EPD Summary Brief for Precast Concrete: Industry-Average Underground 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-018

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:

Underground Precast Concrete (UN CPC 3755) Underground 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. Underground 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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EPD RESULTS PER METRIC TON OF UNDERGROUND PRECAST CONCRETE

Category Indicator	Unit	Underground Precast Panel Results
Life Cycle Impact Assessment		
Global warming potential	kg CO_2 eq.	259.1
Acidification potential	kg SO_2 eq.	4.4
Eutrophication potential	kg N eq.	0.2
Smog creation potential	kg O_3 eq.	51.2
Ozone depletion potential	kg CFC-11	1.8E-04
Primary Energy Consump		
Total Primary Energy	MJ, HHV	2,373.4
Non-renewable (fossil, nuclear)	MJ, HHV	2,327.4
Renewable (solar, wind, biomass hydroelectric, & geothermal)	MJ, HHV	46.0
Material Resources Consump		
Total Material Resource Consumption	kg	1,030.3
Non-renewable materials	kg	1,029.6
Renewable materials	kg	0.7
Fresh water	l	1,352.7
Waste Generated		
Non-hazardous	kg	65.1
Hazardous	kg	10.0

LCIA method: TRACI v2.1

MATERIAL CONTENT PER METRIC TON OF UNDERGROUND PRECAST CONCRETE*

Material	Unit	Underground Precast Panel Materials
Concrete Mix	kg	943.6
Cement	*kg*	*138.3*
Fine Aggregate	*kg*	*390.1*
Coarse Aggregate	*kg*	*381.5*
Lightweight Aggregate	*kg*	*0.3*
Supplementary Cementing Materials SCMs)	*kg*	*31.4*
Concrete Admixtures	*l*	*1.9*
Reinforcement	kg	29.9
Polystyrene	bdft	0.15
Brick	kg	0.04
Pigments	kg	0.003
Net Consumables	l	0.06
Total Batch Water Use	l	57.3

**Detailed material breakdown provided in LCA report*

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