready-mix concrete (1 m³)**

4.2 Time representativeness

Data was collected by CEMEX at its own plants between January and December 2023 (12 months) and the data collected is representative of the production technology used in 2023.

4.3 LCA Software and Data Bases Used

The Life Cycle Assessment was developed using the GCCA Industry EPD Tool for Cement and Concrete (V4.2), North American version, which uses Ecoinvent v3.5 and GCCA datasets for the LCA database.

4.4 System Boundaries

This study covers **the cradle-to-gate** stages of the product; transport to site (A4), construction (A5), Use (B) or end of life (C) stages of the products <u>are not included</u>. The following figure depicts the cradle-to-gate system boundary considered in this study:

Environmental assessment information (Cradle to Gate, A1-A3)
(MA – Module assessed, MNA – Module not assessed, INA – Indicator Not Assessed)

Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufaturing	Transport to construction site	Construction installation process	Use	Maintenance	Repair	Refurbishment	Operational energy use	Operational water use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery recycling potential
A1	A2	A3	A4	A5	B1	B2	A3	B4	B5	B6	B7	C1	C2	C3	C4	D
MA	MA	MA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	

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

1. A1: Raw material supply (upstream processes) - Extraction, handling, and processing of the

[1] EPD Number CCO01102501
[2] EPD Number CCO01102502

materials used in manufacturing the declared products in this LCA.

2. A2: Transportation - Transportation of A1 materials from the supplier to the "gate" of the manufacturing facility (i.e., A3).
3. A3: Manufacturing (core processes)- The energy and other utility inputs used to store, move, and manufacture the declared products and to operate the facility.

The product category rules for this EPD recognize fly ash, silica fume, and slag as recovered materials and thus the environmental impacts allocated to these materials are limited to the treatment and transportation required to use as a concrete material input.

In addition, 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 production equipment, delivery vehicles, earthmoving equipment, and laboratory equipment.
- Personnel-related activities (travel, furniture, office supplies).

4.5 Process Information

4.5.1 Modules A1 - A2: Extraction and transport of raw materials

One of the main constituents of concrete is cement, and CEMEX is the manufacturer of the cement used in the concrete mixes. The following process describes the manufacture of cement.

Limestone and clay are extracted from the stone quarries by drilling and blasting with explosives, the impact of which is minimal thanks to the modern technology used. Once the large masses of stone have been fragmented, they are transported to the plant in trucks or conveyors.

The entire extraction process has rigorous operational controls that mitigate environmental impact, allow comprehensive monitoring and ensure compliance with the requirements of current environmental regulations.

The quarry material is fragmented in crushers and, by impact and/or pressure, reduced to a maximum size of one and at half inches. Then, in the pre-homogenization process, the different types of clay, limestone or any other material that is required are mixed proportionally. Each of the raw materials is transported separately to silos where they are for the production of different types of cement.

They are then ground using a vertical steel mill, which grinds the material by means of the pressure exerted by three conical rollers rolling on a rotating grinding table. Horizontal mills are also used for this phase, in which the material is pulverized by means of steel balls.

The homogenization process of raw meal is carried out in silos equipped to achieve a

homogeneous mixture of the material. This meal is then subjected to the calcination process, the core part of the process, where large rotary kilns are used, inside which, at 1400 °C, the flour is transformed into clinker, which are small dark grey modules of 3 to 4 cm.

Finally, the clinker is ground through steel balls of different sizes as it passes through the two chambers of the mill, adding gypsum to lengthen the setting time of the cement. The cement is sent to the storage silos; from which it is extracted by pneumatic or mechanical systems.

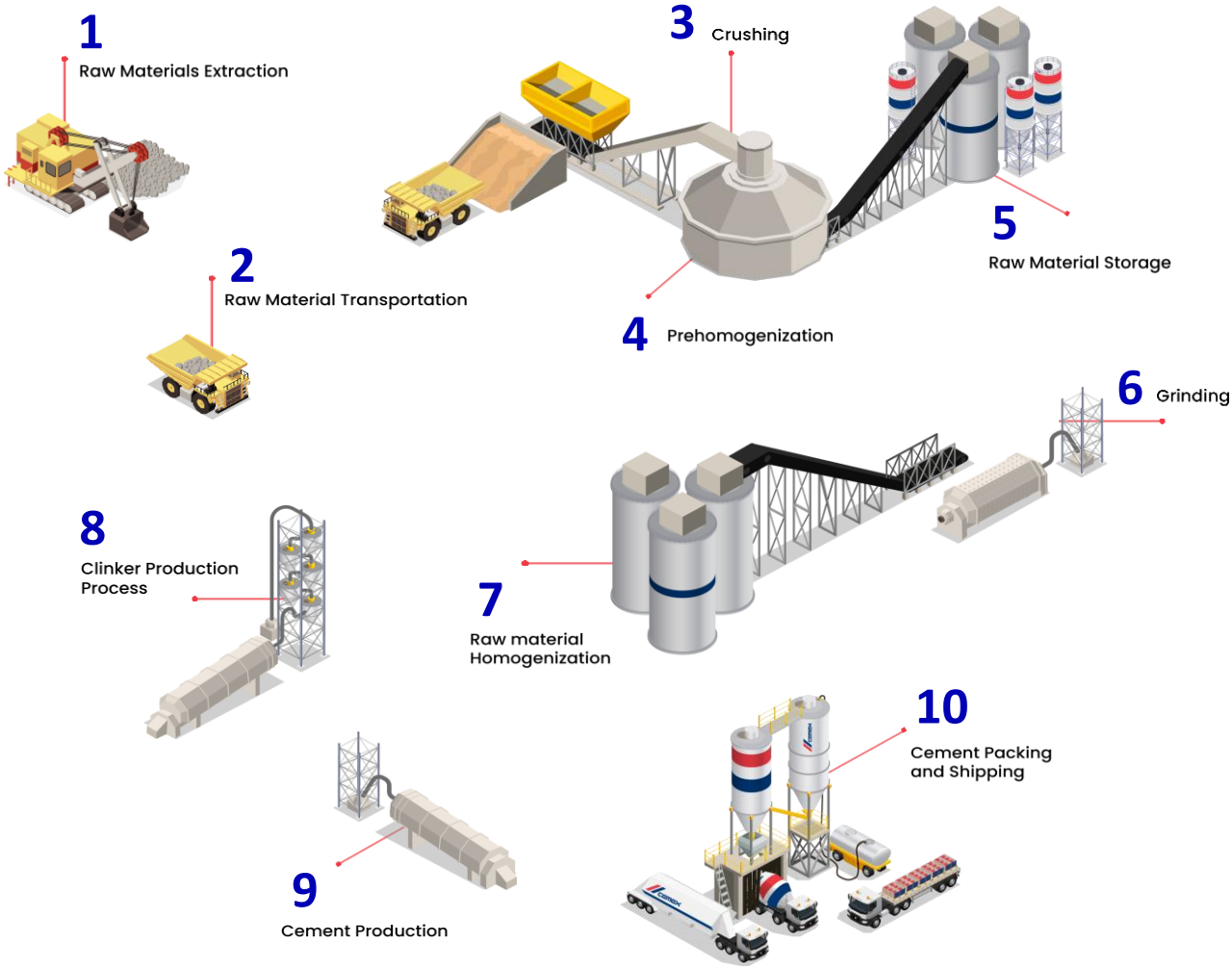

Figure 2. Cement Production

Truck transportation calculations are based on the weight of transported products per unit of clinker, cement or raw material and on the distances travelled per transported product. The volume of the materials was not considered because the majority of the transported materials are weight-limited and not volume-limited. In the Ecoinvent datasets, the allocation of truck's impact to the merchandise transported is done through at top-down approach, considering the total tonnes and total km transported. An average load factor is considered (5.79 t for 16-32 t trucks i.e. 39% average

load rate and 15.96 t for > 32 t trucks, i.e. 71% average load factor) – this average load factor accounts for all truck journeys including empty backhauls and is used to allocate an impact per truck per km to at tonne transported over 1 km (one tkm). In effect, this approach allocates empty backhauls, on average, to at tkm of transported merchandise. Infrastructure, maintenance and end-of-life of roads and trucks are taken into consideration, assuming at 540'000 km lifetime per truck.[3]

4.5.2 Module A3: Production

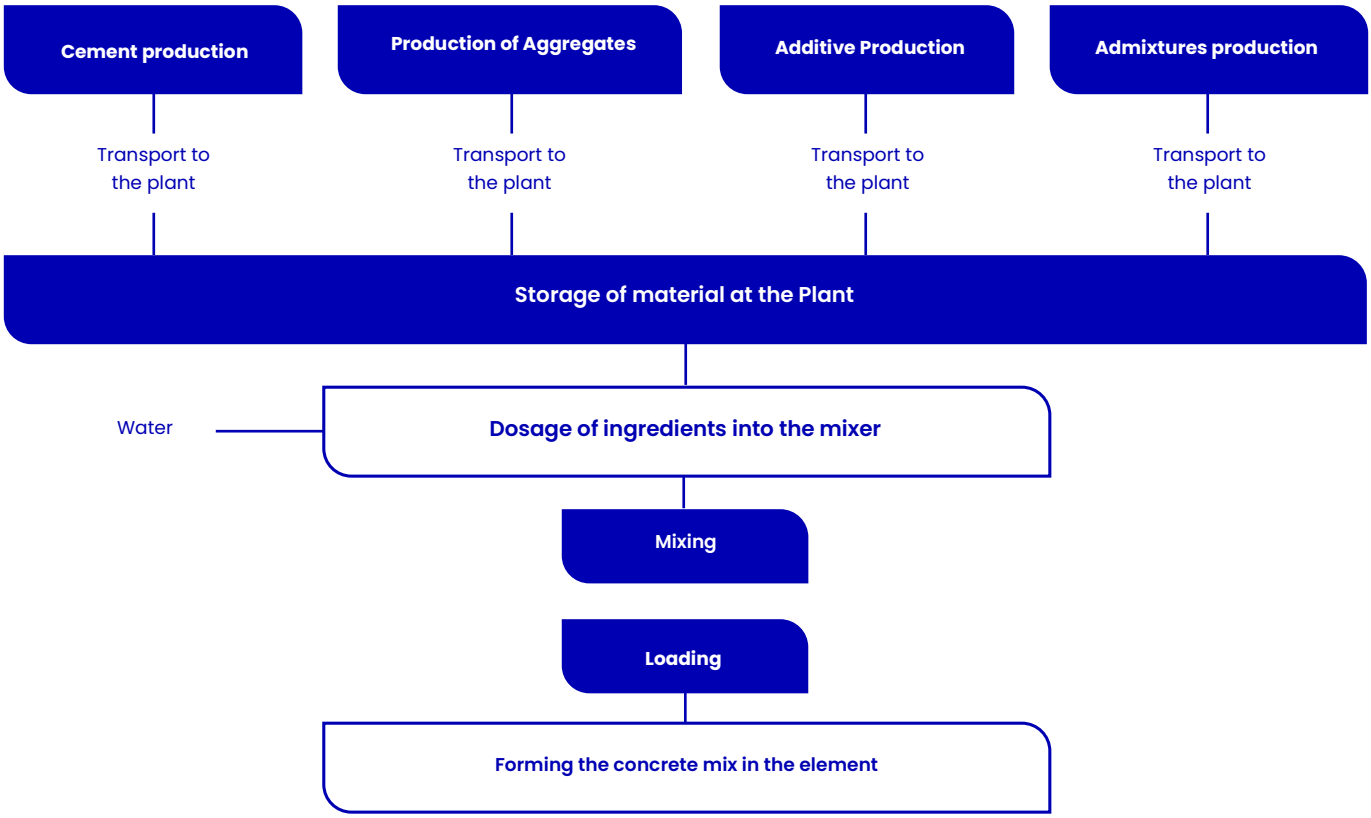

Figure 3. Concrete Production - Inputs and Processes System

After the materials for concrete are transferred to the concrete plant and stored, the substrates are weighed and mixed according to the process shown in Figure 3. The environmental impacts related to the ash have been considered based on economic allocation.

- **Reception and Storage of Raw Materials**: The process begins with the collection of necessary raw materials such as sand, gravel, water, cement, admixtures and additives.
- **Storage Silos**: Cement and fly-ash are received in bulk via tanker trucks and stored in silos equipped with filters and pressure control systems.
- **Weighing and Dosing**: The production coordinator uses the RMS (Ready Mixer Solution) program to automatically load the exact quantities of materials required for the specific mix. Aggregates

[3] Information taken from the GCCA Industry EPD Tool for Cement and Concrete: LCA Model, North American version, 18 December 2023.

are weighed and transported to the mixing machine, while water and additives are dosed and loaded directly into the mixer.

- **Mixing**: All materials are homogenized in the mixer to prepare the concrete, which is then ready to be discharged either directly at the construction site or into a transport vehicle.

  During the mixing phase, the different components come together to produce at uniform mass of concrete. Mixing time is registered from the moment material and water are poured into the cement mixer, and it begins rotating.

- **Transport:** While transporting concrete to site, the concrete mixer never stops revolving at speed of two to six rotations per minute. Transport from the concrete plant to the project site (A4) is not accounted for in this study, however, 30% of the truck diesel is allocated to manufacturing (A3) as per the PCR.

5. CUT-OFF CRITERIA

ISO 14044:2006 and the focus PCR requires the LCA model to contain at minimum of 95% of the total inflows (mass and energy) to the upstream and core modules which have been 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%.

6. DATA SOURCES AND DATA QUALITY ASSESSMENT

- Raw material transport: Actual distance data is provided for each key bulk material. For materials with more than one supplier, the distance is weighted to obtain at single datum.
- Material loss: The Operations, Operational Excellence and Internal Control teams strive to maintain meticulous control of material inventory, performing several monitoring and management processes to limit material loss.

  According to these process controls, there are different permitted inventory deviations that adhere to the following maximums, which are used as material loss factors: 1% for cement and supplementary cementitious materials such as fly-ash, 2% for aggregates (gravel/sand) and 3% for additions and admixtures.

- Electricity: CEMEX Colombia, consumes electricity from various electricity sources and suppliers, including the national grid and self-generation. To calculate the site-specific electricity mix used in the EPD Tool, and align with the PCR, the site-specific electricity mix is distributed proportionally to the plant's energy consumption. The national electricity mix used is published by the authorities (UPME, Colombia's Mining and Energy Planning Unit).
- Ancillary OEM Materials: Due to technical limitations, lubricating oils, engine oils, & other consumable operations equipment maintenance (OEM) were not included within the study and are subject to the cut-off criteria.
- Fuel required for machinery: Fuel needs related to machinery and the low heating value were determined from direct calculations by CEMEX with actual accounting of consumption at the

plant.

