Natural Pozzolans

Ione and Sacramento Yards

Environmental Product Declaration

Date of Issue: 4/6/2026
Date of Expiration: 4/5/2031

PRODUCT CATEGORY RULE
SmartEPD PCR Part B for Supplemental Cementitious Materials, v1.0 (SmartEPD, 2024)

FUNCTIONAL UNIT
One metric tonne (1,000 kg) of SCM product, as shipped

Program Operator Information

Program Operator	ASTM International 100 Barr Harbor Dr., West Conshohocken, PA 19428 cert@astm.org
Manufacturer Name and Address	Golden State Pozzolan 5980 Outfall Circle Sacramento, CA 95828
Declaration Number	EPD1157
Product and Declared Unit	One metric tonne (1,000 kg) of SCM product, as shipped
Reference PCR and Version Number	SmartEPD PCR Part A Product Category Rules for Building and Construction Products and Services, v1.2 (SmartEPD, March 2025) SmartEPD PCR Part B for Supplemental Cementitious Materials, v1.0 (SmartEPD, 2024)
Product's intended Application and Use	Golden States Pozzolan's Natural Pozzolan acts as a supplemental cementitious material, which can be used to displace portions of cement in concrete mixes. Their natural pozzolan product is on the approved material lists for CalTrans and Nevada DOT for use as an SCM in ready mix and other concrete applications.
Product RSL	Not Applicable
Markets of Applicability	United States
Date of Issue	4/6/2026
Period of Validity	5 years from date of issue
EPD Type	Product Specific
EPD Scope	Cradle to Gate
Year of reported manufacturer primary data	2023
LCA Software and Version Number	OpenLCA 2.5.0
LCI Database and Version Number	NREL US LCI 1.2025-06.0
LCIA Methodology and Version Number	TRACI 2.1, IPCC AR5 GWP100, CML 2001-Jan 2016
Independent verification of the declaration and data, according to ISO 14025: 2006, ISO 21930:2017, and the PCR. ☐ Internal ☒ External	Thomas Gloria, Ph.D., Industrial Ecology Consultants
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	WAP Sustainability Consulting

Limitations:

- Environmental declarations from different programs (ISO 14025) may not be comparable.
- Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building or construction works level, and therefore EPDs may not be used for comparability purposes when not considering the whole life cycle. EPD comparability is only possible when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences in results upstream or downstream of the life cycle stages declared.
- The environmental impact results of products in this document are based on a declared unit and therefore do not provide sufficient information to establish comparisons. The results shall not be used for comparisons without knowledge of how the physical properties of the product impact the precise function at the construction level. The environmental impact results shall be converted to a functional unit basis before any comparison is attempted.
- The EPD owner has sole ownership, liability, and responsibility for the EPD.

Declaration of General Information

Company Description

Golden State Pozzolansis a material supplier of supplemental cementitious materials (SCMs), supporting ready-mix and other concrete producers in California and extended markets. To the best of their knowledge, they are the only producer of natural pozzolans in northern California.

Golden State Pozzolan is proud to provide a product that helps to decarbonize the states of California, Nevada, and surrounding regions.

Product Description and Intended Use

Golden State Pozzolan's natural pozzolan product is derived from an andesitic basalt. It acts a supplemental cementitious material (SCM), which can be used to displace portions of cement in concrete mixes. Their natural pozzolan product is on the approved material lists for CalTrans and Nevada DOT for use as an SCM in ready mix and other concrete applications. The density is 2600 kg/m3.

Golden State's pozzolan products are made of naturally occurring andesitic basalt. The products do not contain any hazardous substances according to the Resource Conservation and Recovery Act (RCRA), Subtitle 3. The products do not release dangerous substances to the environment, including indoor air emissions, gamma or ionizing radiation, or chemicals released to air or leached to water and soil.

This product is defined by the following standards:

- Natural Pozzolans ASTM C618
- AASHTO M295

Manufacturing

Natural pozzolans are manufactured by reclamation of secondary materials from a neighboring aggregate quarry at the Ione facility. A portion of the pozzolans produced are transported to the Sacramento facility where they are stockpiled and sold.

