

This Environmental Product Declaration (EPD) reports the impacts for 1 m<sup>3</sup> of ready mixed concrete mix, meeting the following specifications:

- ASTM C94: Ready-Mixed Concrete
- UNSPSC Code 30111505: Ready Mix Concrete
- CSA A23.1/A23.2: Concrete Materials and Methods of Concrete Construction
- CSI Division 03-30-00: Cast-in-Place Concrete

**COMPANY**

Holcim  
8700 Bryn Mawr Ave Suite #300  
Chicago, IL 60631-3512

**PLANT**

Fort Totten (DC) Plant  
5001 Fort Totten Dr. NE  
Washington, DC 20011

**EPD PROGRAM OPERATOR**



ASTM International  
100 Barr Harbor Drive  
West Conshohocken, PA 19428

**DATE OF ISSUE**

07/16/2021 (valid for 5 years until 07/16/2026)

**ENVIRONMENTAL IMPACTS**

**Declared Product:**

Mix ECOS80504 • Fort Totten (DC) Plant  
Description: 8000,ECOPACT, STANDARD PST NAE HRWR  
Compressive strength: 8000 PSI at 28 days

**Declared Unit:** 1 m<sup>3</sup> of concrete

Global Warming Potential (kg CO <sub>2</sub> -eq)	320
Ozone Depletion Potential (kg CFC-11-eq)	9.31E-6
Acidification Potential (kg SO <sub>2</sub> -eq)	1.27
Eutrophication Potential (kg N-eq)	0.59
Photochemical Ozone Creation Potential (kg O <sub>2</sub> -eq)	22.1
Abiotic Depletion, non-fossil (kg Sb-eq)	4.49E-5
Abiotic Depletion, fossil (MJ)	1,712
Total Waste Disposed (kg)	4.37
Consumption of Freshwater (m <sup>3</sup> )	3.67

**Product Components:** crushed aggregate (ASTM C33), natural aggregate (ASTM C33), Portland cement (ASTM C150), slag cement (ASTM C989), admixture (ASTM C494), batch water (ASTM C1602)

Additional detail and impacts are reported on page three of this EPD

ISO 21930:2017 Sustainability in Building Construction – Environmental Declaration of Building Products: serves as the core PCR  
 PCR for Concrete, NSF International, February 2019 serves as the sub-category PCR

Sub-category PCR review was conducted by Thomas P. Gloria • Industrial Ecology Consultants

Independent verification of the declaration, according to ISO 14025:2006:  internal  external

Third party verifier Thomas P. Gloria (t.gloria@industrial-ecology.com) • Industrial Ecology Consultants

**For additional explanatory material**  
 Manufacture Representative: Zachary Lovett (zachary.lovett@holcim.com)  
 Software Tool: CarbonCLARITY Suite, EPD Generator • Verification  
 LCA & EPD Developer: Climate Earth (support@climateearth.com)



**SYSTEM BOUNDARY**

This EPD is a cradle-to-gate EPD covering the product stages (A1-A3) only

Production Stage (Mandatory)			Construction Stage		Use Stage					End-of-Life Stage			
Extraction and upstream product production	Transport to factory	Manufacturing	Transport to site	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	De-construction/ demolition	Transport to was processing or disposal	Waste processing	Disposal of waste
<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>A4</b>	<b>A5</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>B5</b>	<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>C4</b>

**CUT-OFF**

Items excluded from system boundary include: production, manufacture, and construction of manufacturing capital goods and infrastructure; production and manufacture of production equipment, delivery vehicles, and laboratory equipment; personnel-related activities (travel, furniture, and office supplies); and energy and water use related to company management and sales activities that may be located either within the factory site or at another location.

**ALLOCATION PROCEDURE**

Allocation follows the requirements and guidance of ISO 14044. The product category rules for this EPD recognize fly ash, silica fume and slag as waste products 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.

**LIFE CYCLE INVENTORY (LCI)**

This EPD was calculated using manufacturer specific cement data that represents 100% of the total cement used in this mix.