- Waste generation: Waste generation values are directly reported from CEMEX operations.
- Recovered energy: Thermal energy recovered from fuels produced from recycled materials. It was 31.0% average for cement plants Colombia in 2023.
- Recycled/reused material/components: CEMEX is committed to sustainability and circularity practices. Cemex uses post-industrial material waste as inputs to its products, to save virgin raw materials as well as reducing impacts within and outside its boundaries. Common recycled raw materials include fly-ash, ground granulated blast-furnace slag and recycled aggregates from industrial and construction and demolition waste. The quantities are directly reported by CEMEX operations. Specific batch/mix recycled content is readily available for Cemex' customers upon request.
- Direct A1 and A3 emissions accounting: The direct CO2 emissions of the plant (calcination process and fuel) were calculated following the methodology stipulated in "The Cement CO2 and Energy Protocol[4]" of the GCCA. Process emissions were estimated using method A2 - Analysis of the CO2 released from total carbon (TC) of raw meals. Emissions are from fuels burned on-site (kiln and non-kiln fuels) and calculated in the clinker phase in the Caracolito plant. These emissions were estimated using fossil fuel Emission Factors from the IPCC Energy Module - 2006, as well as Emission Factors for alternative fuels suggested by the GCCA[5]. AT third party audits these direct emissions annually. All other emissions were obtained from Ecoinvent Emission Factor data and the respective consumption recorded by the plant.
- Concrete mixing energy use: actual truck fuel use is considered (specific gal/m^3, by plant); the GCCA Industry EPD Tool allocates 30% of all mixing truck (fleet) energy use to Module A3, as defined by the PCR. The Operations and Operational Excellence teams within Cemex continuously monitor and track truck energy use for optimization and efficiency measures.
- Waste transport requirements: Transport distances use actual values between the plant location and the waste treatment location.

7. DATA QUALITY ASSESSMENT

Data quality/variability requirements, as specified in the PCR, are applied. This section describes the data quality achieved 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 at study serving as at data source) and representativeness (geographical, temporal, and technological).

7.1. Precision: Thorough measurement and calculation; the manufacturer collected and provided primary data on their annual production.

7.2. Completeness: All relevant specific processes, including inputs (raw materials, energy, and

[4] https://www.cement-co2-protocol.org/en/
[5] https://www.cement-co2-protocol.org/v3/Content/Internet_Manual/constants.htm

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 v3.5 LCI datasets and GCCA data where relatively recent region-specific electricity inputs were utilized.

7.3. 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 Cement materials, emissions to air, water and soil, and waste recycling and treatment. The same background LCI datasets from the GCCA EPD Tool (which includes the Ecoinvent v3.5 database and GCCA data) were used across all product systems. Cross checks 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 level to maintain a high level of consistency.

7.4. Reproducibility: Internal reproducibility is possible since the data and the models are stored and available in a consolidated database with all inputs and all background reports (outputs) within Cemex' archives and within the GCCA's Industry EPD Tool. The Life Cycle Assessment and calculations for all foreground and background processes are contained within the Industry EPD Tool and replicable at any moment. 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.

7.5. Life Cycle Assessment tool: The Global Cement and Concrete Association (GCCA) is at CEO-led industry initiative. Its members, Board of Directors, and Executive team are committed to sustainability – reducing the impacts of cement production and promoting the unique properties of concrete as at sustainable, durable and resilient building material – at material that will answer the needs of at growing and increasingly urban population that is set to exceed 9 billion people by 2050.

GCCA's Industry EPD Tool for Cement and Concrete is at web-based calculation tool for EPDs of clinker, cement, aggregates, concrete and precast elements, available in both International and North American versions. The latter complies with the latest North American cement and concrete PCRs registered at NSF International, namely PCR for Portland, Blended, Masonry, Mortar, and Plastic (Stucco) Cements (version 3.2, dated September 2021), the PCR for Concrete (version 3.2, dated February 2022) and the PCR for Precast Concrete (version 3.0, dated May 2021), all registered at NSF International.

The tool produces a background report with the complete set of input data and results of the specific product. This document is in the form of an Excel file that contains all the information required to produce an EPD and for a verifier to validate it.

7.6. 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 v3.5 database.
- Geographical coverage for inputs required by the A3 facility is representative of its region of focus (Bogotá, Colombia); other upstream and background processes are based on US, North American, regional 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.

8. 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 at 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 (see tables below). 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.

9. LIMITATIONS

This EPD is at 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 at 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, it does not provide at measure of impact on the environment.

10. ENVIRONMENTAL INFORMATION

The results presented in this document cover cradle-to-gate scope (A1-A3); transport to site (A4), construction (A5), Use (B) or end of life (C) stages of the products are not included. The following tables present aggregated A1 to A3 results:

Strength <15Mpa

ENVIRONMENTAL IMPACTS: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP-tot ***	**GWP-bio ***	**ODP**	**AP**	**EP**	**POCP**	**ADPE**	**ADPF**
Unit	**kg CO_2 eq.**	**kg CO_2 eq.**	**kg CFC 11 eq.**	**kg SO_2 eq.**	**kg N eq**	**kg O_3 eq.**	**kg Sb eq.**	**MJ, net calorific value**
1-105-3-A-28-15-1-3-000	260	0.08	9.24E-06	1.27	0.27	26.39	1.72E-004	1463.93
1-105-5-A-28-10-0-3-000	215	0.07	8.27E-06	1.05	0.22	21.96	1.16E-004	1244.35
1-105-5-A-28-13-1-3-000	207	0.07	8.17E-06	1.02	0.22	21.42	1.15E-004	1220.47
1-105-5-A-28-15-1-3-000	216	0.07	8.30E-06	1.06	0.23	22.06	1.16E-004	1250.14
1-105-5-A-28-20-1-3-000	237	0.07	8.81E-06	1.14	0.25	23.68	1.19E-004	1334.12
1-140-3-A-28-13-1-3-000	242	0.08	8.86E-06	1.20	0.25	25.01	1.68E-004	1395.14
1-140-3-A-28-15-1-3-000	260	0.08	9.18E-06	1.28	0.27	26.65	1.74E-004	1471.41
1-140-5-A-28-10-0-3-000	225	0.07	8.48E-06	1.10	0.24	22.91	1.17E-004	1291.49
1-140-5-A-28-13-1-3-000	241	0.07	8.67E-06	1.16	0.25	24.00	1.18E-004	1339.23
1-140-5-A-28-15-1-3-000	228	0.07	8.56E-06	1.11	0.24	23.05	1.17E-004	1300.65
1-140-5-A-28-20-1-3-000	254	0.08	8.87E-06	1.20	0.26	24.77	1.17E-004	1374.72
M-105-0-A-28-15-1-3-000	278	0.08	1.07E-05	1.34	0.30	27.37	1.41E-004	1602.84
M-125-0-A-28-15-1-3-000	252	0.08	1.04E-05	1.24	0.27	25.42	1.38E-004	1517.17
P-036-5-A-28-10-0-3-026	309	0.10	1.12E-05	1.46	0.34	29.18	2.12E-004	1665.07
P-039-5-A-28-13-0-3-000	321	0.09	9.93E-06	1.47	0.32	30.18	1.21E-004	1622.02
P-039-5-A-28-15-1-3-000	316	0.09	1.01E-05	1.47	0.32	30.01	1.21E-004	1630.86
P-041-5-A-03-13-0-3-000	436	0.11	1.46E-05	1.96	0.44	38.90	1.29E-004	2210.39
P-041-5-A-28-13-0-3-000	341	0.09	1.03E-05	1.56	0.34	31.89	1.21E-004	1702.31
P-041-5-A-28-15-1-3-000	333	0.09	1.04E-05	1.54	0.34	31.34	1.22E-004	1694.57
P-042-5-A-28-15-1-3-000	342	0.09	1.06E-05	1.57	0.34	32.04	1.23E-004	1729.51
P-043-5-A-03-13-0-3-000	505	0.12	1.65E-05	2.25	0.51	44.27	1.35E-004	2510.47
P-043-5-A-28-13-0-3-000	367	0.09	1.08E-05	1.66	0.37	33.93	1.25E-004	1804.33
P-045-5-A-03-13-0-3-000	446	0.11	1.48E-05	2.00	0.45	39.66	1.30E-004	2245.71

ENVIRONMENTAL IMPACTS: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP-tot ***	**GWP-bio ***	**ODP**	**AP**	**EP**	**POCP**	**ADPE**	**ADPF**
Unit	**kg CO_2** eq.	**kg CO_2** eq.	**kg CFC 11 eq.**	**kg SO_2 eq.**	**kg N eq**	**kg O_3 eq.**	**kg Sb eq.**	**MJ, net calorific value**
P-045-5-A-03-13-0-3-534	438	0.11	1.42E-05	1.96	0.44	38.94	1.28E-004	2186.39
P-045-5-A-07-13-0-3-000	456	0.11	1.50E-05	2.04	0.46	40.50	1.34E-004	2285.33
P-045-5-A-07-13-0-3-534	392	0.10	1.32E-05	1.77	0.40	35.44	1.26E-004	2003.94
P-045-5-A-14-13-0-3-000	445	0.11	1.21E-05	1.98	0.44	40.07	1.30E-004	2101.06
P-045-5-A-14-13-0-3-534	335	0.09	1.05E-05	1.55	0.34	31.39	1.21E-004	1705.38
P-045-5-A-28-10-0-3-000	348	0.09	1.07E-05	1.60	0.35	32.49	1.22E-004	1750.09
P-045-5-A-28-10-0-3-534	310	0.08	1.00E-05	1.44	0.31	29.42	1.21E-004	1605.23
P-045-5-A-28-13-0-3-534	312	0.09	1.01E-05	1.45	0.32	29.64	1.21E-004	1616.28
P-045-5-A-28-18-0-3-530	466	0.11	1.50E-05	2.07	0.47	41.16	1.33E-004	2302.50
Acronyms	GWP-tot (Global warming potential) • GWP-bio (Global warming potential, biogenic) • ODP (Depletion potential of the stratospheric ozone layer) • AP (Acidification potential of soil and water sources) • EP (Eutrophication potential) • POCP (Photochemical oxidant creation potential) • ADPE (Abiotic depletion potential for non-fossil mineral resources) • ADPF (Abiotic depletion potential for fossil resources)							

RESOURCES USED: 1 M³ OF READY-MIX CONCRETE.										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m^3**
1-105-3-A-28-15-1-3-000	75.70	0.00	75.70	1519.32	0.00	1519.32	9.62	23.03	279.85	2.37
1-105-5-A-28-10-0-3-000	63.70	0.00	63.70	1284.68	0.00	1284.68	18.97	18.69	227.08	3.24
1-105-5-A-28-13-1-3-000	61.88	0.00	61.88	1260.79	0.00	1260.79	28.88	17.86	217.02	3.23
1-105-5-A-28-15-1-3-000	63.96	0.00	63.96	1289.73	0.00	1289.73	22.29	18.86	229.20	3.21
1-105-5-A-28-20-1-3-000	69.04	0.00	69.04	1373.89	0.00	1373.89	0.52	21.14	256.78	3.26
1-140-3-A-28-13-1-3-000	71.30	0.00	71.30	1450.61	0.00	1450.61	32.84	21.11	256.47	2.30
1-140-3-A-28-15-1-3-000	75.76	0.00	75.76	1528.50	0.00	1528.50	33.39	22.93	278.59	2.41
1-140-5-A-28-10-0-3-000	66.12	0.00	66.12	1332.18	0.00	1332.18	32.77	19.81	240.65	3.24
1-140-5-A-28-13-1-3-000	69.80	0.00	69.80	1378.94	0.00	1378.94	20.27	21.64	262.97	3.20
1-140-5-A-28-15-1-3-000	66.56	0.00	66.56	1340.85	0.00	1340.85	34.58	20.09	244.04	3.20
1-140-5-A-28-20-1-3-000	72.92	0.00	72.92	1414.10	0.00	1414.10	0.57	23.24	282.33	3.20
M-105-0-A-28-15-1-3-000	76.90	0.00	76.90	1602.84	0.00	1602.84	0.61	24.71	300.23	3.01

RESOURCES USED: 1 M^3 OF READY-MIX CONCRETE.										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m^3**
M-125-0-A-28-15-1-3-000	70.41	0.00	70.41	1517.17	0.00	1517.17	29.72	21.70	263.70	2.99
P-036-5-A-28-10-0-3-026	92.40	0.00	92.40	1714.61	0.00	1714.61	42.25	28.05	340.85	3.43
P-039-5-A-28-13-0-3-000	88.86	0.00	88.86	1672.30	0.00	1672.30	26.89	30.58	371.54	3.18
P-039-5-A-28-15-1-3-000	87.35	0.00	87.35	1676.09	0.00	1676.09	45.83	29.93	363.60	3.14
P-041-5-A-03-13-0-3-000	113.02	0.00	113.02	2257.00	0.00	2257.00	25.42	41.75	507.27	3.10
P-041-5-A-28-13-0-3-000	93.47	0.00	93.47	1751.83	0.00	1751.83	44.68	32.83	398.88	3.14
P-041-5-A-28-15-1-3-000	91.22	0.00	91.22	1739.44	0.00	1739.44	48.68	31.78	386.16	3.11
P-042-5-A-28-15-1-3-000	93.20	0.00	93.20	1774.23	0.00	1774.23	50.23	32.71	397.40	3.11
P-043-5-A-03-13-0-3-000	128.23	0.00	128.23	2553.98	0.00	2553.98	29.48	48.93	594.43	3.02
P-043-5-A-28-13-0-3-000	99.46	0.00	99.46	1852.17	0.00	1852.17	33.57	35.58	432.32	3.14
P-045-5-A-03-13-0-3-000	115.39	0.00	115.39	2292.56	0.00	2292.56	20.57	42.85	520.61	3.10
P-045-5-A-03-13-0-3-534	113.64	0.00	113.64	2233.03	0.00	2233.03	21.59	42.17	512.38	3.07
P-045-5-A-07-13-0-3-000	118.03	0.00	118.03	2332.48	0.00	2332.48	3.77	43.93	533.78	3.17
P-045-5-A-07-13-0-3-534	103.09	0.00	103.09	2047.72	0.00	2047.72	23.32	37.22	452.22	3.09
P-045-5-A-14-13-0-3-000	117.31	0.00	117.31	2146.42	0.00	2146.42	43.60	44.15	536.39	3.04
P-045-5-A-14-13-0-3-534	91.49	0.00	91.49	1750.10	0.00	1750.10	49.11	31.99	388.63	3.09
P-045-5-A-28-10-0-3-000	94.90	0.00	94.90	1800.12	0.00	1800.12	51.32	33.45	406.40	3.12
P-045-5-A-28-10-0-3-534	85.90	0.00	85.90	1651.16	0.00	1651.16	34.66	29.20	354.76	3.17
P-045-5-A-28-13-0-3-534	86.45	0.00	86.45	1663.06	0.00	1663.06	42.19	29.45	357.83	3.18
P-045-5-A-28-18-0-3-530	120.50	0.00	120.50	2353.68	0.00	2353.68	1.10	45.10	547.96	3.16
Acronyms	PERE (Use of renewable primary energy excluding renewable primary energy resources used as raw materials) • PERM (Use of renewable primary energy resources used as raw materials) • PERT (Total use of renewable primary energy resources) • PENRE (Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials) • PENRM (Use of non-renewable primary energy resources used as raw materials) • PENRT (Total use of non-renewable primary energy resources) • SM (Use of secondary materials) • RSF (Use of renewable secondary fuels) • NRSF (Use of non-renewable secondary fuels) • NFW (Net use of fresh water)									

