

Environmental Product Declaration (EPD) for Cement Produced at Lebec, California Operation

GENERAL INFORMATION

This cradle to gate Environmental Product Declaration covers cement products produced at the Lebec Production Plant. The Life Cycle Assessment (LCA) was prepared in conformity with ISO 21930, ISO 14025, ISO 14040, and ISO 14044. This EPD is intended for business-to-business (B-to-B) audiences.

NATIONAL CEMENT COMPANY OF CALIFORNIA

Lebec Operation
33503 CA-138
Lebec, CA 93243



EPD 957
April 8th, 2025
Valid for 5 years

PROGRAM OPERATOR

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ENVIRONMENTAL IMPACTS Lebec Plant:
Product-Specific Type III EPD Declared Cement

Product:

Type IT

Declared Unit: One metric Ton of cement

IMPACT CATEGORIES

Type IT

Global Warming Potential, kg CO ₂ eq	582
Ozone Depletion Potential kg CFC-11 eq	4.03E-05
Eutrophication Potential kg N eq	2.43E-01
Acidification Potential kg SO ₂ eq	1.05E+00
Photochemical Ozone Formation Potential, kg O ₃ eq	2.06E+01
Abiotic Depletion, non-fossil kg Sb eq	582
Abiotic Depletion, fossil MJ, NCV	4.03E-05

PRODUCT COMPONENTS

Clinker, Percent	64.04 %
Limestone, Gypsum, calcined clay and others, percent	35.96 %

LIFE CYCLE ASSESSMENT

PRODUCER



National Cement Company of California Inc., (NCC of CA), a subsidiary of National Cement Company Inc., (NCC) is an innovative and dynamic manufacturer of artificial cement and ready-mix concrete serving markets in California and the southeastern United States. NCC is a proud, wholly-owned subsidiary of the Vicat Group based in France. Vicat is an international group of companies and a French, family-run business founded in 1817 by Louis Vicat who mastered the production of artificial cement during construction of the Souillac Bridge in southwestern France.

The portland cement manufacturing plant in Lebec was built in 1966 to serve the rapidly growing demand for Portland cement in Southern California. NCC of CA was formed in 1987 as part of the acquisition of the Lebec Plant. Since that time, NCC of CA has modernized the Lebec plant with state-of-the-art technology to eliminate landfilling of CKD waste, improve energy efficiency and minimize emissions. In addition to manufacturing cement, NCC of CA's ready-mix subsidiaries (National Ready-Mix, Builders Concrete, Viking Ready-Mix and Golden Empire Concrete) serve the region's needs for high-quality residential and commercial concrete products from their numerous batch plants which attend to the diverse markets of Southern California and the Central Valley.

PRODUCT

The cement products covered in this EPD meet UN CPC 3744 classification and the following standards:

Product Type	Applicable Standard	Standard Designation
Blended Hydraulic Cement	ASTM C595, C1157, AASHTO M240	Type IT

PRODUCT DESCRIPTION

This EPD reports environmental information for one cement product produced by NCC of CA at their Lebec, CA facility. This cement is used as the key ingredient in many products, such as ready-mix concrete, mortar, grout, masonry units, and in a wide array of applications such as concrete pipes, pre-stressed concrete, roads, foundations, bridges, soil stabilization, and more. Type IT (LC3) cement is a general-use cement engineered to reduce the carbon footprint by integrating a calcined clay pozzolan and higher ground limestone content than permitted in ASTM C150 Type II/V cement.



ISO 21930:2017 Sustainability in Building Construction-Environmental Declaration of Building Products: serves as the core PCR
NSF PCR for Portland, Blended, Masonry, Mortar, and Plastic (Stucco) Cements V3.2 serves as the sub-category PCR

Sub-category PCR review was conducted by
Thomas P. Gloria, PhD. (t.gloria@industrial-ecology.com) • Industrial Ecology Consultants

Independent verification of the declaration, according to ISO 21930:2017 and ISO 14025:2006.: ☐ internal ☒ external

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

For additional explanatory material
Manufacture Representative: Thomas Snowden (thomas.snowden@natcem.com)
This LCA EPD was prepared by: Melissa Diaz Segura, LCA and EPD Project Manager • Climate Earth (www.climateearth.com)

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.

