

# CENTRAL CONCRETE

ENVIRONMENTAL PRODUCT DECLARATION

Mix 340Z75Q1 • San Francisco Plant 30 Plant



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

## COMPANY

### Central Concrete

755 Stockton Ave.  
San Jose, CA 95126

## PLANT

### San Francisco Plant 30 Plant

450 Amador St.  
San Francisco, CA 94124

## EPD PROGRAM OPERATOR

### ASTM International

100 Barr Harbor Drive  
West Conshohocken, PA 19428



## DATE OF ISSUE

07/08/2019 (valid for 5 years until 07/08/2024)

## ENVIRONMENTAL IMPACTS

### Declared Product:

Mix 340Z75Q1 • San Francisco Plant 30 Plant  
3IN LN 4000 PSI 1" CO2 EF45 3-5SL  
Compressive strength: 4000 psi at 28 days

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

Global Warming Potential (kg CO <sub>2</sub> -eq)	257
Ozone Depletion Potential (kg CFC-11-eq)	9.3E-6
Acidification Potential (kg SO <sub>2</sub> -eq)	1.72
Eutrophication Potential (kg N-eq)	0.33
Photochemical Ozone Creation Potential (kg O <sub>3</sub> -eq)	37.7
Abiotic Depletion, non-fossil (kg Sb-eq)	4.2E-6
Abiotic Depletion, fossil (MJ)	780
Total Waste Disposed (kg)	1.67
Consumption of Freshwater (m <sup>3</sup> )	1.93

**Product Components:** natural aggregate (ASTM C33), crushed aggregate (ASTM C33), Portland cement (ASTM C150), slag cement (ASTM C989), fly ash (ASTM C618), 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:** Rita Schenck ([rita@iere.org](mailto:rita@iere.org)) • Institute for Environmental Research and Education

### For additional explanatory material

Manufacture Representative: Patrick Frawley ([PFrawley@us-concrete.com](mailto:PFrawley@us-concrete.com))

Software Tool: [CE Enterprise EPD Generator](#) • [Verification](#)

## CENTRAL CONCRETE

755 Stockton Ave.  
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408-293-6272

## SAN FRANCISCO PLANT 30

450 Amador St.  
San Francisco, CA 94124

## LIFE CYCLE ASSESSMENT

### 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 production	Transport to factory	Manufacturing	Transport to site	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	De-construction/ Demolition	Transport to waste 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 14044:2006, Clause 4.3.4.

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 industry average cement data. Cement LCA impacts can vary depending upon manufacturing process, efficiency and fuel source by as much as 50% for some environmental impact categories. Cement accounts for as much as 73% of the impacts of the concrete mixes included in this EPD and thus manufacturer specific cement impacts could result in variation of as much as 36%.

### PRIMARY SOURCES OF LCI DATA

- **Admixture (plasticizing):** EFCAEPD, 2015
- **Aggregate (crushed):** US-EI (2016): "Gravel, crushed, at mine/US", 2001
- **Aggregate:** Supplier specific primary data, 2016
- **Carbon Cure:** Supplier specific primary data, 2017
- **Diesel:** USLCI: "Diesel, combusted in industrial equipment/NREL/US", 2007
- **Electricity (WECC):** Ecoinvent 3.4: "Electricity, medium voltage, market for, cut-off", 2015
- **Fly ash:** byproduct of coal combustion; no upstream manufacturing impacts
- **Municipal Water:** US-EI (2016): "Tap water, at user/US", 2000
- **Portland cement:** Portland Concrete Association, Industry Average EPD, 2016
- **Rail transport:** USLCI: "Transport, train, diesel powered NREL/US", 2007
- **Ship transport:** USLCI: "Transport, ocean freighter, average fuel mix 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 (GWP)	kg CO <sub>2</sub> -eq	221	22.6	13.1	257
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11-eq	9.1E-6	8.8E-10	1.8E-7	9.3E-6
Eutrophication potential (EP)	kg N-eq	0.28	0.02	0.03	0.33
Acidification potential of soil and water sources (AP)	kg SO <sub>2</sub> -eq	1.15	0.41	0.15	1.72
Formation potential of tropospheric ozone (POCP)	kg O <sub>3</sub> -eq	21.1	11.9	4.76	37.7
<b>Resource Use</b>					
Abiotic depletion potential for non-fossil mineral resources (ADPelements)*	kg Sb-eq	4.2E-6	-	3.9E-8	4.2E-6
Abiotic depletion potential for fossil resources (ADPfossil)	MJ	308	296	176	780
Renewable primary energy resources as energy (fuel), (RPRE)*	MJ	64.7	0.0E+0	7.22	71.9
Renewable primary resources as material, (RPRM)*	MJ	0.0E+0	-	0.0E+0	0.0E+0
Non-renewable primary resources as energy (fuel), (NRPRE)*	MJ	1,533	296	182	2,011
Non-renewable primary resources as material (NRPRM)*	MJ	5.43	-	0.0E+0	5.43
Consumption of fresh water	m <sup>3</sup>	1.90	-	0.03	1.93
<b>Secondary Material, Fuel and Recovered Energy</b>					
Secondary Materials, (SM)*	kg	145	-	0.0E+0	145
Renewable secondary fuels, (RSF)*	MJ	0.0E+0	-	0.0E+0	0.0E+0
Non-renewable secondary fuels (NRSF)*	MJ	0.0E+0	-	0.0E+0	0.0E+0
Recovered energy, (RE)*	MJ	0.0E+0	-	0.0E+0	0.0E+0
<b>Waste &amp; Output Flows</b>					
Hazardous waste disposed*	kg	0.01	-	0.0E+0	0.01
Non-hazardous waste disposed*	kg	1.66	-	0.0E+0	1.66
High-level radioactive waste*	m <sup>3</sup>	1.0E-3	-	3.0E-9	1.0E-3
Intermediate and low-level radioactive waste*	m <sup>3</sup>	8.2E-8	-	2.8E-8	1.1E-7
Components for reuse*	kg	0.0E+0	-	0.0E+0	0.0E+0
Materials for recycling*	kg	0.0E+0	-	0.0E+0	0.0E+0
Materials for energy recovery*	kg	0.0E+0	-	0.0E+0	0.0E+0
Recovered energy exported from the product system*	MJ	0.0E+0	-	0.0E+0	0.0E+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 Environmental Management — Life Cycle Assessment — Requirements and Guidelines