Strength 15 to 20 Mpa

ENVIRONMENTAL IMPACTS: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP-tot ***	**GWP-bio ***	**ODP**	**AP**	**EP**	**POCP**	**ADPE**	**ADPF**
Unit	**kg CO_2 eq.**	**kg CO_2 eq.**	**kg CFC 11 eq.**	**kg SO_2 eq.**	**kg N eq**	**kg O_3 eq.**	**kg Sb eq.**	**MJ, net calorific value**
1-175-3-A-28-13-1-3-000	266	0.08	9.34E-06	1.30	0.28	26.99	1.70E-004	1492.94
1-175-3-A-28-15-1-3-000	278	0.08	9.36E-06	1.34	0.29	27.85	1.69E-004	1524.39
1-175-3-A-28-20-1-3-000	286	0.08	9.59E-06	1.38	0.29	28.48	1.68E-004	1560.42
1-175-5-A-28-10-0-3-000	265	0.08	9.10E-06	1.25	0.27	25.89	1.21E-004	1427.82
1-175-5-A-28-10-0-3-001	282	0.08	9.28E-06	1.31	0.29	27.04	1.19E-004	1479.03
1-175-5-A-28-13-1-3-000	244	0.07	8.72E-06	1.17	0.25	24.31	1.17E-004	1353.91
1-175-5-A-28-15-1-3-000	257	0.08	8.92E-06	1.22	0.26	25.30	1.18E-004	1399.92
1-175-5-A-28-20-1-3-000	274	0.08	9.31E-06	1.29	0.28	26.56	1.20E-004	1466.04
Acronyms	GWP-tot (Global warming potential) • GWP-bio (Global warming potential, biogenic) • ODP (Depletion potential of the stratospheric ozone layer) • AP (Acidification potential of soil and water sources) • EP (Eutrophication potential) • POCP (Photochemical oxidant creation potential) • ADPE (Abiotic depletion potential for non-fossil mineral resources) • ADPF (Abiotic depletion potential for fossil resources)							

RESOURCES USED: 1 M^3 OF READY-MIX CONCRETE										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m^3**
1-105-3-A-28-15-1-3-000	75.70	0.00	75.70	1519.32	0.00	1519.32	9.62	23.03	279.85	2.37
1-105-5-A-28-10-0-3-000	63.70	0.00	63.70	1284.68	0.00	1284.68	18.97	18.69	227.08	3.24
1-105-5-A-28-13-1-3-000	61.88	0.00	61.88	1260.79	0.00	1260.79	28.88	17.86	217.02	3.23
1-105-5-A-28-15-1-3-000	63.96	0.00	63.96	1289.73	0.00	1289.73	22.29	18.86	229.20	3.21
1-105-5-A-28-20-1-3-000	69.04	0.00	69.04	1373.89	0.00	1373.89	0.52	21.14	256.78	3.26
1-140-3-A-28-13-1-3-000	71.30	0.00	71.30	1450.61	0.00	1450.61	32.84	21.11	256.47	2.30
1-140-3-A-28-15-1-3-000	75.76	0.00	75.76	1528.50	0.00	1528.50	33.39	22.93	278.59	2.41
1-140-5-A-28-10-0-3-000	66.12	0.00	66.12	1332.18	0.00	1332.18	32.77	19.81	240.65	3.24
1-140-5-A-28-13-1-3-000	69.80	0.00	69.80	1378.94	0.00	1378.94	20.27	21.64	262.97	3.20
1-140-5-A-28-15-1-3-000	66.56	0.00	66.56	1340.85	0.00	1340.85	34.58	20.09	244.04	3.20
1-140-5-A-28-20-1-3-000	72.92	0.00	72.92	1414.10	0.00	1414.10	0.57	23.24	282.33	3.20
M-105-0-A-28-15-1-3-000	76.90	0.00	76.90	1602.84	0.00	1602.84	0.61	24.71	300.23	3.01
M-125-0-A-28-15-1-3-000	70.41	0.00	70.41	1517.17	0.00	1517.17	29.72	21.70	263.70	2.99

RESOURCES USED: 1 M³ OF READY-MIX CONCRETE										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m³**
P-036-5-A-28-10-0-3-026	92.40	0.00	92.40	1714.61	0.00	1714.61	42.25	28.05	340.85	3.43
P-039-5-A-28-13-0-3-000	88.86	0.00	88.86	1672.30	0.00	1672.30	26.89	30.58	371.54	3.18
P-039-5-A-28-15-1-3-000	87.35	0.00	87.35	1676.09	0.00	1676.09	45.83	29.93	363.60	3.14
P-041-5-A-03-13-0-3-000	113.02	0.00	113.02	2257.00	0.00	2257.00	25.42	41.75	507.27	3.10
P-041-5-A-28-13-0-3-000	93.47	0.00	93.47	1751.83	0.00	1751.83	44.68	32.83	398.88	3.14
P-041-5-A-28-15-1-3-000	91.22	0.00	91.22	1739.44	0.00	1739.44	48.68	31.78	386.16	3.11
P-042-5-A-28-15-1-3-000	93.20	0.00	93.20	1774.23	0.00	1774.23	50.23	32.71	397.40	3.11
P-043-5-A-03-13-0-3-000	128.23	0.00	128.23	2553.98	0.00	2553.98	29.48	48.93	594.43	3.02
P-043-5-A-28-13-0-3-000	99.46	0.00	99.46	1852.17	0.00	1852.17	33.57	35.58	432.32	3.14
P-045-5-A-03-13-0-3-000	115.39	0.00	115.39	2292.56	0.00	2292.56	20.57	42.85	520.61	3.10
P-045-5-A-03-13-0-3-534	113.64	0.00	113.64	2233.03	0.00	2233.03	21.59	42.17	512.38	3.07
P-045-5-A-07-13-0-3-000	118.03	0.00	118.03	2332.48	0.00	2332.48	3.77	43.93	533.78	3.17
P-045-5-A-07-13-0-3-534	103.09	0.00	103.09	2047.72	0.00	2047.72	23.32	37.22	452.22	3.09
P-045-5-A-14-13-0-3-000	117.31	0.00	117.31	2146.42	0.00	2146.42	43.60	44.15	536.39	3.04
P-045-5-A-14-13-0-3-534	91.49	0.00	91.49	1750.10	0.00	1750.10	49.11	31.99	388.63	3.09
P-045-5-A-28-10-0-3-000	94.90	0.00	94.90	1800.12	0.00	1800.12	51.32	33.45	406.40	3.12
P-045-5-A-28-10-0-3-534	85.90	0.00	85.90	1651.16	0.00	1651.16	34.66	29.20	354.76	3.17
P-045-5-A-28-13-0-3-534	86.45	0.00	86.45	1663.06	0.00	1663.06	42.19	29.45	357.83	3.18
P-045-5-A-28-18-0-3-530	120.50	0.00	120.50	2353.68	0.00	2353.68	1.10	45.10	547.96	3.16
Acronyms	PERE (Use of renewable primary energy excluding renewable primary energy resources used as raw materials) • PERM (Use of renewable primary energy resources used as raw materials) • PERT (Total use of renewable primary energy resources) • PENRE (Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials) • PENRM (Use of non-renewable primary energy resources used as raw materials) • PENRT (Total use of non-renewable primary energy resources) • SM (Use of secondary materials) • RSF (Use of renewable secondary fuels) • NRSF (Use of non-renewable secondary fuels) • NFW (Net use of fresh water)									

Strength 20 to 35 Mpa

ENVIRONMENTAL IMPACTS: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP-tot ***	**GWP-bio ***	**ODP**	**AP**	**EP**	**POCP**	**ADPE**	**ADPF**
Unit	**kg CO_2 eq.**	**kg CO_2 eq.**	**kg CFC 11 eq.**	**kg SO_2 eq.**	**kg N eq**	**kg O_3 eq.**	**kg Sb eq.**	**MJ, net calorific value**
1-210-3-A-03-13-1-3-000	337	0.09	1.22E-05	1.59	0.35	32.32	1.79E-004	1850.43
1-210-3-A-03-13-1-3-001	349	0.10	1.27E-05	1.65	0.36	33.41	1.79E-004	1918.63
1-210-3-A-03-15-1-3-000	326	0.09	1.21E-05	1.55	0.34	31.42	1.78E-004	1810.34
1-210-3-A-03-20-1-3-000	321	0.09	1.28E-05	1.54	0.34	30.94	1.79E-004	1840.49
1-210-3-A-07-13-1-3-000	299	0.09	1.14E-05	1.44	0.31	29.30	1.76E-004	1696.20
1-210-3-A-07-13-1-3-001	298	0.09	1.14E-05	1.43	0.31	29.08	1.70E-004	1691.78
1-210-3-A-07-15-1-3-000	290	0.09	1.13E-05	1.41	0.31	28.70	1.76E-004	1671.54
1-210-3-A-14-13-1-3-000	291	0.09	1.02E-05	1.40	0.30	28.88	1.82E-004	1607.05
1-210-3-A-28-10-0-3-000	295	0.09	9.84E-06	1.42	0.30	29.29	1.71E-004	1602.88
1-210-3-A-28-13-1-3-000	298	0.09	9.81E-06	1.43	0.31	29.47	1.72E-004	1606.23
1-210-3-A-28-15-1-3-000	288	0.08	9.71E-06	1.39	0.30	28.65	1.70E-004	1574.57
1-210-3-A-28-20-1-3-000	302	0.09	9.96E-06	1.44	0.31	29.73	1.70E-004	1624.90
1-210-3-A-28-20-1-3-003	322	0.09	1.04E-05	1.51	0.33	31.15	1.73E-004	1698.86
1-210-3-A-28-20-1-3-004	311	0.09	1.02E-05	1.48	0.32	30.25	1.68E-004	1703.14
1-210-5-A-03-13-1-3-000	304	0.08	1.15E-05	1.43	0.32	28.81	1.24E-004	1674.61
1-210-5-A-03-15-1-3-000	301	0.08	1.14E-05	1.41	0.31	28.55	1.23E-004	1659.16
1-210-5-A-07-13-1-3-000	291	0.08	1.11E-05	1.37	0.30	27.90	1.25E-004	1621.93
1-210-5-A-07-15-1-3-000	263	0.08	1.06E-05	1.26	0.28	25.59	1.21E-004	1509.03
1-210-5-A-14-13-1-3-004	289	0.09	9.89E-06	1.34	0.30	27.52	1.24E-004	1578.09
1-210-5-A-14-15-1-3-000	266	0.08	9.45E-06	1.27	0.27	26.16	1.21E-004	1461.57
1-210-5-A-28-10-0-3-000	262	0.08	9.13E-06	1.25	0.27	25.80	1.19E-004	1431.38
1-210-5-A-28-13-1-3-000	264	0.08	9.15E-06	1.26	0.27	25.94	1.18E-004	1437.97
1-210-5-A-28-15-1-3-000	269	0.08	9.32E-06	1.28	0.28	26.36	1.19E-004	1464.66
1-210-5-A-28-15-1-3-061	274	0.08	9.66E-06	1.30	0.29	26.65	1.42E-004	1490.91
1-210-5-A-28-20-1-3-000	283	0.08	9.36E-06	1.32	0.29	27.11	1.17E-004	1488.32
1-245-3-A-03-15-1-3-000	345	0.09	1.27E-05	1.64	0.36	33.05	1.81E-004	1904.01
1-245-3-A-03-20-1-3-000	371	0.10	1.33E-05	1.74	0.38	34.84	1.80E-004	1999.11
1-245-3-A-07-15-1-3-000	324	0.09	1.19E-05	1.54	0.34	31.32	1.77E-004	1799.36

ENVIRONMENTAL IMPACTS: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP-tot ***	**GWP-bio ***	**ODP**	**AP**	**EP**	**POCP**	**ADPE**	**ADPF**
Unit	**kg CO_2 eq.**	**kg CO_2 eq.**	**kg CFC 11 eq.**	**kg SO_2 eq.**	**kg N eq**	**kg O_3 eq.**	**kg Sb eq.**	**MJ, net calorific value**
1-245-3-A-07-15-1-3-004	335	0.10	1.22E-05	1.58	0.35	32.00	1.78E-004	1884.94
1-245-3-A-07-20-1-3-000	326	0.09	1.21E-05	1.55	0.34	31.48	1.77E-004	1814.32
1-245-3-A-07-20-1-3-004	366	0.10	1.33E-05	1.73	0.38	34.87	1.88E-004	2051.30
1-245-3-A-14-15-1-3-000	311	0.09	1.02E-05	1.48	0.32	30.54	1.76E-004	1664.01
1-245-3-A-14-15-1-3-004	313	0.09	1.02E-05	1.49	0.32	30.57	1.73E-004	1713.91
1-245-3-A-28-15-1-3-000	307	0.09	1.02E-05	1.47	0.32	30.30	1.78E-004	1656.19
1-245-3-A-28-15-1-3-003	320	0.09	1.05E-05	1.52	0.33	31.19	1.79E-004	1703.40
1-245-3-A-28-15-1-3-004	293	0.09	9.88E-06	1.41	0.30	29.02	1.74E-004	1640.58
1-245-3-A-28-15-1-3-020	286	0.08	9.93E-06	1.38	0.30	28.50	1.74E-004	1581.99
1-245-3-A-28-20-1-3-000	291	0.09	9.98E-06	1.41	0.30	29.05	1.74E-004	1602.72
1-245-3-A-28-20-1-3-004	317	0.09	1.05E-05	1.51	0.33	30.85	1.76E-004	1738.64
1-245-5-A-03-13-1-3-000	330	0.09	1.19E-05	1.52	0.34	30.74	1.23E-004	1765.69
1-245-5-A-28-13-1-3-000	263	0.08	9.34E-06	1.26	0.27	25.94	1.19E-004	1449.86
1-245-5-A-28-13-1-3-060	246	0.08	9.12E-06	1.19	0.26	24.59	1.28E-004	1390.33
1-245-5-A-28-15-1-3-000	272	0.08	9.58E-06	1.30	0.28	26.63	1.22E-004	1486.78
1-245-5-A-28-20-1-3-000	284	0.08	9.72E-06	1.34	0.29	27.43	1.21E-004	1520.78
1-280-3-A-03-13-1-3-000	395	0.10	1.37E-05	1.84	0.41	36.88	1.83E-004	2096.45
1-280-3-A-03-15-1-3-000	397	0.10	1.40E-05	1.85	0.41	37.01	1.82E-004	2117.66
1-280-3-A-03-15-1-3-001	410	0.10	1.43E-05	1.90	0.42	37.89	1.78E-004	2169.72
1-280-3-A-07-15-1-3-000	352	0.10	1.28E-05	1.66	0.37	33.43	1.77E-004	1922.88
1-280-3-A-28-13-1-3-000	301	0.09	1.02E-05	1.45	0.31	29.92	1.75E-004	1648.35
1-280-3-A-28-13-1-3-001	343	0.10	1.10E-05	1.61	0.35	32.99	1.76E-004	1797.44
1-280-3-A-28-15-1-3-000	317	0.09	1.05E-05	1.51	0.33	31.09	1.75E-004	1703.19
1-280-3-A-28-15-1-3-001	318	0.09	1.05E-05	1.52	0.33	31.08	1.73E-004	1702.51
1-280-3-A-28-15-1-3-061	294	0.09	1.05E-05	1.43	0.31	29.28	1.99E-004	1644.84
1-280-3-A-28-20-1-3-000	323	0.09	1.07E-05	1.54	0.33	31.52	1.72E-004	1735.23
1-280-3-A-28-20-1-3-003	348	0.10	1.12E-05	1.63	0.36	33.38	1.79E-004	1821.27
1-280-3-A-28-20-1-3-004	330	0.10	1.08E-05	1.56	0.34	31.93	1.73E-004	1797.27