Ione Facility: CA 104, Ione, CA 95640

Sacramento Facility: 5980 Outfall Circle, Sacramento, CA 95828

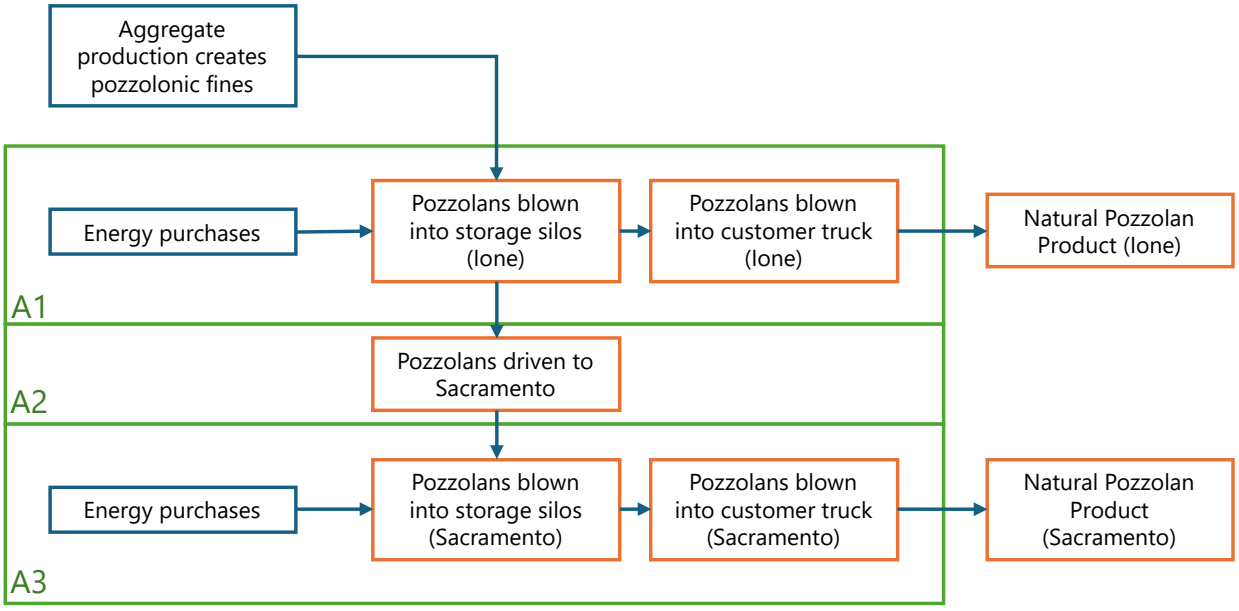

Figure 1: Pozzolan Production Diagram

Packaging

Natural pozzolans produced by Golden State Pozzolans are not packaged – they are distributed directly into transport trucks and delivered to customer siloes or stored according to the individual customer methods.

Declaration of the Methodological Framework

Type of EPD and Declared Unit

This EPD is a Cradle-to-Gate EPD and includes the sourcing of raw materials, transportation of raw materials to the manufacturing facility.

The declared unit is one metric tonne (1,000 kg) of SCM product, as shipped.

System Boundary

Production			Construction		Use							End of Life				Benefits & Loads Beyond System Boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw Material Supply	Transport	Manufacturing	Transport to Site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction	Transport	Waste Processing	Disposal	Reuse, Recovery, Recycling Potential
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Construction of the facility, maintenance and construction of operational equipment, and any personnel related activity, such as transport, are excluded.

Allocation Procedure and Cut-off Procedure

General principles of allocation for the LCA were based on ISO 14040/44. Of relevance to the defined system boundary is the method in which secondary materials were handled. Throughout the study, secondary materials were accounted for via the cut-off method. As a result, no impacts arise from the initial extraction of the pozzolanic materials, as they are the by-product of the neighboring quarry. The study does include the impacts associated with processing and preparation of the pozzolans.

To derive a per-unit value for manufacturing inputs such as electricity, thermal energy, and water, allocation based on total production by mass was adopted.

Material inputs greater than 1% (based on total mass of the final product) were included within the scope of analysis. Material inputs less than 1% were included if sufficient data was available to warrant inclusion and/or the material input was thought to have significant environmental impact. Cumulative excluded material inputs and environmental impacts are less than 5% based on total weight of the functional unit.

Results - Declaration of Environmental Indicators Derived from LCA

The environmental indicators required by the PCR are specified by the table below.

