EPD Summary for Precast Concrete: Industry-Average Architectural and Insulated Wall Panel

EPD OWNERS:

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

PROGRAM OPERATOR:

ASTM International

ASTM EPD NUMBER:

EPD-016

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:

Architectural and Insulated Precast Concrete Panels (UN CPC 3755) Architectural precast panel is a single-wythe exterior wall panel and/or architectural trim product. Insulated Precast Panel is two conventionally reinforced or prestressed concrete wythes with a continuous layer of rigid insulation placed between.

Architectural and Insulated Precast Panels are engineered construction products 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.

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 ARCHITECTURAL AND INSULATED PANELS

Category Indicator	Unit	Architectural Panel Results	Insulated Panel Results
Life Cycle Impact Assessment			
Global warming potential	kg CO_2 eq.	307.7	321.4
Acidification potential	kg SO_2 eq.	5.8	4.8
Eutrophication potential	kg N eq.	0.3	0.3
Smog creation potential	kg O_3 eq.	67.6	55.1
Ozone depletion potential	kg CFC-11	1.6E-03	3.8E-03
Primary Energy Consumption			
Total Primary Energy	MJ, HHV	2,814.4	2,830.3
Non-renewable (fossil, nuclear)	MJ, HHV	2,760.4	2,780.9
Renewable (solar, wind, biomass hydroelectric, & geothermal)	MJ, HHV	53.9	49.3
Material Resources Consumption			
Total Material Resource Consumption	kg	1,057.9	1,040.7
Non-renewable materials	kg	1,056.7	1,039.9
Renewable materials	kg	1.2	0.8
Fresh water	l	1,734.4	1,564.1
Waste Generated			
Non-hazardous	kg	65.3	65.3
Hazardous	kg	10.0	10.0

LCIA method: TRACI v2.1

MATERIAL CONTENT PER METRIC TON OF ARCHITECTURAL AND INSULATED PANELS*

Material	Unit	Architectural Panel Materials	Insulated Panel Materials
Concrete Mix	kg	905.01	894.87
Cement	*kg*	*157.4*	*164.8*
Fine Aggregate	*kg*	*343.3*	*336.8*
Coarse Aggregate	*kg*	*395.1*	*379.6*
Lightweight Aggregate	*kg*	*1.3*	*5.3*
Supplementary Cementing Materials SCMs)	*kg*	*6.0*	*6.73*
Concrete Admixtures	*l*	*1.91*	*1.64*
Reinforcement	kg	43.74	37.164
Polystyrene	bdft	0.72	49.3
Brick	kg	3.97	2.6
Natural Stone	kg	0.83	0
Pigments	kg	1.62	0.72
Net Consumables	l	0.08	0.1
Total Batch Water Use	l	57.9	65.1

**Detailed material breakdown provided in LCA report*

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