ENVIRONMENTAL IMPACTS: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP-tot ***	**GWP-bio ***	**ODP**	**AP**	**EP**	**POCP**	**ADPE**	**ADPF**
Unit	**kg CO_2 eq.**	**kg CO_2 eq.**	**kg CFC 11 eq.**	**kg SO_2 eq.**	**kg N eq**	**kg O_3 eq.**	**kg Sb eq.**	**MJ, net calorific value**
1-280-5-A-03-13-1-3-000	378	0.10	1.33E-05	1.73	0.39	34.59	1.29E-004	1985.29
1-280-5-A-03-13-1-3-001	370	0.09	1.30E-05	1.69	0.38	33.83	1.28E-004	1941.19
1-280-5-A-03-15-1-3-000	389	0.10	1.37E-05	1.78	0.40	35.48	1.31E-004	2038.01
1-280-5-A-07-13-1-3-000	318	0.09	1.19E-05	1.49	0.33	29.96	1.25E-004	1737.73
1-280-5-A-07-13-1-3-001	338	0.09	1.20E-05	1.55	0.35	31.25	1.23E-004	1792.70
1-280-5-A-07-15-1-3-000	332	0.09	1.22E-05	1.54	0.34	31.03	1.26E-004	1797.10
1-280-5-A-07-20-1-3-000	373	0.10	1.30E-05	1.70	0.38	33.99	1.28E-004	1943.45
1-280-5-A-14-13-1-3-000	316	0.09	1.01E-05	1.47	0.32	30.16	1.24E-004	1640.33
1-280-5-A-14-15-1-3-000	299	0.08	9.89E-06	1.40	0.31	28.78	1.22E-004	1580.20
1-280-5-A-28-10-0-3-000	290	0.08	9.67E-06	1.36	0.30	28.02	1.22E-004	1539.36
1-280-5-A-28-13-1-3-000	291	0.08	9.79E-06	1.37	0.30	28.11	1.21E-004	1551.35
1-280-5-A-28-13-1-3-001	307	0.08	9.90E-06	1.42	0.31	29.19	1.21E-004	1593.66
1-280-5-A-28-13-1-3-060	270	0.08	9.61E-06	1.30	0.28	26.57	1.32E-004	1489.58
1-280-5-A-28-15-1-3-000	286	0.08	9.85E-06	1.35	0.29	27.80	1.22E-004	1546.48
1-280-5-A-28-15-1-3-001	300	0.08	1.00E-05	1.41	0.31	28.76	1.21E-004	1585.54
1-280-5-A-28-15-1-3-01P	303	0.09	1.04E-05	1.42	0.32	28.94	1.59E-004	1616.64
1-280-5-A-28-15-1-3-060	284	0.08	1.01E-05	1.35	0.30	27.66	1.35E-004	1556.52
1-280-5-A-28-15-1-3-061	291	0.09	1.03E-05	1.38	0.31	28.10	1.46E-004	1583.90
1-280-5-A-28-20-1-3-000	298	0.08	1.00E-05	1.40	0.31	28.62	1.21E-004	1581.35
1-280-5-A-28-20-1-3-001	295	0.08	9.76E-06	1.38	0.30	28.25	1.19E-004	1553.81
1-315-5-A-28-15-1-3-000	328	0.09	1.04E-05	1.51	0.33	30.96	1.25E-004	1686.48
1-315-5-A-28-15-1-3-001	353	0.09	1.08E-05	1.61	0.36	32.86	1.28E-004	1773.66
1-350-3-A-03-13-1-3-000	478	0.12	1.57E-05	2.17	0.49	43.32	1.85E-004	2444.28
1-350-3-A-03-13-1-3-001	436	0.11	1.49E-05	2.01	0.45	40.01	1.82E-004	2278.11
1-350-3-A-07-15-1-3-000	447	0.11	1.50E-05	2.04	0.46	40.79	1.83E-004	2308.61
1-350-3-A-28-15-1-3-000	347	0.10	1.12E-05	1.64	0.35	33.47	1.77E-004	1828.01
1-350-3-A-28-20-1-3-000	361	0.10	1.14E-05	1.69	0.37	34.49	1.80E-004	1873.96
1-350-5-A-03-13-1-3-000	488	0.12	1.57E-05	2.18	0.49	43.41	1.41E-004	2438.43

ENVIRONMENTAL IMPACTS: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP-tot ***	**GWP-bio ***	**ODP**	**AP**	**EP**	**POCP**	**ADPE**	**ADPF**
Unit	**kg CO_2 eq.**	**kg CO_2 eq.**	**kg CFC 11 eq.**	**kg SO_2 eq.**	**kg N eq**	**kg O_3 eq.**	**kg Sb eq.**	**MJ, net calorific value**
1-350-5-A-03-13-1-3-001	468	0.11	1.55E-05	2.10	0.48	41.61	1.35E-004	2361.78
1-350-5-A-07-13-1-3-001	438	0.11	1.48E-05	1.98	0.45	39.37	1.34E-004	2242.59
1-350-5-A-28-10-0-3-000	320	0.09	1.05E-05	1.49	0.33	30.52	1.26E-004	1673.90
1-350-5-A-28-10-0-3-001	328	0.09	1.04E-05	1.51	0.33	30.95	1.24E-004	1684.06
1-350-5-A-28-13-1-3-000	315	0.09	1.04E-05	1.48	0.32	30.12	1.23E-004	1658.84
1-350-5-A-28-13-1-3-001	342	0.09	1.08E-05	1.58	0.35	32.21	1.26E-004	1754.03
1-350-5-A-28-15-1-3-000	332	0.09	1.06E-05	1.54	0.34	31.36	1.26E-004	1714.21
1-350-5-A-28-20-1-3-000	358	0.09	1.11E-05	1.64	0.36	33.27	1.28E-004	1802.49
3-280-5-A-28-13-1-3-001	302	0.08	1.00E-05	1.42	0.31	29.03	1.18E-004	1602.32
3-280-5-A-28-15-1-3-000	335	0.09	1.08E-05	1.56	0.34	31.78	1.23E-004	1740.47
3-280-5-A-28-15-1-3-001	315	0.08	1.03E-05	1.47	0.32	30.00	1.19E-004	1650.41
3-280-5-A-28-20-1-3-009	336	0.09	1.09E-05	1.56	0.34	31.62	1.22E-004	1784.84
3-315-5-A-28-15-1-3-000	335	0.09	1.08E-05	1.56	0.34	31.68	1.25E-004	1735.43
8-280-3-A-28-13-1-3-000	314	0.09	1.05E-05	1.51	0.32	31.12	1.79E-004	1711.27
8-280-3-A-28-20-1-3-000	376	0.10	1.14E-05	1.74	0.38	35.62	1.75E-004	1918.10
8-315-5-A-28-20-1-3-000	332	0.09	1.05E-05	1.53	0.34	31.33	1.24E-004	1707.82
8-350-3-A-28-20-1-3-000	377	0.10	1.16E-05	1.76	0.38	35.93	1.79E-004	1939.11
C-245-3-A-28-25-1-3-000	337	0.10	1.15E-05	1.59	0.35	32.35	2.00E-004	1806.95
F-210-3-A-18-65-1-3-000	339	0.10	1.25E-05	1.61	0.36	32.33	1.82E-004	1874.50
F-210-3-A-18-65-1-3-061	331	0.10	1.26E-05	1.58	0.35	31.63	1.91E-004	1854.96
F-280-3-A-18-65-1-3-000	390	0.10	1.38E-05	1.81	0.41	36.22	1.80E-004	2082.66
F-280-3-A-18-65-1-3-061	388	0.11	1.41E-05	1.81	0.42	36.01	2.26E-004	2094.58
F-315-3-A-18-65-1-3-000	392	0.10	1.41E-05	1.83	0.41	36.43	1.73E-004	2110.15
F-350-3-A-18-65-1-3-000	413	0.11	1.45E-05	1.92	0.43	38.19	1.73E-004	2199.03
F-350-3-A-18-65-1-3-061	394	0.11	1.42E-05	1.83	0.42	36.25	1.95E-004	2115.72
J-210-3-A-28-65-1-3-000	299	0.09	1.09E-05	1.45	0.32	29.34	2.01E-004	1679.47
J-210-3-A-28-65-1-3-460	345	0.12	1.33E-05	1.66	0.39	32.66	2.96E-004	1936.74
J-245-3-A-28-65-1-3-000	313	0.09	1.12E-05	1.50	0.33	30.38	2.00E-004	1732.05

ENVIRONMENTAL IMPACTS: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP-tot ***	**GWP-bio ***	**ODP**	**AP**	**EP**	**POCP**	**ADPE**	**ADPF**
Unit	**kg CO_2 eq.**	**kg CO_2 eq.**	**kg CFC 11 eq.**	**kg SO_2 eq.**	**kg N eq**	**kg O_3 eq.**	**kg Sb eq.**	**MJ, net calorific value**
M-210-0-A-28-15-1-3-000	303	0.09	1.13E-05	1.45	0.32	29.46	1.44E-004	1712.70
M-210-0-A-28-15-1-3-004	318	0.09	1.15E-05	1.51	0.33	30.53	1.46E-004	1810.99
M-210-0-A-28-15-1-3-020	340	0.09	1.22E-05	1.58	0.36	32.06	1.47E-004	1854.70
N-280-3-A-28-15-1-3-004	438	0.11	1.34E-05	2.01	0.44	40.62	1.68E-004	2264.24
O-210-3-A-18-13-1-3-000	324	0.09	1.18E-05	1.53	0.34	31.14	1.74E-004	1781.94
O-210-3-A-18-13-1-3-061	327	0.10	1.21E-05	1.55	0.35	31.32	1.98E-004	1807.19
O-210-3-A-18-15-1-3-000	302	0.09	1.13E-05	1.45	0.32	29.57	1.74E-004	1698.38
O-210-3-A-18-18-1-3-000	322	0.09	1.19E-05	1.53	0.34	30.96	1.69E-004	1784.91
O-210-3-A-18-18-1-3-060	307	0.09	1.17E-05	1.47	0.32	29.84	1.83E-004	1734.94
O-210-3-A-18-20-1-3-000	322	0.09	1.20E-05	1.53	0.34	30.95	1.72E-004	1790.40
O-210-3-A-18-23-1-3-000	337	0.09	1.23E-05	1.59	0.35	32.08	1.71E-004	1845.86
O-210-5-A-18-13-1-3-000	287	0.08	1.08E-05	1.35	0.30	27.36	1.21E-004	1583.89
O-210-5-A-18-13-1-3-061	286	0.08	1.09E-05	1.35	0.30	27.27	1.42E-004	1588.35
O-210-5-A-18-15-1-3-000	299	0.08	1.11E-05	1.40	0.31	28.32	1.23E-004	1638.84
O-210-5-A-18-15-1-3-061	306	0.09	1.16E-05	1.43	0.32	28.81	1.46E-004	1680.71
O-245-3-A-18-13-1-3-000	306	0.09	1.15E-05	1.47	0.32	29.94	1.77E-004	1725.57
O-245-3-A-18-15-1-3-000	300	0.09	1.13E-05	1.45	0.32	29.56	1.77E-004	1700.68
O-245-5-A-18-13-1-3-000	290	0.08	1.10E-05	1.36	0.30	27.63	1.23E-004	1602.83
O-280-3-A-18-13-1-3-000	337	0.09	1.22E-05	1.59	0.35	32.27	1.77E-004	1848.15
O-280-3-A-18-15-1-3-000	343	0.09	1.23E-05	1.62	0.36	32.84	1.77E-004	1876.13
O-280-3-A-18-15-1-3-061	356	0.10	1.30E-05	1.67	0.38	33.61	2.03E-004	1940.86
O-280-3-A-18-18-1-3-000	355	0.10	1.25E-05	1.66	0.37	33.63	1.75E-004	1916.75
O-280-3-A-18-18-1-3-001	338	0.09	1.26E-05	1.60	0.35	32.26	1.72E-004	1873.15
O-280-3-A-18-20-1-3-000	335	0.09	1.24E-05	1.59	0.35	32.15	1.78E-004	1855.00
O-280-3-A-18-23-1-3-000	332	0.09	1.23E-05	1.58	0.35	31.93	1.75E-004	1840.93
O-280-5-A-18-13-1-3-000	320	0.09	1.17E-05	1.49	0.33	30.02	1.25E-004	1728.51
O-280-5-A-18-13-1-3-001	610	0.15	1.84E-05	2.77	0.61	56.12	1.93E-004	3043.69
O-280-5-A-18-13-1-3-061	323	0.09	1.20E-05	1.51	0.34	30.24	1.50E-004	1754.25

ENVIRONMENTAL IMPACTS: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP-tot ***	**GWP-bio ***	**ODP**	**AP**	**EP**	**POCP**	**ADPE**	**ADPF**
Unit	**kg CO_2** eq.	**kg CO_2** eq.	**kg CFC 11 eq.**	**kg SO_2 eq.**	**kg N eq**	**kg O_3 eq.**	**kg Sb eq.**	**MJ, net calorific value**
O-280-5-A-18-15-1-3-000	314	0.09	1.14E-05	1.46	0.32	29.59	1.25E-004	1698.56
O-280-5-A-18-15-1-3-061	317	0.09	1.20E-05	1.48	0.33	29.65	1.47E-004	1734.00
O-315-3-A-18-13-1-3-000	372	0.10	1.30E-05	1.73	0.38	34.99	1.80E-004	1989.18
O-315-3-A-18-15-1-3-000	377	0.10	1.33E-05	1.76	0.39	35.39	1.78E-004	2020.73
O-315-5-A-18-13-1-3-000	356	0.09	1.25E-05	1.63	0.37	32.80	1.27E-004	1875.64
O-315-5-A-18-15-1-3-000	334	0.09	1.23E-05	1.55	0.35	31.17	1.25E-004	1808.97
O-350-3-A-18-13-1-3-000	371	0.10	1.25E-05	1.73	0.38	35.06	1.82E-004	1957.39
O-350-3-A-18-15-1-3-000	410	0.11	1.39E-05	1.89	0.42	37.90	1.82E-004	2145.52
O-350-3-A-18-18-1-3-000	362	0.10	1.24E-05	1.70	0.37	34.40	1.79E-004	1931.12
O-350-5-A-18-13-1-3-000	337	0.09	1.18E-05	1.56	0.35	31.55	1.27E-004	1788.31
O-350-5-A-18-15-1-3-000	327	0.09	1.15E-05	1.52	0.34	30.76	1.26E-004	1744.29
O-350-5-A-18-15-1-3-61U	420	0.10	1.46E-05	1.90	0.43	37.79	1.34E-004	2177.81
T-210-3-A-28-20-1-3-000	301	0.09	1.01E-05	1.44	0.31	29.70	1.83E-004	1630.55
T-210-5-A-28-20-1-3-000	301	0.08	1.00E-05	1.40	0.31	28.63	1.32E-004	1583.30
T-210-5-A-28-20-1-3-200	280	0.08	9.53E-06	1.32	0.29	27.10	1.30E-004	1499.90
T-210-5-A-28-20-1-3-464	321	0.11	1.19E-05	1.52	0.36	30.13	2.27E-004	1740.71
T-245-3-A-28-20-1-3-000	322	0.09	1.09E-05	1.54	0.33	31.45	1.86E-004	1748.46
T-245-5-A-28-20-1-3-000	321	0.09	1.07E-05	1.49	0.33	30.32	1.36E-004	1679.61
T-280-3-A-28-20-1-3-000	342	0.10	1.14E-05	1.63	0.35	33.02	1.88E-004	1828.03
T-280-5-A-28-20-1-3-000	328	0.09	1.09E-05	1.53	0.34	30.96	1.36E-004	1722.96
T-350-5-A-28-20-1-3-000	360	0.10	1.16E-05	1.66	0.37	33.55	1.43E-004	1846.98
V-280-3-A-03-65-1-3-000	520	0.13	1.76E-05	2.37	0.54	46.70	1.99E-004	2684.45
V-280-3-A-28-65-1-3-000	333	0.09	1.15E-05	1.59	0.35	32.18	1.79E-004	1805.38
Acronyms	GWP-tot (Global warming potential) • GWP-bio (Global warming potential, biogenic) • ODP (Depletion potential of the stratospheric ozone layer) • AP (Acidification potential of soil and water sources) • EP (Eutrophication potential) • POCP (Photochemical oxidant creation potential) • ADPE (Abiotic depletion potential for non-fossil mineral resources) • ADPF (Abiotic depletion potential for fossil resources)							