Abbreviation	Indicator	Unit
	Impact	
GWP	Global warming potential, 100 years, excluding biogenic carbon	kg CO_2 eq
ODP	Ozone depletion potential	kg CFC 11 eq
EP	Eutrophication potential	kg N eq
AP	Acidification potential	kg SO_2 eq
SFP	Smog formation potential	kg O_3 eq
ADP-fossil	Abiotic depletion potential for fossil resources	MJ, net calorific value
	Resource Use	
RPR_E	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value
RPR_M	Use of renewable primary energy resources used as raw materials	MJ, net calorific value
$NRPR_E$	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value
$NRPR_M$	Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value
SM	Use of secondary materials	kg
RSF	Use of renewable secondary fuels	MJ, net calorific value
NRSF	Use of non-renewable secondary fuels	MJ, net calorific value
RE	Recovered energy	MJ, net calorific value
FW	Net use of fresh water	m^3
	Waste Categories	
HWD	Hazardous waste disposed	kg
NHWD	Non-hazardous waste disposed	kg
HLRW	High-level radioactive waste, conditioned, to final repository	kg
ILLRW	Intermediate- and low-level radioactive waste, conditioned, to final repository	kg
	Output Flows	
CRU	Components for reuse	kg
MR	Materials for recycling	kg
MER	Materials for energy recovery	kg
EE	Exported energy	MJ

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Production A1-A3

Production results are presented in the following tables for the product under study.

Product ID:	Ione Pozzolans				
Impacts	Unit	A1	A2	A3	TOTAL A1-A3
IPCC AR6					
GWP	kg CO_2 eq	3.10E-01	0.00E+00	0.00E+00	3.10E-01
TRACI 2.1					
ODP	kg CFC-11 eq	1.98E-09	0.00E+00	0.00E+00	1.98E-09
AP	kg SO_2 eq	5.61E-04	0.00E+00	0.00E+00	5.61E-04
EP	kg N eq	3.74E-05	0.00E+00	0.00E+00	3.74E-05
SFP	kg O_3 eq	1.91E-02	0.00E+00	0.00E+00	1.91E-02
ADP_F	MJ_{NCV}	4.47E+00	0.00E+00	0.00E+00	4.47E+00
Resource Use					
RPR_E	MJ_{NCV}	7.51E-04	0.00E+00	0.00E+00	7.51E-04
RPR_M	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00
$NRPR_E$	MJ_{NCV}	7.51E-04	0.00E+00	0.00E+00	7.51E-04
$NRPR_M$	MJ_{NCV}	4.47E+00	0.00E+00	0.00E+00	4.47E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	4.47E+00	0.00E+00	0.00E+00	4.47E+00
NRSF	MJ_{NCV}	1.00E+03	0.00E+00	0.00E+00	1.00E+03
RE	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Output Flows					
HWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	kg	1.12E-06	0.00E+00	0.00E+00	1.12E-06
HLRW	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ILLRW	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Product ID:	Sacramento Pozzolans				
Impacts	Unit	A1	A2	A3	TOTAL A1-A3
IPCC AR6					
GWP	kg CO_2 eq	3.10E-01	4.28E+00	1.06E+00	5.65E+00
TRACI 2.1					
ODP	kg CFC-11 eq	1.98E-09	7.95E-09	6.77E-09	1.67E-08
AP	kg SO_2 eq	5.61E-04	6.53E-03	1.92E-03	9.01E-03
EP	kg N eq	3.74E-05	2.20E-03	1.28E-04	2.36E-03
SFP	kg O_3 eq	1.91E-02	2.30E-01	6.55E-02	3.15E-01
ADP_F	MJ_{NCV}	4.47E+00	5.00E+01	1.53E+01	6.97E+01
Resource Use					
RPR_E	MJ_{NCV}	7.51E-04	6.55E-04	2.57E-03	3.97E-03
RPR_M	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00
$NRPR_E$	MJ_{NCV}	7.51E-04	6.55E-04	2.57E-03	3.97E-03
$NRPR_M$	MJ_{NCV}	4.47E+00	5.00E+01	1.53E+01	6.97E+01
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	4.47E+00	5.00E+01	1.53E+01	6.97E+01
NRSF	MJ_{NCV}	1.00E+03	0.00E+03	0.00E+03	1.00E+03
RE	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Output Flows					
HWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	kg	1.12E-06	0.00E+00	3.82E-06	4.93E-06
HLRW	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ILLRW	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building or construction works has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase only when product or construction works performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparisons can be inaccurate and could lead to erroneous selection of materials or products that are higher-impact, at least in some impact categories.