DECLARED UNIT

The declared unit is one metric tonne of Type IT cement.

SYSTEM BOUNDARY

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

PRODUCTION STAGE			CONSTRUCTION STAGE		USE STAGE							END-OF-LIFE STAGE			
Extraction and upstream production	Transport to factory	Manufacturing	Transport to site	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational eater use	Deconstruction / Demolition	Transport	Waste Processing	Disposal of Waste
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
X	X	X	MND	MND	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.

ALLOCATION PROCEDURE

Allocation follows the requirements and guidance of ISO 14044:2006, Clause 4.3.4; NSF PCR:2021; and ISO 21930:2017 section 7.2. Recycling and recycled content is modeled using the cut-off rule.

This sub-category PCR recognizes fly ash, silica fume, granulated blast furnace slag, cement kiln dust, flue gas desulfurization (FGD) gypsum, and post-consumer gypsum as recovered materials and thus the environmental impacts allocated to these materials are limited to the treatment and transportation required to use as a cement material input. Recycled and recovered materials with fuel content and used as fuels, such as scrap tires and agricultural waste, are considered nonrenewable or renewable secondary fuels. Impacts allocated to these fuels are limited to the treatment and transport required for their use from point of generation along with all emissions from combustion.

LIFE CYCLE INVENTORY (LCI)

Primary Sources of LCI Data:

Diesel: US-EI (2021) "Diesel, combusted in industrial equipment/US"

Electricity: US-EI (2021) "Electricity, high voltage, at grid, eGrid (2021), WECC/US US-EI U"

Limestone: Manufacture specific primary data (2019)

Calcined clay: ecoinvent 3.8 (2021) "Calcined clay {RoW} calcined clay production"

Natural Gas: ecoinvent 3.8 (2021) "market for natural gas, high pressure US"

Petroleum Coke: US-EI (2021) "Petroleum coke, at refinery US"

Truck transport: USLCI (2015) "Transport, combination truck, long-haul, diesel powered, West/tkm/RNA"

Truck transport: USLCI (2015) "Transport, combination truck, short-haul, diesel powered, West/tkm/RNA"

CNG Transport: GREET (2020): "CNG HD truck short Haul, GREET WTW"

Electricity grid mix includes: 34.16% Natural Gas, 17.16% Coal, 9.97% Wind, 7.72% Nuclear, 7.78% Solar, 2.15% Geothermal, 19.31% Hydro, 1.22% Biomass, 0.11% oil, with a global warming potential of 0.465 kg CO₂eq/kWh.