RESOURCES USED: 1 M³ OF READY-MIX CONCRETE.										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m³**
1-210-3-A-03-13-1-3-000	92.20	0.00	92.20	1906.10	0.00	1906.10	8.16	30.54	371.08	2.35
1-210-3-A-03-13-1-3-001	94.59	0.00	94.59	1970.62	0.00	1970.62	19.18	31.62	384.19	2.44
1-210-3-A-03-15-1-3-000	89.39	0.00	89.39	1866.04	0.00	1866.04	13.40	29.23	355.19	2.34
1-210-3-A-03-20-1-3-000	87.54	0.00	87.54	1898.12	0.00	1898.12	15.33	28.17	342.20	2.35
1-210-3-A-07-13-1-3-000	83.35	0.00	83.35	1752.22	0.00	1752.22	10.31	26.39	320.66	2.36
1-210-3-A-07-13-1-3-001	82.62	0.00	82.62	1743.37	0.00	1743.37	17.32	26.34	320.05	2.32
1-210-3-A-07-15-1-3-000	81.39	0.00	81.39	1727.99	0.00	1727.99	15.76	25.44	309.10	2.35
1-210-3-A-14-13-1-3-000	82.74	0.00	82.74	1667.65	0.00	1667.65	0.63	25.91	314.74	2.40
1-210-3-A-28-10-0-3-000	83.57	0.00	83.57	1657.13	0.00	1657.13	41.06	26.92	327.07	2.28
1-210-3-A-28-13-1-3-000	84.44	0.00	84.44	1660.83	0.00	1660.83	28.71	27.30	331.64	2.29
1-210-3-A-28-15-1-3-000	81.49	0.00	81.49	1628.43	0.00	1628.43	51.79	26.00	315.90	2.27
1-210-3-A-28-20-1-3-000	85.07	0.00	85.07	1677.97	0.00	1677.97	39.42	27.75	337.18	2.26
1-210-3-A-28-20-1-3-003	89.81	0.00	89.81	1750.99	0.00	1750.99	0.73	29.81	362.22	2.35
1-210-3-A-28-20-1-3-004	88.27	0.00	88.27	1730.76	21.71	1752.47	43.68	28.43	345.39	2.31
1-210-5-A-03-13-1-3-000	83.09	0.00	83.09	1714.65	0.00	1714.65	15.89	27.63	335.71	3.20
1-210-5-A-03-15-1-3-000	82.31	0.00	82.31	1699.11	0.00	1699.11	16.51	27.27	331.38	3.20
1-210-5-A-07-13-1-3-000	80.23	0.00	80.23	1663.54	0.00	1663.54	15.86	26.08	316.92	3.33
1-210-5-A-07-15-1-3-000	73.64	0.00	73.64	1549.57	0.00	1549.57	14.41	23.13	281.01	3.26
1-210-5-A-14-13-1-3-004	82.15	0.00	82.15	1596.23	21.71	1617.94	0.65	26.35	320.09	3.23
1-210-5-A-14-15-1-3-000	75.40	0.00	75.40	1502.01	0.00	1502.01	37.14	24.15	293.47	3.21
1-210-5-A-28-10-0-3-000	74.46	0.00	74.46	1471.66	0.00	1471.66	41.90	23.82	289.36	3.18
1-210-5-A-28-13-1-3-000	74.88	0.00	74.88	1477.71	0.00	1477.71	47.51	24.11	292.89	3.14
1-210-5-A-28-15-1-3-000	75.83	0.00	75.83	1502.01	0.00	1502.01	50.75	24.59	298.73	3.11
1-210-5-A-28-15-1-3-061	78.94	0.00	78.94	1531.66	0.00	1531.66	38.03	24.94	303.07	3.24
1-210-5-A-28-20-1-3-000	79.38	0.00	79.38	1525.55	0.00	1525.55	19.56	26.47	321.61	3.03
1-245-3-A-03-15-1-3-000	93.73	0.00	93.73	1959.89	0.00	1959.89	20.96	31.17	378.68	2.36
1-245-3-A-03-20-1-3-000	99.59	0.00	99.59	2053.29	0.00	2053.29	0.83	34.05	413.71	2.33
1-245-3-A-07-15-1-3-000	89.13	0.00	89.13	1855.01	0.00	1855.01	18.03	29.15	354.21	2.35
1-245-3-A-07-15-1-3-004	92.95	0.00	92.95	1918.03	21.71	1939.74	18.07	30.00	364.47	2.37
1-245-3-A-07-20-1-3-000	89.50	0.00	89.50	1869.70	0.00	1869.70	18.26	29.32	356.25	2.33

RESOURCES USED: 1 M³ OF READY-MIX CONCRETE.										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m³**
1-245-3-A-07-20-1-3-004	100.28	0.00	100.28	2085.76	21.71	2107.47	21.29	32.91	399.88	2.56
1-245-3-A-14-15-1-3-000	87.52	0.00	87.52	1719.78	0.00	1719.78	23.47	28.59	347.38	2.32
1-245-3-A-14-15-1-3-004	89.12	0.00	89.12	1745.98	21.71	1767.69	43.94	28.57	347.14	2.30
1-245-3-A-28-15-1-3-000	86.85	0.00	86.85	1712.86	0.00	1712.86	15.00	28.16	342.10	2.34
1-245-3-A-28-15-1-3-003	89.70	0.00	89.70	1760.09	0.00	1760.09	0.72	29.44	357.64	2.37
1-245-3-A-28-15-1-3-004	84.54	0.00	84.54	1673.83	21.71	1695.54	40.54	26.30	319.50	2.34
1-245-3-A-28-15-1-3-020	81.03	0.00	81.03	1638.43	0.00	1638.43	39.19	25.53	310.21	2.30
1-245-3-A-28-20-1-3-000	82.70	0.00	82.70	1658.45	0.00	1658.45	36.27	26.31	319.71	2.32
1-245-3-A-28-20-1-3-004	90.16	0.00	90.16	1769.86	21.71	1791.57	17.74	28.88	350.89	2.39
1-245-5-A-03-13-1-3-000	88.96	0.00	88.96	1805.19	0.00	1805.19	19.07	30.54	371.10	3.14
1-245-5-A-28-13-1-3-000	74.42	0.00	74.42	1489.88	0.00	1489.88	55.53	23.79	289.07	3.16
1-245-5-A-28-13-1-3-060	71.30	0.00	71.30	1430.43	0.00	1430.43	61.31	21.89	265.98	3.17
1-245-5-A-28-15-1-3-000	76.80	0.00	76.80	1525.61	0.00	1525.61	31.39	24.83	301.65	3.20
1-245-5-A-28-20-1-3-000	79.66	0.00	79.66	1560.43	0.00	1560.43	20.22	26.23	318.68	3.18
1-280-3-A-03-13-1-3-000	105.22	0.00	105.22	2151.62	0.00	2151.62	15.75	36.67	445.47	2.31
1-280-3-A-03-15-1-3-000	105.31	0.00	105.31	2172.32	0.00	2172.32	25.41	36.74	446.38	2.30
1-280-3-A-03-15-1-3-001	107.80	0.00	107.80	2221.30	0.00	2221.30	32.31	38.14	463.41	2.25
1-280-3-A-07-15-1-3-000	95.17	0.00	95.17	1976.89	0.00	1976.89	20.31	32.08	389.75	2.31
1-280-3-A-28-13-1-3-000	84.64	0.00	84.64	1703.92	0.00	1703.92	57.97	27.25	331.04	2.30
1-280-3-A-28-13-1-3-001	94.84	0.00	94.84	1848.71	0.00	1848.71	0.79	32.08	389.73	2.36
1-280-3-A-28-15-1-3-000	88.41	0.00	88.41	1757.98	0.00	1757.98	48.77	29.08	353.34	2.29
1-280-3-A-28-15-1-3-001	88.60	0.00	88.60	1756.08	0.00	1756.08	44.87	29.28	355.74	2.27
1-280-3-A-28-15-1-3-061	84.49	0.00	84.49	1700.60	0.00	1700.60	72.76	26.05	316.55	2.33
1-280-3-A-28-20-1-3-000	89.42	0.00	89.42	1786.56	0.00	1786.56	51.41	29.65	360.25	2.33
1-280-3-A-28-20-1-3-003	95.88	0.00	95.88	1874.34	0.00	1874.34	0.79	32.42	393.90	2.41
1-280-3-A-28-20-1-3-004	92.76	0.00	92.76	1826.19	21.71	1847.91	46.70	30.32	368.43	2.34
1-280-5-A-03-13-1-3-000	99.60	0.00	99.60	2024.53	0.00	2024.53	23.69	35.37	429.72	3.16
1-280-5-A-03-13-1-3-001	97.83	0.00	97.83	1979.72	0.00	1979.72	11.76	34.64	420.83	3.12
1-280-5-A-03-15-1-3-000	102.11	0.00	102.11	2077.58	0.00	2077.58	18.85	36.45	442.80	3.20
1-280-5-A-07-13-1-3-000	86.28	0.00	86.28	1778.37	0.00	1778.37	18.13	29.06	353.02	3.23

RESOURCES USED: 1 M³ OF READY-MIX CONCRETE.										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m³**
1-280-5-A-07-13-1-3-001	90.53	0.00	90.53	1830.99	0.00	1830.99	19.38	31.39	381.37	3.08
1-280-5-A-07-15-1-3-000	89.40	0.00	89.40	1837.10	0.00	1837.10	18.01	30.55	371.15	3.20
1-280-5-A-07-20-1-3-000	98.66	0.00	98.66	1981.84	0.00	1981.84	0.86	35.03	425.66	3.13
1-280-5-A-14-13-1-3-000	87.18	0.00	87.18	1680.12	0.00	1680.12	44.69	29.80	362.11	3.16
1-280-5-A-14-15-1-3-000	83.10	0.00	83.10	1619.62	0.00	1619.62	42.70	27.88	338.74	3.15
1-280-5-A-28-10-0-3-000	81.02	0.00	81.02	1579.79	0.00	1579.79	39.95	26.89	326.67	3.17
1-280-5-A-28-13-1-3-000	81.03	0.00	81.03	1591.21	0.00	1591.21	48.65	26.92	327.06	3.15
1-280-5-A-28-13-1-3-001	84.86	0.00	84.86	1632.36	0.00	1632.36	31.04	28.85	350.52	3.09
1-280-5-A-28-13-1-3-060	76.94	0.00	76.94	1529.08	0.00	1529.08	68.23	24.47	297.32	3.16
1-280-5-A-28-15-1-3-000	79.65	0.00	79.65	1584.53	0.00	1584.53	55.89	26.25	318.97	3.16
1-280-5-A-28-15-1-3-001	83.16	0.00	83.16	1624.82	0.00	1624.82	41.90	27.98	339.94	3.12
1-280-5-A-28-15-1-3-01P	86.72	0.00	86.72	1655.68	0.00	1655.68	37.52	27.97	339.83	3.22
1-280-5-A-28-15-1-3-060	79.85	0.00	79.85	1594.46	0.00	1594.46	63.74	25.74	312.76	3.17
1-280-5-A-28-15-1-3-061	82.40	0.00	82.40	1622.49	0.00	1622.49	73.87	26.51	322.09	3.13
1-280-5-A-28-20-1-3-000	82.75	0.00	82.75	1620.35	0.00	1620.35	40.32	27.77	337.36	3.14
1-280-5-A-28-20-1-3-001	81.82	0.00	81.82	1591.47	0.00	1591.47	42.36	27.51	334.26	3.05
1-315-5-A-28-15-1-3-000	89.79	0.00	89.79	1726.01	0.00	1726.01	32.43	31.03	376.96	3.15
1-315-5-A-28-15-1-3-001	96.01	0.00	96.01	1812.49	0.00	1812.49	0.83	33.89	411.74	3.15
1-350-3-A-03-13-1-3-000	123.41	0.00	123.41	2496.19	0.00	2496.19	36.08	45.38	551.34	2.26
1-350-3-A-03-13-1-3-001	113.84	0.00	113.84	2330.69	0.00	2330.69	34.33	40.90	496.96	2.23
1-350-3-A-07-15-1-3-000	116.52	0.00	116.52	2361.05	0.00	2361.05	21.61	42.15	512.08	2.27
1-350-3-A-28-15-1-3-000	95.09	0.00	95.09	1882.93	0.00	1882.93	57.84	32.21	391.37	2.27
1-350-3-A-28-20-1-3-000	98.84	0.00	98.84	1928.74	0.00	1928.74	21.77	33.86	411.37	2.33
1-350-5-A-03-13-1-3-000	125.09	0.00	125.09	2477.23	0.00	2477.23	13.68	47.09	572.12	3.22
1-350-5-A-03-13-1-3-001	119.78	0.00	119.78	2398.70	0.00	2398.70	31.54	44.94	546.03	3.06
1-350-5-A-07-13-1-3-001	113.29	0.00	113.29	2280.60	0.00	2280.60	24.59	41.78	507.59	3.12
1-350-5-A-28-10-0-3-000	87.94	0.00	87.94	1715.36	0.00	1715.36	46.02	29.99	364.33	3.21
1-350-5-A-28-10-0-3-001	89.87	0.00	89.87	1723.40	0.00	1723.40	31.22	31.12	378.05	3.11
1-350-5-A-28-13-1-3-000	86.38	0.00	86.38	1698.27	0.00	1698.27	68.14	29.47	358.00	3.12
1-350-5-A-28-13-1-3-001	93.10	0.00	93.10	1793.62	0.00	1793.62	40.68	32.54	395.38	3.15