**PRIMARY SOURCES OF LCI DATA**

- Admixture (superplasticizing): EFCA EPD, 2015
- Aggregate (crushed): US-EI (2016): “Gravel, crushed, at mine/US”, 2001
- Aggregate (natural): US-EI (2016): “Gravel, round, at mine/US”, 2001
- Cleaning Chemicals: Ecoinvent 3.4: 50% Citric acid and 50% Phosphoric acid, industrial grade, without water, in 70% solution state, market for/GLO, 2017
- Diesel: USLCI: “Diesel, combusted in industrial equipment/ NREL/US”, 2007
- Electricity (RCC): Ecoinvent 3.4: “Electricity, medium voltage, market for, cut-off”, 2015
- Municipal Water: US-EI (2016): “Tap water, at user/US”, 2000
- Non-Hazardous Solid Waste: US-EI (2016): Disposal, municipal solid waste, 2008
- Oils, Lubricants and Greases: Ecoinvent 3.4: Lubricating oil, GLO, market for, cut-off, 2011
- Portland Cement: Supplier specific primary data, 2020
- Rail transport: USLCI: “Transport, train, diesel powered NREL/US”, 2007
- Slag cement: Slag Cement Association, industry average EPD, 2014
- Truck transport: USLCI:”Transport, combination truck, long-haul, diesel powered/tkm/RNA”, 2010
- Truck transport: USLCI:”Transport, combination truck, short-haul, diesel powered/tkm/RNA”, 2010



## DECLARATION OF ENVIRONMENTAL INDICATORS DERIVED FROM LCA

Impact Assessment	Unit	A1	A2	A3	Total
Global warming potential	kg CO <sub>2</sub> -eq	287	21.2	12.6	320
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11-eq	8.84E-6	8.85E-10	4.77E-7	9.31E-6
Eutrophication potential	kg N-eq	0.49	0.02	0.08	0.59
Acidification potential of soil and water sources (AP)	kg SO <sub>2</sub> -eq	0.92	0.26	0.08	1.27
Formation potential of tropospheric ozone (POCP)	kg O <sub>2</sub> -eq	12.9	7.05	2.10	22.1

### Resource Use

Abiotic depletion potential for non-fossil mineral resources (ADP elements)*	kg Sb-eq	4.20E-5	-	2.94E-6	4.49E-5
Abiotic depletion potential for fossil resources (ADP <sub>fossil</sub> )	MJ	1,291	300	121	1,712
Renewable primary energy resources as energy (fuel), (RPRE)*	MJ	44.1	0.00E+0	2.00	46.1
Renewable primary resources as material, (RPRM)*	MJ	0.00E+0	-	0.00E+0	0.00E+0
Non-renewable primary resources as energy (fuel), (NRPRE)*	MJ	2,090	300	154	2,544
Non-renewable primary resources as material (NRPRM)*	MJ	11.6	-	0.00E+0	11.6
Consumption of fresh water	m <sup>3</sup>	3.64	-	0.04	3.67

### Secondary Material, Fuel and Recovered Energy

Secondary Materials, (SM)*	kg	254	-	0.00E+0	254
Renewable secondary fuels, (RSF)*	MJ	-	-	0.00E+0	0.00E+0
Non-renewable secondary fuels (NRSF)*	MJ	17.2	-	0.00E+0	17.2
Recovered energy, (RE)*	MJ	-	-	0.00E+0	0.00E+0

### Waste & Output Flows

Hazardous waste disposed*	kg	5.51E-3	-	0.00E+0	5.51E-3
Non-hazardous waste disposed*	kg	0.19	-	4.18	4.37
High-level radioactive waste*	m <sup>3</sup>	2.17E-3	-	1.72E-8	2.17E-3
Intermediate and low-level radioactive waste*	m <sup>3</sup>	1.16E-6	-	1.58E-7	1.31E-6
Components for reuse*	kg	-	-	0.00E+0	0.00E+0
Materials for recycling*	kg	1.37	-	1.63	3.00
Materials for energy recovery*	kg	-	-	6.58E-3	6.58E-3
Recovered energy exported from the product system*	MJ	-	-	0.00E+0	0.00E+0

\* 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 these categories.

- 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

EPDs are comparable only if they comply with ISO 21930 (2017), use the same, sub-category PCR where applicable, include all relevant information modules and are based on equivalent scenarios with respect to the context of construction works.

### REFERENCES

ISO 21930:2017 Sustainability in Building Construction – Environmental Declaration of Building Products  
ISO 14044:2006/Amd 1:2017/Amd 2:2020 Environmental Management – Life Cycle Assessment – Requirements and Guidelines