Environmental Product Declaration (EPD) for Precast Concrete Underground Enclosure Structures

American Concrete Products

(Kansas Plant)

AMERICAN CONCRETE PRODUCTS

an Enterprise Company

amconco.com

General Information

This cradle to gate Environmental Product Declaration covers dry mix products produced at the Kansas City, KS Plant. The Life Cycle Assessment (LCA) was prepared in conformity with ISO 21930, ISO 14025, ISO 14040, and ISO 14044, and the governing precast concrete category rules and ASTM international's EPD program operator rules. This EPD is intended for business-to-business (B-to-B) audiences. **EPD 1119, December 29, 2025 - December 29, 2030.**

Producer

American Concrete Products Inc.
6945 Inland Drive, Kansas City, KS 66106
913-353-9850
www.amconco.com

Program Operator

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428
610-832-9500
www.astm.org

LCA/EPD Developer

Climate Earth, Inc.
137 Park Place, Suite 204
Pt Richmond, CA 94801
415-391-2725
www.climateearth.com

ISO 21930:2017 Sustainability in Building Construction-Environmental Declaration of Building Products serves as the core PCR

Product Category Rules: NSF PCR for Precast Concrete, V3.0, May 2021.

Independent verification of the declaration, according to ISO 21930:2017 and ISO 14025:2006:
X internal | ✓ external

Third-party verifier
Thomas P. Gloria, PhD. (t.gloria@industrial-ecology.com) • Industrial Ecology Consultants

PCR review was conducted by
Dr. Thomas Gloria, Industrial Ecology Consultants; Mr. Bill Stough, Bill Stough, LCC; Dr. Michael Overcash, Environmental Clarity

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.

Producer

American Concrete Products (ACP) is a U.S.-based manufacturer of precast concrete products serving the infrastructure, utility, and transportation markets. The company operates multiple production facilities across the Midwest and South Central United States, including plants in Nebraska, Kansas, and Texas.

ACP manufactures a wide range of precast utility products, including reinforced concrete pipe, manholes, junction boxes, box culverts, utility vaults, inlet structures, and specialty precast elements. Products are manufactured in controlled plant environments using locally sourced raw materials and are designed to meet applicable ASTM, AASHTO, and project-specific requirements.

The company focuses on delivering durable, high-quality precast solutions for underground and civil infrastructure applications, supporting stormwater, sanitary, electrical, telecommunications, and transportation projects.

Product

This Environmental Product Declaration (EPD) reports environmental information for products produced by ACP at its Kansas plant.

The products covered in this EPD meet the following descriptions and applicable standards:

Product Name	Product Description	Standards	Compressive Strength
Utility Structure	Telecommunications Maintenance Hole/Vault (TMH)	ASTM C-857	5,000 PSI
Utility Structure	Telecommunications Handhole/Pull Box (THH)	ASTM C-857	5,000 PSI
Utility Structure	Electric/Medium Voltage Manhole (MV)	ASTM C-857	5,000 PSI
Utility Structure	Electric/Medium Voltage Handhole/Pull Box	ASTM C-857	5,000 PSI

AMERICAN
CONCRETE PRODUCTS

Declared Unit

The declared unit is metric ton of product.

System Boundary

This EPD is a cradle-to-gate EPD covering A1-A3 stages of the life cycle.

Production Stage (Mandatory)			Construction Stage		Use Stage					End-of-Life Sage			
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
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Note: MND = module not declared; X = module included.													

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.
- No substances with hazardous and toxic properties that pose a concern for human health and/or the environment were identified in the framework of this EPD.

Allocation Procedure

Allocation follows the requirements and guidance of ISO 14044:2006, Clause 4.3.4; and ISO 21930:2017 section 7.2. Recycling and recycled content is modeled using the cut-off rule.