FUTURO EN ACCIÓN

RESOURCES USED: 1 M³ OF READY-MIX CONCRETE.										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m³**
1-350-5-A-28-15-1-3-000	90.67	0.00	90.67	1751.97	0.00	1751.97	32.14	31.41	381.57	3.15
1-350-5-A-28-20-1-3-000	97.06	0.00	97.06	1841.47	0.00	1841.47	9.96	34.41	418.11	3.15
3-280-5-A-28-13-1-3-001	82.93	0.00	82.93	1641.71	0.00	1641.71	94.60	28.08	341.20	3.01
3-280-5-A-28-15-1-3-000	90.92	0.00	90.92	1779.51	0.00	1779.51	86.61	31.69	385.06	3.08
3-280-5-A-28-15-1-3-001	86.04	0.00	86.04	1689.71	0.00	1689.71	82.70	29.52	358.65	3.02
3-280-5-A-28-20-1-3-009	92.42	0.00	92.42	1801.47	21.71	1823.18	87.38	31.54	383.24	3.02
3-315-5-A-28-15-1-3-000	91.09	0.00	91.09	1776.07	0.00	1776.07	62.40	31.61	384.08	3.15
8-280-3-A-28-13-1-3-000	87.82	0.00	87.82	1768.85	0.00	1768.85	62.51	28.52	346.57	2.36
8-280-3-A-28-20-1-3-000	101.99	0.00	101.99	1966.69	0.00	1966.69	29.19	35.64	432.99	2.35
8-315-5-A-28-20-1-3-000	90.59	0.00	90.59	1746.26	0.00	1746.26	42.22	31.45	382.14	3.12
8-350-3-A-28-20-1-3-000	102.48	0.00	102.48	1992.87	0.00	1992.87	54.16	35.74	434.19	2.28
C-245-3-A-28-25-1-3-000	94.56	0.00	94.56	1856.47	0.00	1856.47	0.75	30.80	374.21	2.49
F-210-3-A-18-65-1-3-000	92.80	0.00	92.80	1916.45	0.00	1916.45	18.02	30.68	372.74	2.49
F-210-3-A-18-65-1-3-061	91.46	0.00	91.46	1897.31	0.00	1897.31	19.37	29.58	359.34	2.52
F-280-3-A-18-65-1-3-000	103.94	0.00	103.94	2126.00	0.00	2126.00	16.73	36.14	439.15	2.41
F-280-3-A-18-65-1-3-061	106.98	0.00	106.98	2136.42	0.00	2136.42	24.33	35.58	432.23	2.52
F-315-3-A-18-65-1-3-000	103.49	0.00	103.49	2156.56	0.00	2156.56	23.78	36.25	440.37	2.34
F-350-3-A-18-65-1-3-000	108.10	0.00	108.10	2240.71	0.00	2240.71	24.46	38.39	466.40	2.46
F-350-3-A-18-65-1-3-061	105.65	0.00	105.65	2155.09	0.00	2155.09	22.25	36.34	441.50	2.39
J-210-3-A-28-65-1-3-000	85.47	0.00	85.47	1722.67	0.00	1722.67	73.94	26.44	321.27	2.43
J-210-3-A-28-65-1-3-460	102.10	0.00	102.10	1983.92	0.00	1983.92	83.45	30.12	365.91	2.56
J-245-3-A-28-65-1-3-000	88.56	0.00	88.56	1775.49	0.00	1775.49	59.77	27.97	339.85	2.46
M-210-0-A-28-15-1-3-000	82.42	0.00	82.42	1712.70	0.00	1712.70	32.91	27.28	331.39	2.97
M-210-0-A-28-15-1-3-004	87.38	0.00	87.38	1789.76	21.71	1811.47	39.84	28.63	347.80	2.98
M-210-0-A-28-15-1-3-020	90.59	0.00	90.59	1854.70	0.00	1854.70	0.76	31.06	377.33	2.98
N-280-3-A-28-15-1-3-004	116.36	0.00	116.36	2272.72	21.71	2294.44	63.16	41.81	507.94	2.59
O-210-3-A-18-13-1-3-000	88.98	0.00	88.98	1834.22	0.00	1834.22	4.18	29.23	355.13	2.36
O-210-3-A-18-13-1-3-061	91.47	0.00	91.47	1859.79	0.00	1859.79	1.81	29.36	356.70	2.42
O-210-3-A-18-15-1-3-000	84.14	0.00	84.14	1753.46	0.00	1753.46	22.32	26.94	327.32	2.31
O-210-3-A-18-18-1-3-000	87.96	0.00	87.96	1831.23	0.00	1831.23	14.14	28.95	351.71	2.42

RESOURCES USED: 1 M³ OF READY-MIX CONCRETE.										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m³**
O-210-3-A-18-18-1-3-060	85.65	0.00	85.65	1787.11	0.00	1787.11	23.28	27.20	330.41	2.37
O-210-3-A-18-20-1-3-000	88.33	0.00	88.33	1841.31	0.00	1841.31	4.81	28.98	352.12	2.36
O-210-3-A-18-23-1-3-000	91.56	0.00	91.56	1893.03	0.00	1893.03	0.75	30.58	371.59	2.42
O-210-5-A-18-13-1-3-000	79.15	0.00	79.15	1623.67	0.00	1623.67	15.13	25.90	314.67	3.18
O-210-5-A-18-13-1-3-061	80.64	0.00	80.64	1627.98	0.00	1627.98	15.55	25.65	311.67	3.23
O-210-5-A-18-15-1-3-000	81.90	0.00	81.90	1676.12	0.00	1676.12	9.08	27.20	330.49	3.16
O-210-5-A-18-15-1-3-061	85.21	0.00	85.21	1718.07	0.00	1718.07	0.68	27.73	336.87	3.22
O-245-3-A-18-13-1-3-000	85.13	0.00	85.13	1782.07	0.00	1782.07	17.20	27.23	330.85	2.34
O-245-3-A-18-15-1-3-000	83.87	0.00	83.87	1757.36	0.00	1757.36	21.49	26.63	323.55	2.34
O-245-5-A-18-13-1-3-000	80.06	0.00	80.06	1643.34	0.00	1643.34	2.82	26.19	318.17	3.23
O-280-3-A-18-13-1-3-000	91.98	0.00	91.98	1903.05	0.00	1903.05	17.25	30.56	371.25	2.32
O-280-3-A-18-15-1-3-000	93.42	0.00	93.42	1930.45	0.00	1930.45	24.22	31.24	379.57	2.32
O-280-3-A-18-15-1-3-061	97.99	0.00	97.99	1994.26	0.00	1994.26	19.55	32.26	391.97	2.36
O-280-3-A-18-18-1-3-000	95.82	0.00	95.82	1968.26	0.00	1968.26	19.53	32.50	394.83	2.33
O-280-3-A-18-18-1-3-001	91.45	0.00	91.45	1923.12	0.00	1923.12	26.40	30.49	370.49	2.32
O-280-3-A-18-20-1-3-000	91.46	0.00	91.46	1910.92	0.00	1910.92	18.63	30.24	367.47	2.30
O-280-3-A-18-23-1-3-000	90.64	0.00	90.64	1892.41	0.00	1892.41	19.00	29.98	364.23	2.37
O-280-5-A-18-13-1-3-000	86.71	0.00	86.71	1768.26	0.00	1768.26	14.99	29.36	356.72	3.18
O-280-5-A-18-13-1-3-001	157.05	0.00	157.05	3103.94	0.00	3103.94	53.28	58.73	713.53	4.95
O-280-5-A-18-13-1-3-061	89.33	0.00	89.33	1794.12	0.00	1794.12	8.15	29.46	357.88	3.27
O-280-5-A-18-15-1-3-000	85.57	0.00	85.57	1738.69	0.00	1738.69	10.10	28.78	349.61	3.22
O-280-5-A-18-15-1-3-061	87.54	0.00	87.54	1773.06	0.00	1773.06	18.44	28.76	349.47	3.21
O-315-3-A-18-13-1-3-000	100.00	0.00	100.00	2044.38	0.00	2044.38	10.63	34.27	416.32	2.32
O-315-3-A-18-15-1-3-000	100.86	0.00	100.86	2074.64	0.00	2074.64	24.73	34.79	422.66	2.28
O-315-5-A-18-13-1-3-000	94.94	0.00	94.94	1914.79	0.00	1914.79	10.17	33.26	404.08	3.15
O-315-5-A-18-15-1-3-000	89.66	0.00	89.66	1849.24	0.00	1849.24	26.65	30.73	373.30	3.17
O-350-3-A-18-13-1-3-000	100.49	0.00	100.49	2013.52	0.00	2013.52	4.27	34.44	418.40	2.34
O-350-3-A-18-15-1-3-000	108.68	0.00	108.68	2199.67	0.00	2199.67	0.94	38.36	466.09	2.31
O-350-3-A-18-18-1-3-000	98.26	0.00	98.26	1984.15	0.00	1984.15	12.42	33.51	407.15	2.36
O-350-5-A-18-13-1-3-000	91.09	0.00	91.09	1828.71	0.00	1828.71	22.13	31.40	381.50	3.20

RESOURCES USED: 1 M³ OF READY-MIX CONCRETE.										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m³**
O-350-5-A-18-15-1-3-000	88.85	0.00	88.85	1784.25	0.00	1784.25	19.10	30.35	368.72	3.22
O-350-5-A-18-15-1-3-61U	109.07	0.00	109.07	2216.66	0.00	2216.66	0.97	39.66	481.84	3.19
T-210-3-A-28-20-1-3-000	85.75	0.00	85.75	1683.67	0.00	1683.67	42.23	27.45	333.52	2.31
T-210-5-A-28-20-1-3-000	83.93	0.00	83.93	1620.53	0.00	1620.53	42.87	27.97	339.77	3.08
T-210-5-A-28-20-1-3-200	79.48	0.00	79.48	1538.33	0.00	1538.33	39.18	25.83	313.82	3.14
T-210-5-A-28-20-1-3-464	96.01	0.00	96.01	1784.31	0.00	1784.31	0.71	29.17	354.35	3.52
T-245-3-A-28-20-1-3-000	89.86	0.00	89.86	1801.07	0.00	1801.07	81.13	29.30	356.03	2.28
T-245-5-A-28-20-1-3-000	88.93	0.00	88.93	1717.81	0.00	1717.81	31.05	30.11	365.88	3.14
T-280-3-A-28-20-1-3-000	94.71	0.00	94.71	1880.47	0.00	1880.47	73.96	31.57	383.52	2.27
T-280-5-A-28-20-1-3-000	89.85	0.00	89.85	1759.84	0.00	1759.84	80.29	30.66	372.47	3.03
T-350-5-A-28-20-1-3-000	98.23	0.00	98.23	1886.95	0.00	1886.95	35.61	34.23	415.88	3.19
V-280-3-A-03-65-1-3-000	133.27	0.00	133.27	2722.76	0.00	2722.76	57.60	49.33	599.35	2.52
V-280-3-A-28-65-1-3-000	92.09	0.00	92.09	1848.65	0.00	1848.65	60.78	30.62	372.01	2.39
Acronyms	PERE (Use of renewable primary energy excluding renewable primary energy resources used as raw materials) • PERM (Use of renewable primary energy resources used as raw materials) • PERT (Total use of renewable primary energy resources) • PENRE (Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials) • PENRM (Use of non-renewable primary energy resources used as raw materials) • PENRT (Total use of non-renewable primary energy resources) • SM (Use of secondary materials) • RSF (Use of renewable secondary fuels) • NRSF (Use of non-renewable secondary fuels) • NFW (Net use of fresh water)									

Strength >35 Mpa

ENVIRONMENTAL IMPACTS: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP-tot ***	**GWP-bio ***	**ODP**	**AP**	**EP**	**POCP**	**ADPE**	**ADPF**
Unit	**kg CO_2 eq.**	**kg CO_2 eq.**	**kg CFC 11 eq.**	**kg SO_2 eq.**	**kg N eq**	**kg O_3 eq.**	**kg Sb eq.**	**MJ, net calorific value**
1-420-3-A-03-13-1-3-001	600	0.14	1.88E-05	2.68	0.61	52.84	1.91E-004	2960.33
1-420-3-A-28-15-1-3-000	444	0.11	1.28E-05	2.02	0.45	41.02	1.84E-004	2182.93
1-420-5-A-03-13-1-3-001	588	0.13	1.82E-05	2.59	0.59	51.04	1.45E-004	2856.77
1-420-5-A-14-13-1-3-000	412	0.10	1.21E-05	1.87	0.41	37.77	1.30E-004	2028.32
1-420-5-A-28-10-0-3-000	411	0.10	1.19E-05	1.85	0.41	37.47	1.32E-004	1998.05
1-420-5-A-28-13-1-3-000	400	0.10	1.18E-05	1.81	0.40	36.77	1.31E-004	1967.59

ENVIRONMENTAL IMPACTS: 1 M³ OF READY-MIX CONCRETE.

Indicator	GWP-tot *	GWP-bio *	ODP	AP	EP	POCP	ADPE	ADPF
Unit	kg CO_2 eq.	kg CO_2 eq.	kg CFC 11 eq.	kg SO_2 eq.	kg N eq	kg O_3 eq.	kg Sb eq.	MJ, net calorific value
1-420-5-A-28-13-1-3-001	399	0.10	1.16E-05	1.80	0.40	36.58	1.27E-004	1954.22
A-490-3-A-28-15-1-3-551	436	0.11	1.31E-05	2.00	0.44	40.24	1.94E-004	2176.89
A-490-5-A-28-15-1-3-551	425	0.11	1.27E-05	1.91	0.43	38.39	1.35E-004	2082.10
F-420-3-A-18-65-1-3-000	480	0.12	1.61E-05	2.19	0.49	43.31	1.77E-004	2473.53
F-490-3-A-18-65-1-3-524	489	0.12	1.68E-05	2.24	0.50	44.15	1.86E-004	2536.31
O-420-3-A-18-18-1-3-000	455	0.11	1.43E-05	2.07	0.46	41.61	1.83E-004	2300.86
O-420-3-A-18-23-1-3-000	463	0.11	1.56E-05	2.11	0.47	42.00	1.80E-004	2393.18
O-490-3-A-18-15-1-3-406	446	0.11	1.53E-05	2.05	0.46	40.68	1.93E-004	2323.33
O-490-3-A-18-18-1-3-407	488	0.12	1.67E-05	2.22	0.50	43.87	1.92E-004	2519.69
O-490-3-A-18-23-1-3-407	506	0.12	1.71E-05	2.30	0.52	45.31	1.93E-004	2592.72

Acronyms: GWP-tot (Global warming potential) • GWP-bio (Global warming potential, biogenic) • ODP (Depletion potential of the stratospheric ozone layer) • AP (Acidification potential of soil and water sources) • EP (Eutrophication potential) • POCP (Photochemical oxidant creation potential) • ADPE (Abiotic depletion potential for non-fossil mineral resources) • ADPF (Abiotic depletion potential for fossil resources)

RESOURCES USED: 1 M³ OF READY-MIX CONCRETE.