Interpretation

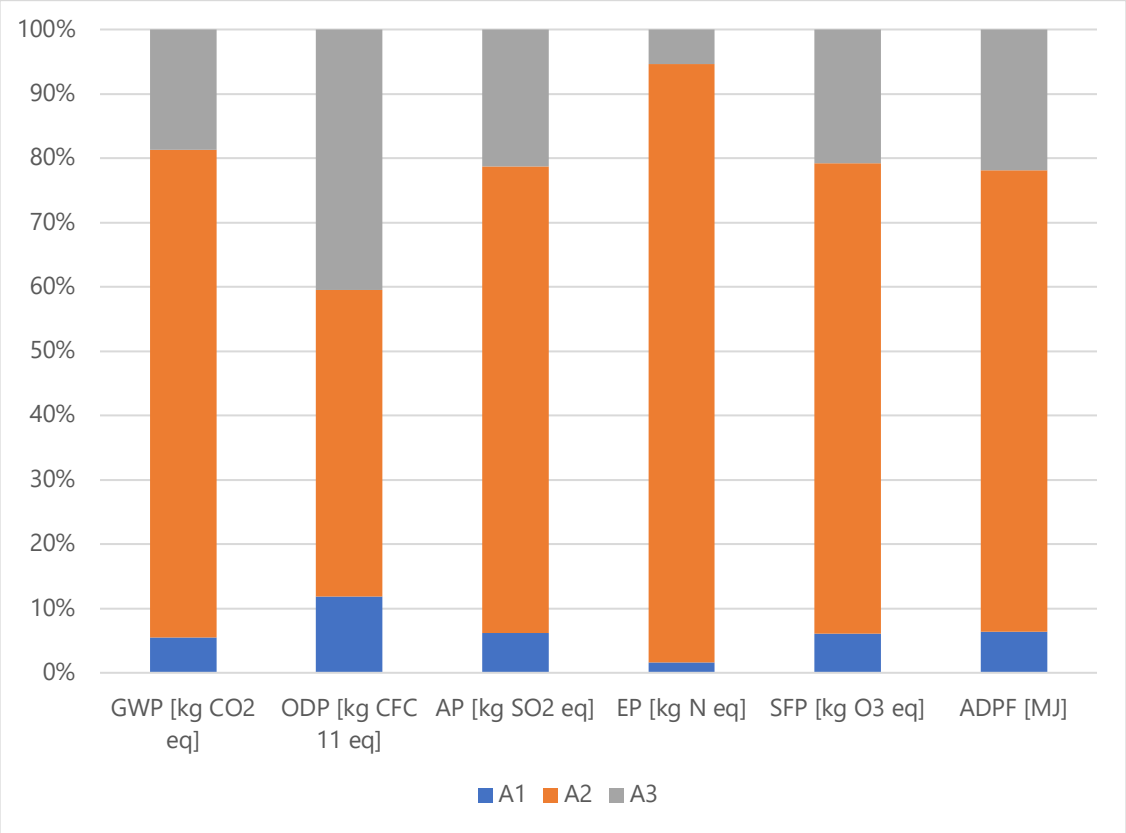

Figure 2: Contribution to Impact Category by Life Cycle Stage, Sacramento Yard

The Ione facility has no impacts outside of A1. Across all impact categories, the transportation of pozzolans from the Ione yard to the Sacramento yard represents the greatest portion of impacts, ranging from 48% of the total ODP to 93% of the EP, as shown in Figure 2. This phenomenon of transport overwhelming other lifecycle stages serves to highlight the limited processing needed to prepare natural pozzolans for use.

Additional Environmental Information

References

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ISO 14040: 2006/Amd 1:2020 Environmental Management - Life cycle assessment – Principles and framework.

ISO 14044: 2006/Amd 2:2020 Environmental Management - Life cycle assessment - Requirements and Guidelines

ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and Procedures.

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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