Life Cycle Assessment

Table 1: Cradle-to-Gate Impact Results for Products Covered in Study (per 1 mtn of finished product) Kansas Plant

IMPACT CATEGORY	UNIT	American Concrete Products, Kansas Plant			
		A1	A2	A3	Total
Global warming	kg CO2 eq	1.63E+02	7.17E+00	1.59E+01	1.86E+02
Ozone depletion	kg CFC-11 eq	3.64E-06	3.03E-10	5.50E-08	3.70E-06
Eutrophication	kg N eq	1.63E-01	5.07E-03	2.97E-02	1.98E-01
Acidification	kg SO2 eq	3.71E-01	8.46E-02	1.12E-01	5.68E-01
Smog	kg O3 eq	7.16E+00	2.14E+00	3.17E+00	1.25E+01
RESOURCE USE					
Abiotic depletion (non-fossil mineral)	kg Sb eq	3.36E-05	0.00E+00	1.62E-07	3.38E-05
Abiotic depletion (fossil fuels)	MJ, NCV	7.19E+02	1.03E+02	1.95E+02	1.02E+03
Renewable primary energy resources as energy	MJ, NCV	5.93E+01	0.00E+00	3.03E+01	8.95E+01
Renewable primary resources as material	MJ, NCV	6.38E-03	0.00E+00	0.00E+00	6.38E-03
Non-renewable primary resources as energy	MJ, NCV	1.07E+03	1.03E+02	2.02E+02	1.37E+03
Non-renewable primary resources as material	MJ, NCV	9.76E+00	0.00E+00	0.00E+00	9.76E+00
Consumption of fresh water	m3	1.69E+00	0.00E+00	2.81E+02	2.82E+02
SECONDARY MATERIAL, FUEL AND RECOVERED ENERGY					
Secondary materials	kg	9.75E+01	0.00E+00	0.00E+00	9.75E+01
Renewable secondary fuels	MJ, NCV	7.63E+00	0.00E+00	0.00E+00	7.63E+00
Non-renewable secondary fuels	MJ, NCV	7.35E+01	0.00E+00	0.00E+00	7.35E+01
Recovered energy	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WASTE & OUTPUT FLOWS					
Hazardous waste disposed	kg	4.22E-02	0.00E+00	0.00E+00	4.22E-02
Non-hazardous waste disposed	kg	9.40E-01	0.00E+00	3.77E+00	4.71E+00
High-level radioactive waste	m3	1.61E-05	0.00E+00	3.30E-09	1.61E-05
Intermediate and low-level radioactive waste	m3	4.44E-04	0.00E+00	1.57E-08	4.44E-04
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.16E+00	0.00E+00	1.47E+00	2.62E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered energy exported from product system	MJ, NCV	2.73E-01	0.00E+00	0.00E+00	2.73E-01
Calcination	kg CO2 eq	6.75E+01	0.00E+00	0.00E+00	6.75E+01
Biogenic CO2 emissions	kg CO2 eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00

* This EPD meets all comparability requirements stated in ISO 14025:2006. However, differences in certain assumptions, data quality, and variability between LCA data sets may still exist. As such, caution should be exercised when evaluating EPDs from different manufacturers or programs, as the EPD results may not be entirely comparable. Any EPD comparison must be carried out at the construction works level per ISO 21930:2017 guidelines. The results of this EPD reflect an average performance by the product and its actual impacts may vary on a case-to-case basis.

** 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.

Life Cycle Inventory

This EPD utilizes foreground LCI data gathered from the participating company's production facilities during the 2025 calendar year. All upstream materials, resources, and energy carriers are modeled using industry-average datasets and published literature, with many datasets defaulted in accordance with the NSF PCR (2021) requirements. Hardware (lifting or connection) has been included. The following table details each LCI data source and its corresponding data quality evaluation.

Material / Process	LCI Data Source	Year	Data Quality Assessment
GU & GUL Cement	Portland Cement Association, Industry Average EPD, 2023	2023	Technology: very good; Time: very good; Geography: very good; Completeness: very good; Reliability: very good
Slag Cement	Slag Cement Association – EPD of North America Slag Cement	2021	Technology: very good; Time: very good; Geography: very good; Completeness: very good; Reliability: very good
Crushed Aggregates (coarse & fine)	US-EI (2020): "Gravel, crushed, at mine/US", 2001	2001	Technology: very good; Time: fair; Geography: very good; Completeness: very good; Reliability: very good
Natural Aggregates (coarse & fine)	US-EI process (2016): "Gravel, round, at mine/US"	2001	Technology: very good; Time: fair; Geography: very good; Completeness: very good; Reliability: very good
Admixtures	EFCA EPDs for admixtures (2015); non-supported LCIA indicators adjusted using TRACI equivalents	2022	Technology: very good; Time: very good; Geography: fair; Completeness: good; Reliability: very good
Batch & Wash Water	ecoinvent 3.4: *Tap water {RoW}	2011	
Steel Plate	American Iron and Steel Institute – LCI of North American Steel Products (wire & plate)	2017	Technology: very good; Time: very good; Geography: good; Completeness: very good; Reliability: very good
Rebar, WWR, Steel Stressing Strand	Concrete Reinforcing Steel Institute EPD for Steel Reinforcement Bar (adjusted ×1.10 for strand)	2022	Technology: very good; Time: very good; Geography: good; Completeness: very good; Reliability: very good
Road Transport	USLCI 2014: Combination truck, short-haul, diesel (tkm)	2010	Technology: very good; Time: good; Geography: very good; Completeness: very good; Reliability: very good
Rail Transport	USLCI 2014: Train, diesel powered	2007	Technology: very good; Time: fair; Geography: very good; Completeness: very good; Reliability: very good