Indicator	PERE	PERM	PERT	PENRE	PENRM	PENRT	SM	RSF	NRSF	NFW
Unit	MJ	MJ	MJ	MJ	MJ.	MJ	kg	MJ	MJ	m^3
1-420-3-A-03-13-1-3-001	150.87	0.00	150.87	3007.70	0.00	3007.70	34.75	58.36	709.00	2.25
1-420-3-A-28-15-1-3-000	118.29	0.00	118.29	2235.88	0.00	2235.88	14.90	43.12	523.93	2.29
1-420-5-A-03-13-1-3-001	146.89	0.00	146.89	2891.20	0.00	2891.20	33.56	57.65	700.39	3.00
1-420-5-A-14-13-1-3-000	108.95	0.00	108.95	2066.21	0.00	2066.21	61.58	40.12	487.49	3.05
1-420-5-A-28-10-0-3-000	109.36	0.00	109.36	2036.62	0.00	2036.62	13.03	40.22	488.71	3.12
1-420-5-A-28-13-1-3-000	106.65	0.00	106.65	2006.25	0.00	2006.25	35.85	38.94	473.16	3.11
1-420-5-A-28-13-1-3-001	105.88	0.00	105.88	1990.46	0.00	1990.46	59.67	38.92	472.84	2.95
A-490-3-A-28-15-1-3-551	116.06	0.00	116.06	2242.11	0.00	2242.11	17.82	41.62	505.65	2.16
A-490-5-A-28-15-1-3-551	112.05	0.00	112.05	2126.11	0.00	2126.11	1.01	41.15	499.94	3.24
F-420-3-A-18-65-1-3-000	123.05	0.00	123.05	2515.84	0.00	2515.84	32.37	45.49	552.71	2.37
F-490-3-A-18-65-1-3-524	125.62	0.00	125.62	2586.66	0.00	2586.66	21.02	46.28	562.27	2.32

RESOURCES USED: 1 M³ OF READY-MIX CONCRETE.										
Indicator	**PERE**	**PERM**	**PERT**	**PENRE**	**PENRM**	**PENRT**	**SM**	**RSF**	**NRSF**	**NFW**
Unit	**MJ**	**MJ**	**MJ**	**MJ**	**MJ.**	**MJ**	**kg**	**MJ**	**MJ**	**m³**
O-420-3-A-18-18-1-3-000	119.25	0.00	119.25	2351.04	0.00	2351.04	16.42	43.52	528.76	2.32
O-420-3-A-18-23-1-3-000	119.65	0.00	119.65	2441.17	0.00	2441.17	27.03	43.75	531.55	2.30
O-490-3-A-18-15-1-3-406	116.54	0.00	116.54	2385.33	0.00	2385.33	1.02	41.64	505.96	2.24
O-490-3-A-18-18-1-3-407	125.21	0.00	125.21	2579.38	0.00	2579.38	20.42	45.84	556.89	2.20
O-490-3-A-18-23-1-3-407	129.56	0.00	129.56	2651.10	0.00	2651.10	15.48	47.92	582.20	2.21
Acronyms	PERE (Use of renewable primary energy excluding renewable primary energy resources used as raw materials) • PERM (Use of renewable primary energy resources used as raw materials) • PERT (Total use of renewable primary energy resources) • PENRE (Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials) • PENRM (Use of non-renewable primary energy resources used as raw materials) • PENRT (Total use of non-renewable primary energy resources) • SM (Use of secondary materials) • RSF (Use of renewable secondary fuels) • NRSF (Use of non-renewable secondary fuels) • NFW (Net use of fresh water)									

11. OTHER ENVIRONMENTAL INFORMATION

Strength <15 MPa

OTHER ENVIRONMENTAL INFORMATION: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
1-105-3-A-28-15-1-3-000	232	0.03	0.03	-	0	62.08	0	0
1-105-5-A-28-10-0-3-000	192	0.03	0.03	-	0	62.07	0	0
1-105-5-A-28-13-1-3-000	186	0.03	0.03	-	0	62.06	0	0
1-105-5-A-28-15-1-3-000	193	0.03	0.03	-	0	62.07	0	0
1-105-5-A-28-20-1-3-000	212	0.03	0.03	-	0	62.07	0	0
1-140-3-A-28-13-1-3-000	217	0.03	0.03	-	0	62.07	0	0
1-140-3-A-28-15-1-3-000	232	0.03	0.03	-	0	62.08	0	0
1-140-5-A-28-10-0-3-000	202	0.03	0.03	-	0	62.07	0	0
1-140-5-A-28-13-1-3-000	215	0.03	0.03	-	0	62.07	0	0
1-140-5-A-28-15-1-3-000	204	0.03	0.03	-	0	62.07	0	0
1-140-5-A-28-20-1-3-000	226	0.03	0.03	-	0	62.08	0	0

OTHER ENVIRONMENTAL INFORMATION: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
M-105-0-A-28-15-1-3-000	249	0.03	0.03	-	0	62.08	0	0
M-125-0-A-28-15-1-3-000	226	0.03	0.03	-	0	62.07	0	0
P-036-5-A-28-10-0-3-026	275	0.04	0.03	-	0	62.09	0	0
P-039-5-A-28-13-0-3-000	284	0.04	0.03	-	0	62.10	0	0
P-039-5-A-28-15-1-3-000	281	0.04	0.03	-	0	62.10	0	0
P-041-5-A-03-13-0-3-000	387	0.05	0.03	-	0	62.13	0	0
P-041-5-A-28-13-0-3-000	302	0.04	0.03	-	0	62.11	0	0
P-041-5-A-28-15-1-3-000	296	0.04	0.03	-	0	62.10	0	0
P-042-5-A-28-15-1-3-000	303	0.04	0.03	-	0	62.11	0	0
P-043-5-A-03-13-0-3-000	447	0.06	0.04	-	0	62.15	0	0
P-043-5-A-28-13-0-3-000	324	0.05	0.03	-	0	62.11	0	0
P-045-5-A-03-13-0-3-000	395	0.05	0.03	-	0	62.13	0	0
P-045-5-A-03-13-0-3-534	388	0.05	0.03	-	0	62.13	0	0
P-045-5-A-07-13-0-3-000	404	0.05	0.03	-	0	62.14	0	0
P-045-5-A-07-13-0-3-534	348	0.05	0.03	-	0	62.12	0	0
P-045-5-A-14-13-0-3-000	392	0.05	0.03	-	0	62.14	0	0
P-045-5-A-14-13-0-3-534	297	0.04	0.03	-	0	62.10	0	0
P-045-5-A-28-10-0-3-000	309	0.04	0.03	-	0	62.11	0	0
P-045-5-A-28-10-0-3-534	275	0.04	0.03	-	0	62.10	0	0
P-045-5-A-28-13-0-3-534	277	0.04	0.03	-	0	62.10	0	0
P-045-5-A-28-18-0-3-530	412	0.06	0.03	-	0	62.14	0	0

Acronyms	GWP-Net (Net Global warming potential) • HWD (hazardous waste disposed) • NHWD (non-hazardous waste disposed) • RWD (radioactive waste disposed) • MER (materials for energy recovery) • MFR (materials for recycling) • EE (exported energy) • CRU (components for re-use)
Note	• The gross GWP values include the greenhouse gas emissions from the coprocessing of secondary fuels at clinker production. The net GWP values exclude emissions from the coprocessing of secondary fuels at clinker production. • Not all LCA datasets for upstream materials include these impact categories and thus results may be incomplete. Use caution when interpreting data in these categories: 'Radioactive waste disposed'. According to the Global Cement and Concrete Association and industry studies, the only contribution in the cement and concrete sectors is the indirect contribution from the nuclear power share in the electricity mix, which is not present in Colombia's energy mix.

Strength 15 to 20 MPa

OTHER ENVIRONMENTAL INFORMATION: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
1-175-3-A-28-13-1-3-000	237.90	0.03	0.03	-	0	62.08	0	0
1-175-3-A-28-15-1-3-000	248.04	0.03	0.03	-	0	62.08	0	0
1-175-3-A-28-20-1-3-000	255.09	0.04	0.03	-	0	62.09	0	0
1-175-5-A-28-10-0-3-000	236.24	0.03	0.03	-	0	62.08	0	0
1-175-5-A-28-10-0-3-001	250.61	0.04	0.03	-	0	62.09	0	0
1-175-5-A-28-13-1-3-000	217.94	0.03	0.03	-	0	62.08	0	0
1-175-5-A-28-15-1-3-000	229.52	0.03	0.03	-	0	62.08	0	0
1-175-5-A-28-20-1-3-000	243.72	0.04	0.03	-	0	62.08	0	0
Acronyms	GWP-Net (Net Global warming potential) • HWD (hazardous waste disposed) • NHWD (non-hazardous waste disposed) • RWD (radioactive waste disposed) • MER (materials for energy recovery) • MFR (materials for recycling) • EE (exported energy) • CRU (components for re-use)							
Notes	• The gross GWP values include the greenhouse gas emissions from the coprocessing of secondary fuels at clinker production. The net GWP values exclude emissions from the coprocessing of secondary fuels at clinker production. • Not all LCA datasets for upstream materials include these impact categories and thus results may be incomplete. Use caution when interpreting data in these categories: 'Radioactive waste disposed'. According to the Global Cement and Concrete Association and industry studies, the only contribution in the cement and concrete sectors is the indirect contribution from the nuclear power share in the electricity mix, which is not present in Colombia's energy mix.							

Strength 20 to 35 MPa

OTHER ENVIRONMENTAL INFORMATION: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
1-210-3-A-03-13-1-3-000	301	0.04	0.03	-	0	62.10	0	0
1-210-3-A-03-13-1-3-001	312	0.04	0.03	-	0	62.10	0	0
1-210-3-A-03-15-1-3-000	291	0.04	0.03	-	0	62.10	0	0
1-210-3-A-03-20-1-3-000	287	0.04	0.03	-	0	62.09	0	0
1-210-3-A-07-13-1-3-000	268	0.04	0.03	-	0	62.09	0	0
1-210-3-A-07-13-1-3-001	266	0.04	0.03	-	0	62.09	0	0

OTHER ENVIRONMENTAL INFORMATION: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
1-210-3-A-07-15-1-3-000	260	0.04	0.03	-	0	62.08	0	0
1-210-3-A-14-13-1-3-000	260	0.04	0.03	-	0	62.09	0	0
1-210-3-A-28-10-0-3-000	263	0.04	0.03	-	0	62.09	0	0
1-210-3-A-28-13-1-3-000	266	0.04	0.03	-	0	62.09	0	0
1-210-3-A-28-15-1-3-000	257	0.04	0.03	-	0	62.09	0	0
1-210-3-A-28-20-1-3-000	269	0.04	0.03	-	0	62.09	0	0
1-210-3-A-28-20-1-3-003	287	0.04	0.03	-	0	62.10	0	0
1-210-3-A-28-20-1-3-004	277	0.04	0.03	-	0	62.09	0	0
1-210-5-A-03-13-1-3-000	272	0.04	0.03	-	0	62.09	0	0
1-210-5-A-03-15-1-3-000	269	0.04	0.03	-	0	62.09	0	0
1-210-5-A-07-13-1-3-000	260	0.04	0.03	-	0	62.09	0	0
1-210-5-A-07-15-1-3-000	235	0.03	0.03	-	0	62.08	0	0
1-210-5-A-14-13-1-3-004	258	0.04	0.03	-	0	62.09	0	0
1-210-5-A-14-15-1-3-000	237	0.03	0.03	-	0	62.08	0	0
1-210-5-A-28-10-0-3-000	234	0.03	0.03	-	0	62.08	0	0
1-210-5-A-28-13-1-3-000	236	0.03	0.03	-	0	62.08	0	0
1-210-5-A-28-15-1-3-000	240	0.03	0.03	-	0	62.08	0	0
1-210-5-A-28-15-1-3-061	244	0.03	0.03	-	0	62.08	0	0
1-210-5-A-28-20-1-3-000	252	0.04	0.03	-	0	62.09	0	0
1-245-3-A-03-15-1-3-000	308	0.04	0.03	-	0	62.10	0	0
1-245-3-A-03-20-1-3-000	330	0.04	0.03	-	0	62.11	0	0
1-245-3-A-07-15-1-3-000	290	0.04	0.03	-	0	62.10	0	0
1-245-3-A-07-15-1-3-004	299	0.04	0.03	-	0	62.10	0	0
1-245-3-A-07-20-1-3-000	292	0.04	0.03	-	0	62.10	0	0
1-245-3-A-07-20-1-3-004	327	0.04	0.03	-	0	62.11	0	0
1-245-3-A-14-15-1-3-000	277	0.04	0.03	-	0	62.09	0	0
1-245-3-A-14-15-1-3-004	279	0.04	0.03	-	0	62.09	0	0
1-245-3-A-28-15-1-3-000	274	0.04	0.03	-	0	62.09	0	0
1-245-3-A-28-15-1-3-003	285	0.04	0.03	-	0	62.10	0	0
1-245-3-A-28-15-1-3-004	261	0.04	0.03	-	0	62.09	0	0

OTHER ENVIRONMENTAL INFORMATION: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
1-245-3-A-28-15-1-3-020	256	0.04	0.03	-	0	62.09	0	0
1-245-3-A-28-20-1-3-000	260	0.04	0.03	-	0	62.09	0	0
1-245-3-A-28-20-1-3-004	282	0.04	0.03	-	0	62.09	0	0
1-245-5-A-03-13-1-3-000	294	0.04	0.03	-	0	62.10	0	0
1-245-5-A-28-13-1-3-000	234	0.03	0.03	-	0	62.08	0	0
1-245-5-A-28-13-1-3-060	220	0.03	0.03	-	0	62.07	0	0
1-245-5-A-28-15-1-3-000	243	0.03	0.03	-	0	62.08	0	0
1-245-5-A-28-20-1-3-000	253	0.04	0.03	-	0	62.09	0	0
1-280-3-A-03-13-1-3-000	352	0.05	0.03	-	0	62.12	0	0
1-280-3-A-03-15-1-3-000	353	0.05	0.03	-	0	62.12	0	0
1-280-3-A-03-15-1-3-001	364	0.05	0.03	-	0	62.12	0	0
1-280-3-A-07-15-1-3-000	314	0.04	0.03	-	0	62.10	0	0
1-280-3-A-28-13-1-3-000	269	0.04	0.03	-	0	62.09	0	0
1-280-3-A-28-13-1-3-001	305	0.04	0.03	-	0	62.10	0	0
1-280-3-A-28-15-1-3-000	282	0.04	0.03	-	0	62.10	0	0
1-280-3-A-28-15-1-3-001	283	0.04	0.03	-	0	62.10	0	0
1-280-3-A-28-15-1-3-061	263	0.04	0.03	-	0	62.09	0	0
1-280-3-A-28-20-1-3-000	288	0.04	0.03	-	0	62.10	0	0
1-280-3-A-28-20-1-3-003	310	0.04	0.03	-	0	62.10	0	0
1-280-3-A-28-20-1-3-004	294	0.04	0.03	-	0	62.10	0	0
1-280-5-A-03-13-1-3-000	336	0.05	0.03	-	0	62.11	0	0
1-280-5-A-03-13-1-3-001	329	0.04	0.03	-	0	62.11	0	0
1-280-5-A-03-15-1-3-000	345	0.05	0.03	-	0	62.12	0	0
1-280-5-A-07-13-1-3-000	284	0.04	0.03	-	0	62.10	0	0
1-280-5-A-07-13-1-3-001	301	0.04	0.03	-	0	62.10	0	0
1-280-5-A-07-15-1-3-000	296	0.04	0.03	-	0	62.10	0	0
1-280-5-A-07-20-1-3-000	331	0.05	0.03	-	0	62.11	0	0
1-280-5-A-14-13-1-3-000	281	0.04	0.03	-	0	62.10	0	0
1-280-5-A-14-15-1-3-000	266	0.04	0.03	-	0	62.09	0	0
1-280-5-A-28-10-0-3-000	258	0.04	0.03	-	0	62.09	0	0

