

EPD Summary Brief for Precast Concrete: Industry-Average Structural Precast Concrete

EPD OWNERS:

Canadian Precast/Prestressed Concrete Institute
National Precast Concrete Association
Precast/Prestressed Concrete Institute

PROGRAM OPERATOR:

ASTM International

ASTM EPD NUMBER:

EPD-017

CERTIFICATION PERIOD:

11-11- 2015 to 11-11- 2020

BOUNDARY:

Cradle-to- gate (product stage)

Module A1: Raw material supply

Module A2: Transport to manufacturer

Module A3: Manufacturing and terminal operations

GEOGRAPHICAL APPLICABILITY:

United States and Canada

PRODUCT DESCRIPTION:

Structural Precast Concrete (UN CPC 3755) Structural precast concrete is a construction product produced by casting concrete in a reusable mold or “form” which is then cured in a controlled environment, transported to the construction site and lifted into place. Structural precast concrete is used in building or civil engineering works and is primarily composed of cement, aggregates and reinforcement materials.

PCR:

Product Category Rules for Preparing an Environmental Product Declaration for Precast Concrete, ASTM International, March 2015.



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RESULTS PER METRIC TON OF STRUCTURAL PRECAST CONCRETE

Category Indicator	Unit	Structural Panel Results
Life Cycle Impact Assessment		
Global warming potential	kg CO ₂ eq.	298.8
Acidification potential	kg SO ₂ eq.	50
Eutrophication potential	kg N eq.	0.3
Smog creation potential	kg O ₃ eq.	58.6
Ozone depletion potential	kg CFC-11	1.9E-03
Primary Energy Consump		
Total Primary Energy	MJ, HHV	2,620.2
Non-renewable (fossil, nuclear)	MJ, HHV	2,574.1
Renewable (solar, wind, biomass hydroelectric, & geothermal)	MJ, HHV	46.1
Material Resources Consump		
Total Material Resource Consumption	kg	1,066.7
Non-renewable materials	kg	1,065.8
Renewable materials	kg	0.9
Fresh water	l	1,597.3
Waste Generated		
Non-hazardous	kg	65.2
Hazardous	kg	10.0

LCIA method: TRACI v2.1

MATERIAL CONTENT PER METRIC TON OF STRUCTURAL PRECAST CONCRETE*

Material	Unit	Structural Panel Materials
Concrete Mix	kg	933.63
Cement	kg	159.2
Fine Aggregate	kg	357.7
Coarse Aggregate	kg	389.9
Lightweight Aggregate	kg	5.6
Supplementary Cementing Materials (SCMs)	kg	19
Concrete Admixtures	l	2.23
Reinforcement	kg	42.92
Polystyrene	bdf	0.89
Brick	kg	0.43
Pigments	kg	0.07
Net Consumables	l	0.1
Total Batch Water Use	l	59.4

*Detailed material breakdown provided in LCA report