Continued >>>

Life Cycle Inventory

Material / Process	LCI Data Source	Year	Data Quality Assessment
Ocean Transport	USLCI 2014: Ocean freighter, average fuel mix	2007	Technology: very good; Time: fair; Geography: very good; Completeness: very good; Reliability: very good
Barge Transport	USLCI 2014: Barge, average fuel mix	2007	Technology: very good; Time: fair; Geography: very good; Completeness: very good; Reliability: very good
Electricity	ecoinvent 3.4: Electricity, low voltage (modeled on provincial grids)	2015	Technology: very good; Time: very good; Geography: very good; Completeness: very good; Reliability: very good
Natural Gas	USLCI 2014: Natural gas, combusted in industrial boiler	2007	Technology: very good; Time: fair; Geography: very good; Completeness: very good; Reliability: very good
Diesel	USLCI 2014: Diesel, combusted in industrial equipment	2007	Technology: very good; Time: fair; Geography: very good; Completeness: very good; Reliability: very good
Gasoline	USLCI 2014: Gasoline, combusted in equipment	2007	Technology: very good; Time: fair; Geography: very good; Completeness: very good; Reliability: very good
Liquefied Petroleum Gas	USLCI 2014: LPG, combusted in industrial boiler	2007	Technology: very good; Time: fair; Geography: very good; Completeness: very good; Reliability: very good
Hazardous Solid Waste	ecoinvent 3.4: Hazardous waste incineration (modified with Canada grid)	2011	Technology: very good; Time: good; Geography: good; Completeness: very good; Reliability: very good
Non-Hazardous Solid Waste	ecoinvent 3.4: Inert waste, sanitary landfill (modified with US grid)	2011	Technology: very good; Time: good; Geography: good; Completeness: very good; Reliability: very good

* This sub-category PCR recognizes fly ash, silica fume, and granulated blast furnace slag as recovered materials and thus the environmental impacts allocated to these materials are limited to the treatment and transportation required to use as a precast concrete material input.

* Some LCA impact categories and inventory items are still under development and can have high levels of uncertainty. To promote uniform guidance on the data collection, calculation, and reporting of results, the ACLCA methodology (ACLCA 2019) was used.

AMERICAN CONCRETE PRODUCTS

References

- ACLCA. (2019). ACLCA Guidance to Calculating Non-LCIA Inventory Metrics in Accordance with ISO 21930:2017.
- ASTM. (April 2020). General Program Instructions.
- ecoinvent. (2021). The ecoinvent Database v.3.8. Zurich, Switzerland: The Swiss Centre for Life Cycle Inventories.
- ISO 14020. (2000). Environmental labels and declarations – General principles.
- ISO 14025. (2006). Environmental labels and declarations, Type III environmental declarations, Principles and procedures.
- ISO 14040. (2006). ISO 14040: Environmental Management – Life Cycle Assessment – Principles and Framework.
- ISO 14044. (2006/Amd 1:2017/Amd 2:2020). Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 21930. (2017). ISO 21930; Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.
- Long Trail Sustainability. (2021). DATASMART (ES-EI Database). Huntington, VT: Long Trail Sustainability.
- National Renewable Energy Laboratory. (2015). U.S. Life-Cycle Inventory (LCI) database.
- PRé Sustainability. (2020). SimaPro Vers. 9.1.0.8. www.pre-sustainability.com/simapro.
- US EPA. (2014). Tool for the Reduction of Assessment of Chemical and Other Environmental Impacts (TRACI).
- US EPA. (2022). Emissions & Generation Resource Integrated Database (eGRID).

AMERICAN CONCRETE PRODUCTS

amconco.com