OTHER ENVIRONMENTAL INFORMATION: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
1-280-5-A-28-13-1-3-000	259	0.04	0.03	-	0	62.09	0	0
1-280-5-A-28-13-1-3-001	272	0.04	0.03	-	0	62.09	0	0
1-280-5-A-28-13-1-3-060	241	0.03	0.03	-	0	62.08	0	0
1-280-5-A-28-15-1-3-000	255	0.04	0.03	-	0	62.09	0	0
1-280-5-A-28-15-1-3-001	267	0.04	0.03	-	0	62.09	0	0
1-280-5-A-28-15-1-3-01P	270	0.04	0.03	-	0	62.09	0	0
1-280-5-A-28-15-1-3-060	253	0.04	0.03	-	0	62.09	0	0
1-280-5-A-28-15-1-3-061	260	0.04	0.03	-	0	62.09	0	0
1-280-5-A-28-20-1-3-000	265	0.04	0.03	-	0	62.09	0	0
1-280-5-A-28-20-1-3-001	262	0.04	0.03	-	0	62.09	0	0
1-315-5-A-28-15-1-3-000	291	0.04	0.03	-	0	62.10	0	0
1-315-5-A-28-15-1-3-001	313	0.04	0.03	-	0	62.11	0	0
1-350-3-A-03-13-1-3-000	424	0.06	0.03	-	0	62.14	0	0
1-350-3-A-03-13-1-3-001	387	0.05	0.03	-	0	62.13	0	0
1-350-3-A-07-15-1-3-000	397	0.05	0.03	-	0	62.13	0	0
1-350-3-A-28-15-1-3-000	308	0.04	0.03	-	0	62.10	0	0
1-350-3-A-28-20-1-3-000	321	0.04	0.03	-	0	62.11	0	0
1-350-5-A-03-13-1-3-000	432	0.06	0.03	-	0	62.15	0	0
1-350-5-A-03-13-1-3-001	415	0.06	0.03	-	0	62.14	0	0
1-350-5-A-07-13-1-3-001	389	0.05	0.03	-	0	62.13	0	0
1-350-5-A-28-10-0-3-000	284	0.04	0.03	-	0	62.10	0	0
1-350-5-A-28-10-0-3-001	291	0.04	0.03	-	0	62.10	0	0
1-350-5-A-28-13-1-3-000	280	0.04	0.03	-	0	62.10	0	0
1-350-5-A-28-13-1-3-001	304	0.04	0.03	-	0	62.10	0	0
1-350-5-A-28-15-1-3-000	295	0.04	0.03	-	0	62.10	0	0
1-350-5-A-28-20-1-3-000	317	0.04	0.03	-	0	62.11	0	0
3-280-5-A-28-13-1-3-001	268	0.04	0.03	-	0	62.09	0	0
3-280-5-A-28-15-1-3-000	298	0.04	0.03	-	0	62.10	0	0
3-280-5-A-28-15-1-3-001	279	0.04	0.03	-	0	62.10	0	0
3-280-5-A-28-20-1-3-009	299	0.04	0.03	-	0	62.10	0	0

OTHER ENVIRONMENTAL INFORMATION: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
3-315-5-A-28-15-1-3-000	297	0.04	0.03	-	0	62.10	0	0
8-280-3-A-28-13-1-3-000	280	0.04	0.03	-	0	62.09	0	0
8-280-3-A-28-20-1-3-000	333	0.05	0.03	-	0	62.11	0	0
8-315-5-A-28-20-1-3-000	295	0.04	0.03	-	0	62.10	0	0
8-350-3-A-28-20-1-3-000	335	0.05	0.03	-	0	62.11	0	0
C-245-3-A-28-25-1-3-000	301	0.04	0.03	-	0	62.10	0	0
F-210-3-A-18-65-1-3-000	303	0.04	0.03	-	0	62.10	0	0
F-210-3-A-18-65-1-3-061	295	0.04	0.03	-	0	62.10	0	0
F-280-3-A-18-65-1-3-000	347	0.05	0.03	-	0	62.12	0	0
F-280-3-A-18-65-1-3-061	346	0.05	0.03	-	0	62.11	0	0
F-315-3-A-18-65-1-3-000	349	0.05	0.03	-	0	62.12	0	0
F-350-3-A-18-65-1-3-000	367	0.05	0.03	-	0	62.12	0	0
F-350-3-A-18-65-1-3-061	351	0.05	0.03	-	0	62.12	0	0
J-210-3-A-28-65-1-3-000	268	0.04	0.03	-	0	62.09	0	0
J-210-3-A-28-65-1-3-460	309	0.04	0.03	-	0	62.10	0	0
J-245-3-A-28-65-1-3-000	280	0.04	0.03	-	0	62.09	0	0
M-210-0-A-28-15-1-3-000	271	0.04	0.03	-	0	62.09	0	0
M-210-0-A-28-15-1-3-004	284	0.04	0.03	-	0	62.09	0	0
M-210-0-A-28-15-1-3-020	304	0.04	0.03	-	0	62.10	0	0
N-280-3-A-28-15-1-3-004	389	0.05	0.03	-	0	62.13	0	0
O-210-3-A-18-13-1-3-000	289	0.04	0.03	-	0	62.10	0	0
O-210-3-A-18-13-1-3-061	292	0.04	0.03	-	0	62.10	0	0
O-210-3-A-18-15-1-3-000	270	0.04	0.03	-	0	62.09	0	0
O-210-3-A-18-18-1-3-000	287	0.04	0.03	-	0	62.09	0	0
O-210-3-A-18-18-1-3-060	274	0.04	0.03	-	0	62.09	0	0
O-210-3-A-18-20-1-3-000	288	0.04	0.03	-	0	62.09	0	0
O-210-3-A-18-23-1-3-000	300	0.04	0.03	-	0	62.10	0	0
O-210-5-A-18-13-1-3-000	256	0.04	0.03	-	0	62.09	0	0
O-210-5-A-18-13-1-3-061	255	0.04	0.03	-	0	62.09	0	0
O-210-5-A-18-15-1-3-000	267	0.04	0.03	-	0	62.09	0	0

OTHER ENVIRONMENTAL INFORMATION: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
O-210-5-A-18-15-1-3-061	273	0.04	0.03	-	0	62.09	0	0
O-245-3-A-18-13-1-3-000	274	0.04	0.03	-	0	62.09	0	0
O-245-3-A-18-15-1-3-000	269	0.04	0.03	-	0	62.09	0	0
O-245-5-A-18-13-1-3-000	259	0.04	0.03	-	0	62.09	0	0
O-280-3-A-18-13-1-3-000	301	0.04	0.03	-	0	62.10	0	0
O-280-3-A-18-15-1-3-000	306	0.04	0.03	-	0	62.10	0	0
O-280-3-A-18-15-1-3-061	317	0.04	0.03	-	0	62.10	0	0
O-280-3-A-18-18-1-3-000	316	0.04	0.03	-	0	62.10	0	0
O-280-3-A-18-18-1-3-001	302	0.04	0.03	-	0	62.10	0	0
O-280-3-A-18-20-1-3-000	299	0.04	0.03	-	0	62.10	0	0
O-280-3-A-18-23-1-3-000	296	0.04	0.03	-	0	62.10	0	0
O-280-5-A-18-13-1-3-000	285	0.04	0.03	-	0	62.10	0	0
O-280-5-A-18-13-1-3-001	540	0.07	0.04	-	0	62.18	0	0
O-280-5-A-18-13-1-3-061	288	0.04	0.03	-	0	62.10	0	0
O-280-5-A-18-15-1-3-000	279	0.04	0.03	-	0	62.09	0	0
O-280-5-A-18-15-1-3-061	282	0.04	0.03	-	0	62.09	0	0
O-315-3-A-18-13-1-3-000	331	0.04	0.03	-	0	62.11	0	0
O-315-3-A-18-15-1-3-000	336	0.05	0.03	-	0	62.11	0	0
O-315-5-A-18-13-1-3-000	317	0.04	0.03	-	0	62.11	0	0
O-315-5-A-18-15-1-3-000	298	0.04	0.03	-	0	62.10	0	0
O-350-3-A-18-13-1-3-000	330	0.04	0.03	-	0	62.11	0	0
O-350-3-A-18-15-1-3-000	364	0.05	0.03	-	0	62.12	0	0
O-350-3-A-18-18-1-3-000	323	0.04	0.03	-	0	62.11	0	0
O-350-5-A-18-13-1-3-000	300	0.04	0.03	-	0	62.10	0	0
O-350-5-A-18-15-1-3-000	291	0.04	0.03	-	0	62.10	0	0
O-350-5-A-18-15-1-3-61U	373	0.05	0.03	-	0	62.12	0	0
T-210-3-A-28-20-1-3-000	268	0.04	0.03	-	0	62.09	0	0
T-210-5-A-28-20-1-3-000	268	0.04	0.03	-	0	62.09	0	0
T-210-5-A-28-20-1-3-200	249	0.04	0.03	-	0	62.09	0	0
T-210-5-A-28-20-1-3-464	287	0.04	0.03	-	0	62.10	0	0

OTHER ENVIRONMENTAL INFORMATION: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
T-245-3-A-28-20-1-3-000	287	0.04	0.03	-	0	62.10	0	0
T-245-5-A-28-20-1-3-000	286	0.04	0.03	-	0	62.10	0	0
T-280-3-A-28-20-1-3-000	305	0.04	0.03	-	0	62.10	0	0
T-280-5-A-28-20-1-3-000	292	0.04	0.03	-	0	62.10	0	0
T-350-5-A-28-20-1-3-000	319	0.04	0.03	-	0	62.11	0	0
V-280-3-A-03-65-1-3-000	462	0.06	0.04	-	0	62.15	0	0
V-280-3-A-28-65-1-3-000	297	0.04	0.03	-	0	62.10	0	0
Acronyms	GWP-Net (Net Global warming potential) • HWD (hazardous waste disposed) • NHWD (non-hazardous waste disposed) • RWD (radioactive waste disposed) • MER (materials for energy recovery) • MFR (materials for recycling) • EE (exported energy) • CRU (components for re-use)							
Notes	• The gross GWP values include the greenhouse gas emissions from the coprocessing of secondary fuels at clinker production. The net GWP values exclude emissions from the coprocessing of secondary fuels at clinker production. • Not all LCA datasets for upstream materials include these impact categories and thus results may be incomplete. Use caution when interpreting data in these categories: 'Radioactive waste disposed'. According to the Global Cement and Concrete Association and industry studies, the only contribution in the cement and concrete sectors is the indirect contribution from the nuclear power share in the electricity mix, which is not present in Colombia's energy mix.							

Strength >35 MPa

OTHER ENVIRONMENTAL INFORMATION: 1 M³ OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
1-420-3-A-28-15-1-3-001	375	0.08	0.04	-	0	35.59	0	0
1-420-3-A-28-20-1-3-000	366	0.08	0.04	-	0	35.59	0	0
1-420-5-A-14-15-1-3-001	429	0.09	0.05	-	0	35.61	0	0
1-420-3-A-03-13-1-3-001	531	0.07	0.04	-	0	62.18	0	0
1-420-3-A-28-15-1-3-000	393	0.05	0.03	-	0	62.13	0	0
1-420-5-A-03-13-1-3-001	519	0.07	0.04	-	0	62.18	0	0
1-420-5-A-14-13-1-3-000	364	0.05	0.03	-	0	62.13	0	0
1-420-5-A-28-10-0-3-000	363	0.05	0.03	-	0	62.13	0	0
1-420-5-A-28-13-1-3-000	354	0.05	0.03	-	0	62.12	0	0
1-420-5-A-28-13-1-3-001	353	0.05	0.03	-	0	62.12	0	0

OTHER ENVIRONMENTAL INFORMATION: 1 M^3 OF READY-MIX CONCRETE.								
Indicator	**GWP Net**	**HWD**	**NHWD**	**RWD**	**MER**	**MFR**	**EE**	**CRU**
Unit	**kgCO_2 eq**	**kg**	**kg**	**kg**	**kg**	**kg**	**MJ**	**kg**
A-490-3-A-28-15-1-3-551	387	0.05	0.03	-	0	62.13	0	0
A-490-5-A-28-15-1-3-551	376	0.05	0.03	-	0	62.13	0	0
F-420-3-A-18-65-1-3-000	425	0.06	0.03	-	0	62.14	0	0
F-490-3-A-18-65-1-3-524	434	0.06	0.03	-	0	62.14	0	0
O-420-3-A-18-18-1-3-000	403	0.05	0.03	-	0	62.14	0	0
O-420-3-A-18-23-1-3-000	411	0.05	0.03	-	0	62.14	0	0
O-490-3-A-18-15-1-3-406	397	0.05	0.03	-	0	62.13	0	0
O-490-3-A-18-18-1-3-407	433	0.06	0.03	-	0	62.14	0	0
O-490-3-A-18-23-1-3-407	449	0.06	0.03	-	0	62.15	0	0

Acronyms	GWP-Net (Net Global warming potential) • HWD (hazardous waste disposed) • NHWD (non-hazardous waste disposed) • RWD (radioactive waste disposed) • MER (materials for energy recovery) • MFR (materials for recycling) • EE (exported energy) • CRU (components for re-use)
Notes	• The gross GWP values include the greenhouse gas emissions from the coprocessing of secondary fuels at clinker production. The net GWP values exclude emissions from the coprocessing of secondary fuels at clinker production. • Not all LCA datasets for upstream materials include these impact categories and thus results may be incomplete. Use caution when interpreting data in these categories: 'Radioactive waste disposed'. According to the Global Cement and Concrete Association and industry studies, the only contribution in the cement and concrete sectors is the indirect contribution from the nuclear power share in the electricity mix, which is not present in Colombia's energy mix.

12. REFERENCES

- 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 21930, Sustainability in building construction — Environmental declaration of building products.
- Labeling Sustainability - Program Operator for Product Category Rules (PCRs) and Environmental Product Declarations (EPDs): General Program Instructions
- NTC 220 - Cementos. Determinación de la resistencia de morteros de cemento hidráulico AT la compresión, usando cubos de 50 mm o 2 pulgadas de lado.
- NTC 396 - Ingeniería Civil y Arquitectura. Método de ensayo para determinar el asentamiento del concreto.
- NTC 673 - Concretos. Ensayo de resistencia AT la compresión de cilindros normales de Concreto.
- NTC 3318 - Concreto Premezclado.
- NSF International PCR for Portland, Blended, Masonry, Mortar, and Plastic (Stucco) Cements v3.2
- NSF International PCR for Concrete, Version 2.3 (including deviation) – 2024 Extension
- GCCA Industry EPD Tool for Cement and Concrete (v4.1), North American Version