LIFE CYCLE IMPACT ASSESSMENT RESULTS

Lebec Cement Products¹: Type IT; per 1 metric tonne

Impact Assessment	Unit	Type IT
Global warming potential (GWP) ²	kg CO ₂ eq	582
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq	4.03E-05
Eutrophication potential (EP)	kg N eq	2.43E-01
Acidification potential of soil and water sources (AP)	kg SO ₂ eq	1.05E+00
Formation potential of tropospheric ozone (POCP)	kg O ₃ eq	2.06E+01
Resource Use		
Abiotic depletion potential for non-fossil mineral resources (ADPelements)*	kg Sb eq	9.64E-06
Abiotic depletion potential for fossil resources (ADPfossil)	MJ, NCV	4,157
Renewable primary energy resources as energy (fuel), (RPRE ³) *	MJ, NCV	210
Renewable primary resources as material, (RPRM ²) *	MJ, NCV	0.00E+00
Non-renewable primary resources as energy (fuel), (NRPRE ²) *	MJ, NCV	4,340
Non-renewable primary resources as material, (NRPRM ²) *	MJ, NCV	0.00E+00
Consumption of fresh water, (FW ²)	m3	2.25E+00
Secondary Material, Fuel and Recovered Energy		
Secondary Materials, (SM ²) *	kg	0.00E+00
Renewable secondary fuels, (RSF ²) *	MJ, NCV	626
Non-renewable secondary fuels (NRSF ²) *	MJ, NCV	171
Recovered energy, (RE ²) *	MJ, NCV	0.00E+00
Waste & Output Flows		
Hazardous waste disposed, (HW ²) *	kg	0.00E+00
Non-hazardous waste disposed, (NHWD ²) *	kg	2.64E-02
High-level radioactive waste, (HLRW ²) *	kg	9.78E-08
Intermediate and low-level radioactive waste, (ILLRW ²) *	kg	1.63E-06
Components for reuse, (CRU ²) *	kg	0.00E+00
Materials for recycling, (MR ²) *	kg	0.00E+00
Materials for energy recovery, (MER ²) *	kg	1.25E-03
Recovered energy exported from the product system, (EE ²) *	MJ, NCV	0.00E+00
Additional Inventory Parameters for Transparency		
CO ₂ emissions from calcination and uptake from carbonation ⁴	kg CO ₂ eq	341

* Emerging LCA impact categories and inventory items are still under development and can have high levels of uncertainty that preclude international acceptance pending further development. Use caution when interpreting data in these categories. The following optional indicators are not reported and also have high levels of uncertainty: Land use related impacts, toxicological aspects, and emissions from land use change.

Only EPDs prepared from cradle-to-grave life-cycle results and based on the same function, quantified by the same functional unit, and taking account of replacement based on the product reference service life (RSL) relative to an assumed building service life, can be used to assist purchasers and users in making informed comparisons between products.

¹ This product contain no materials that are considered hazardous as defined by the PCR.

² GWP 100; 100-year time horizon GWP factors are provided by the IPCC 2013 Fifth Assessment Report (AR5).

CO₂ from biogenic secondary fuels used in kiln are climate-neutral (CO₂ sink = CO₂ emissions), ISO 21930, 7.2.7.

³ Calculated per ACLCA ISO 21930 Guidance.

⁴ Calcination emissions were calculated based on the Cement CO₂ and Energy Protocol detailed output method (B2) published by the World Business Council for Sustainable Development (WBCSD) Cement Sustainability Initiative (CSI).

ADDITIONAL ENVIRONMENTAL INFORMATION

NCC of CA's Lebec Plant complies with local, state and federal environmental regulations and monitors and reports emissions to air and water from the manufacturing process. The plant maintains a Title V Operating Permit (1128-V-2000) issued by Eastern Kern Air Pollution Control District (EKAPCD). This permit also requires compliance with the Federal New Source Performance Standards (NSPS), the National Emission Standards for Hazardous Air Pollutants (NESHAP) and Prevention of Significant Deterioration (PSD) permit number NSR 4-4-11, SE 95-01. NCC of CA's commitment to sustainability includes the use of alternative raw materials and alternative fuels such as tire-derived fuel (TDF) and wood-derived fuel to lower the carbon footprint of the products.

NCC is part of the Vicat Group, a global innovator of construction materials across 12 countries worldwide. The Vicat Group's sustainability initiatives include implementation of new, less energy-intensive organizational methods, integration of new technologies derived from our research and development projects and a focus on the use of new materials for the construction of housing and transportation infrastructures. To learn more about the Vicat Group's sustainability initiatives, visit <https://www.vicat.com/commitments/respecting-environment>.

REFERENCES

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Climate Earth 2025: National Cement – LCA Project Report, Lebec Plant
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ISO 14020:2000 Environmental labels and declarations – General principles
ISO 14025:2006 Environmental labeling and declarations – Type III environmental declarations – Principles and procedures
ISO 14040:2006 Environmental Management - Life Cycle Assessment - Principles and Framework
ISO 14044:2006/Amd 1:2017/Amd2:2020 Environmental Management - Life Cycle Assessment - Requirements and Guidelines
ISO 21930:2017 Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services
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