

# COLLECTING AND REPORTING | building products environmental information EPD

## ENVIRONMENTAL product DECLARATION (EPD)



**EPD:** When researching a product, we should try to obtain the product's EPD with the product's environmental information.

If the EPD is not available, make sure that the information you find is verified by a reliable source, such as manufacturers, associations, etc.

The EPDs are verified by independent parties in a series of reviews before they are published and registered.

An EPD is not a claim of environmental superiority for a specific product.

**PCR:** The Product Category Rules (PCRs) were developed to enable comparisons among products of the same category. The format, contents and manner of use of PCRs are established by the ISO (International Organization for Standardization).

Information for this module was taken from the 'Environmental Product Declarations (EPDs): Improving Material Selection Options in the IgCC'

**The International Green Construction Code**

### the EPD

The **EPD (Environmental Product Declaration)** is a document that **QUALIFIES environmental information** on products to facilitate comparisons between products with the same function. **The format of the EPD is the same for all products, so the information recorded is always the same type and organized in the same manner.**

- EPDs provide information about products from cradle to grave (or cradle) such that designers, specifiers, buyers, code officials and the general public can better understand a product's specific, as well as overall, environmental impact.
- EPDs make the environmental benefits of energy efficiency and other important aspects of a given product clearer.

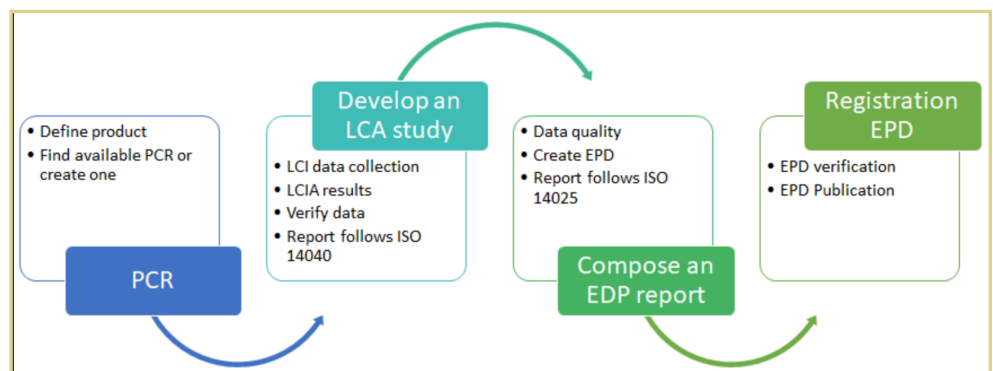
For uniformity and quality control purposes, the collection and documentation of the information included in an EPD is done following a set of rules called **Product Category Rules (PCR)**; these rules are for working with a product type (for example "insulation", "floor finishes", etc.) This procedure makes working with environmental information of different products easier.

The EPDs are prepared by the product manufacturers. The steps to prepare an EPD are:

1. Define the product using the Product Category Rules. **Product Category** is a group of products that have similar functions, for example: 'floor finishes', 'concrete blocks', or 'insulation'.
2. Collect and document the information necessary following the Product Category Rules.
3. Using the information collected, prepare a document called the **Life Cycle Assessment (LCA)**, that measures the product's environmental impact throughout the product's life cycle.
4. Prepare the product's Environmental Product Declaration (EPD) using the information in the LCA.

A properly developed EPD follows an ISO standard to report information over the entire product life cycle with quantitative measures of key environmental impacts. An EPD follows a specific format described in an ISO-compliant Product Category Rule (PCR) and verified by the PCR program operator and reports information on the entire product life, from manufacture to final disposal.

- The contents of the EPD are *third-party-reviewed during the process of obtaining the relevant information and documenting it*, with the goal of making approval decisions and judgments easier to use and understand for code officials, because they can consider an EPD as a verified IgCC compliance report.



## Environmental Product Declaration for Concrete

Process	LCI Data Source	Geography	Year	Data Quality
<b>Cement</b>	Portland cement, at plant (USLCC). Modified to include upstream impacts of fuel and energy production	US	2007	<ul style="list-style-type: none"> <li>Technology: Best available technology in the US</li> <li>Geography: Data is within US</li> <li>Completeness: Data is better</li> <li>Reliability: good</li> </ul>
<b>Fly Ash</b>	None, no incoming burden and only incoming transport was considered	N/A	N/A	N/A
<b>Packaging/ Administration Type</b>	EPA 324 Packaging Eco-Profiles (A Water Reducer)	Europe	2006	<ul style="list-style-type: none"> <li>Technology: Process report in concrete</li> <li>Time: 1 year</li> <li>Data is within ten years</li> <li>Geography: fair</li> <li>Completeness: good</li> <li>Data from: Institute of European architecture products</li> <li>Reliability: fair</li> </ul>
<b>Sand</b>	Sand (DLS, market for (account 3))	Global	2011	<ul style="list-style-type: none"> <li>Technology: very good</li> <li>Process: represents extraction of sand for production</li> <li>Time: very good</li> <li>Data from: year of study</li> <li>Geography: fair</li> <li>Completeness: good</li> <li>Data is representative of global production</li> <li>Reliability: good</li> <li>ecosmart has verified the data</li> </ul>

### Impact Assessment Metrics

Climate change	kg CO <sub>2</sub> eq	622	633
Ozone depletion <th>kg CFC-11 eq</th> <th>5.61E-05</th> <th>8.27E-05</th>	kg CFC-11 eq	5.61E-05	8.27E-05
Acidification <th>kg SO<sub>2</sub> eq</th> <th>2.20</th> <th>3.34</th>	kg SO <sub>2</sub> eq	2.20	3.34
Eutrophication <th>kg N eq</th> <th>0.00</th> <th>0.004</th>	kg N eq	0.00	0.004
Photochemical smog creation/Smog <th>kg O<sub>3</sub> eq</th> <th>32.8</th> <th>45.6</th>	kg O <sub>3</sub> eq	32.8	45.6

EPD Program Operator  
National Ready Mixed Concrete Association  
900 Spring Street, Silver Spring, MD 20910  
301-687-1400  
[www.concrete.org/sustainability](http://www.concrete.org/sustainability)

Date of Issue: November 12, 2014  
Period of Validity: 3 years  
(until November 12, 2019)  
Declaration: MINCPEAC 10005

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## Environmental Product Declaration (EPD) for Concrete

### ENVIRONMENTAL PRODUCT DECLARATION: DETAILED VERSION

#### Product Description

Products covered by this Environmental Product Declaration (EPD) are for general purpose concrete for commercial applications developed and produced by Cementa Arco® Systems at Marilena Plant. This EPD reports the impacts for the product "ready mix concrete" meeting the following specifications:

- ASTM C94: Standard Specification for Ready-Mix Concrete
- UNFSC code 3011500-Ready Mix Concrete
- Concrete C18 Section 03 30 00: Cast-in-Place

#### Product Components

Component	ASTM C1157	Specification For:
Hydrated Cement	ASTM C1157	Hydraulic Cement
Wool Cement	ASTM C1157	
Pig Ash	ASTM C1157	Used as fill or in cementitious material for use in concrete
Wool Cement	ASTM C1157	Used as fill or in cementitious material for use in concrete
Mineral and Gravel Aggregates	ASTM C1157	Concrete aggregates
Admixtures	ASTM C1157	Chemical Admixtures for Concrete
Ready-Mix	ASTM C1157	Ready-Mix concrete in the production of hydraulic cement concrete

#### Declared Unit

The declared unit is 1m<sup>3</sup> of ARCO concrete that corresponds to the ARCO mix numbers and plants given in the tables below:

Mix Code	Strength Class (psi)	Slump (in)
1010075	8000 @ 28 days	8 to 14
1010170	8000 @ 90 days	8 to 14

EPD Program Operator:

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Date of Issue: November 12, 2014

Period of Validity: 3 years

(until November 12, 2017)

Declaration#: MINICAPCD-10005

# Environmental Product Declaration (EPD) for Concrete

## References

Product Category Rules (PCR) for ISO 14025 Type III Environmental Product Declarations (EPDs) for Concrete meeting the requirements of one of the following: ASTM C84, ASTM C84, ASTM A12132, UNPSP code 300711050, Version 1, dated December 4, 2013. The Carbon Leadership Forum, <http://carbonleadershipforum.org>

Greenhouse Gas Protocol, "Product Life Cycle Accounting and Reporting Standard", [http://www.greenhousegas.org/files/greengasproductlife-cycle-accounting-and-reporting-standard\\_041813.pdf](http://www.greenhousegas.org/files/greengasproductlife-cycle-accounting-and-reporting-standard_041813.pdf) Accessed June 2013.

"U.S. Life Cycle Inventory (LCI) 2012", National Renewable Energy Laboratory, <http://www.nrel.gov/lca/lci/> Accessed March 19, 2013, <http://www.epa.com/epa/ncma/epd/>

Carbon Leadership Forum, (2014) "Clarification #1: April 10, 2014 to: Product Category Rules (PCR) for ISO 14025 Type III Environmental Product Declarations (EPD)"

U.S. Environmental Administration, (2014) "Program, <http://www.epa.gov/epa/ncma/epd/>

Ecoinvent, ecoinvent Database v2.2, <http://www.ecoinvent.org/databases/> Accessed March 2013.

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Maranan, Medgar, Michael Nisbett, and Martha VanGeem (2007) Life Cycle Inventory of Portland Cement and Concrete, NCMA31, Portland Cement Association, Skokie, Illinois, PCA.


World Business Council for Sustainable Development-Cement Sustainability Initiative, (2011) "CO<sub>2</sub> Accounting and Reporting Standard for the Cement Industry v2", <http://www.cement.org/ncma/epd/> Accessed June 2013.

National Ready Mixed Concrete Association, (2013) "Program Operator's Instructions For Environmental Product Declarations v.1.2"

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Date of Issue: November 12, 2014  
Period of Validity: November 12, 2014 -  
October 11, 2019  
Declaration #: NRMCA/EPD/10005

in two years	in two years
gr. fair	gr. fair
needs good	needs good
is a federation of European admires	is a federation of European admires
far	far
correlate with ISO standards	correlate with ISO standards
promotes attraction of sand for	promotes attraction of sand for
gr. good	gr. good
error of study	error of study
gr. fair	gr. fair
needs good	needs good
concentration of global production	concentration of global production
good	good
was verified the data	was verified the data



# EPD SAMPLE



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