Environmental Product Declaration

Structo-Base® Gypsum Plaster

Shoals, IN

For extremely high-strength conventional plaster applications

- Develops higher strengths than conventional plasters (up to 2,800 psi compressive strength).
- Ideal for high-abuse areas, such as handball courts, security walls, hospital corridors and schools.
- Recommended over metal lath with scratch and brown coats mixed 2 cu. ft. sand to 100 lbs. plaster.
- For use with Structocore™ Brand Security Wall Systems

Declared Unit – 1 tonne	(A1-A3) Cradle-to-Gate
Global Warming Potential – Total (kg CO2 eq.)[1]	**1.76E+02**
Ozone Depletion Potential (kg CFC-11 eq.)[1]	**3.04E-08**
Acidification Potential (kg SO2 eq.)[1]	**1.56E-01**
Eutrophication Potential (kg N eq.)[1]	**9.35E-02**
Photochemical Ozone Creation Potential (kg O3 eq.)[1]	**3.38E+00**
Abiotic Resource Depletion Potential Fossil Fuels (MJ, LHV)[2]	**2.53E+03**

1 TRACI 2.2
2 CML 2001; Aug. 2016

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This declaration is an Environmental Product Declaration (EPD) in accordance with ISO 14025 and ISO 21930; 2017. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. USG Corporation has sole ownership, liability, and responsibility for this EPD.

The owner of the declaration shall be liable for the underlying information and evidence; ASTM, or its affiliates, shall not be liable with respect to manufacturer information, life cycle assessment data, and evidence.

DECLARATION NUMBER	EPD XXX
EPD TYPE	Product specific, facility specific EPD
PROGRAM OPERATOR	ASTM International – 100 Barr Harbor Drive, West Conshohocken, PA USA www.astm.org
DECLARATION HOLDER	USG Corporation - 550 W. Adams St., Chicago, IL USA
EPD Type	Type III Declaration per ISO 14025:2006
DECLARED PRODUCT	Structo-Base® Gypsum Plaster
DATE OF ISSUE PERIOD OF VALIDITY	X/X/25 5 Years
MARKETS OF APPLICABILITY	North America
CORE STANDARD	ISO 21930: 2017
CORE PCR	Smart EPD® Part A Product Category Rules for Building and Construction Products and Services, Standard 1000. Version 1.01. March 2025. www.smartepd.com.
SUB-CATEGORY PCR	Smart EPD® Part B PCR for Portland, Blended, Masonry, Mortar and Plastic (Stucco) Cement v4.0, 2025.
SUB-CATEGORY PCR REVIEW	Independent Panel Review, contact info@smartepd.com
ACLCA PCR OPEN STANDARD CONFORMANCE	Transparency
ACLCA PCR OPEN STANDARD VERSION	Version 1.0 | May 25, 2022
This declaration was independently verified in accordance with ISO 14025 and ISO 21930:2017 □ INTERNAL ☒ EXTERNAL	Tim Brooke, ASTM International
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Thomas P. Gloria, Industrial Ecology Consultants

1. Product System Documentation

1.1 Product Description and Product Identification

USG Structo-Base® Gypsum Plaster is USG's highest-strength basecoat plaster. It can be mixed with sand in various proportions to provide required compressive strength; the highest strength is obtained by mixing 2 cu. ft. sand to 100 lbs. plaster. When mixed 200 lbs. sand and with 100 lbs. plaster, it provides a 2,800 psi compressive strength when tested in accordance with ASTM C472. Gypsum Plaster is suitable for hand and machine application. This basecoat provides excellent indentation and penetration resistance and is ideally suited for applications requiring the highest levels of abuse resistance.

USG Structo-Base Gypsum Plaster provides a plastic working material that will conform to varied designs and help achieve high durability in walls and ceilings. It can be applied on gypsum and metal lath, clay tile, concrete and cinder blocks, and other approved plaster bases.

Fire Protection - Gypsum plaster, properly proportioned with approved aggregates and used with specified plaster bases, provides excellent fire protection.

Sound Reflection - The high density of USG Structo-Base Gypsum Plaster makes it ideal for use in areas where reflection of the full range of sound from high to low frequency is desired, such as in concert halls. Sound Isolation Gypsum plasters can offer sound transmission loss characteristics suitable for most applications.

Control of Set - USG Structo-Base Gypsum Plaster is formulated for use with sand aggregate, and in varying climatic conditions and job conditions. The quicker a gypsum plaster sets, the stronger the basecoat.

1.2 Designated Application

USG Structo-Base® Gypsum Plaster is USG's highest-strength basecoat plaster.

1.3 Product Technical Data

Table 1: Performance Data

Technical Data	Approximate Values Standard (Metric)
Coverage	Varies with substrate. See product submittal sheet.
Thermal Coefficient of Expansion (Unrestrained):	Sanded gypsum plaster (sanded 100:2, 100:3) - 7.0x10–6 in. per in. per °F (40-100 °F); 12.6 mm per mm per °C (4.5-37.8 °C).
Hygrometric Coefficient of Expansion (Unrestrained):	Sanded gypsum plaster (sanded 100:2, 100:3) - $1.5x10^{-6}$ in. per in. per % relative humidity (5-90% R.H.); $1.5x10^{-6}$ mm per mm per % relative humidity (5-90% R.H.).
Compliance with standards	Complies with ASTM Designation C28; STRUCTO-BASE Gypsum Plaster meets Federal Specification SS-P-00402B, Type II, Class 1 and 2.
Storage	Store material in a cool, dry place. Avoid direct sunlight. Maintain temperature above 40 °F (4 °C).
Shelf Life	Up to 6 months under protected storage conditions. Rotate stock.
Packaging	Available in 50 lb. (22.7 kg) bags.

1.4 Placing on the Market/Application Rules

USG Structo-Base® Gypsum Plaster is sold to distributors and suitable for hand and machine applications.

1.5 Product Composition

Table 2: Product Composition

Material	Structo-Base® Brand Gypsum Plaster
Calcium Sulfate Hemihydrate	> 95%
Additives	< 5%
Sum	100%

1.6 Product Manufacturing

The manufacture of USG Structo-Base® Gypsum Plaster consists of the blending of the dry ingredients followed by packaging into multi-walled paper bags. The finished product is then stacked on wooden pallets and wrapped with a plastic cover bag.

1.7 Environment and Health During Manufacturing

USG and CGC have led the building sector's efforts in developing and supplying sustainable construction materials. Today, sustainability is integrated into the design and manufacture of every wall, ceiling, and flooring product. As both a producer and a buyer of raw materials, we have a responsibility to extensively review and select each material we use. Each decision we make is based on careful consideration of environmental and safety effects over time. Raw materials used in our products are carefully selected and go through a screening procedure. Incoming raw materials are tested for contaminants by an internal lab and third-party labs for consideration of use and worker, environmental, and end-user exposure. This due diligence helps to ensure our products are safe to handle in our manufacturing plants and on job sites while having minimal impact on occupant health and indoor and outdoor environments.

1.8 Packaging

USG Structo-Base® Gypsum Plaster is packaged in 50 lb. multiwall paper bags. The finished product is then stacked on wooden pallets and wrapped with a plastic cover bag. All packaging components have been modeled in this study.

1.9 Conditions of Use

To ensure the longevity of the product, products should not be exposed to moisture, high humidity, or high temperature. Criteria can be found in USG warranty information specific to each product.

1.10 Reference Service Life

The Reference Service Life is considered not to be relevant for this cradle-to-gate study.

2 LCA Calculation Methodology

2.1 Declared Unit

The declared unit for this LCA study is one metric tonne of product.

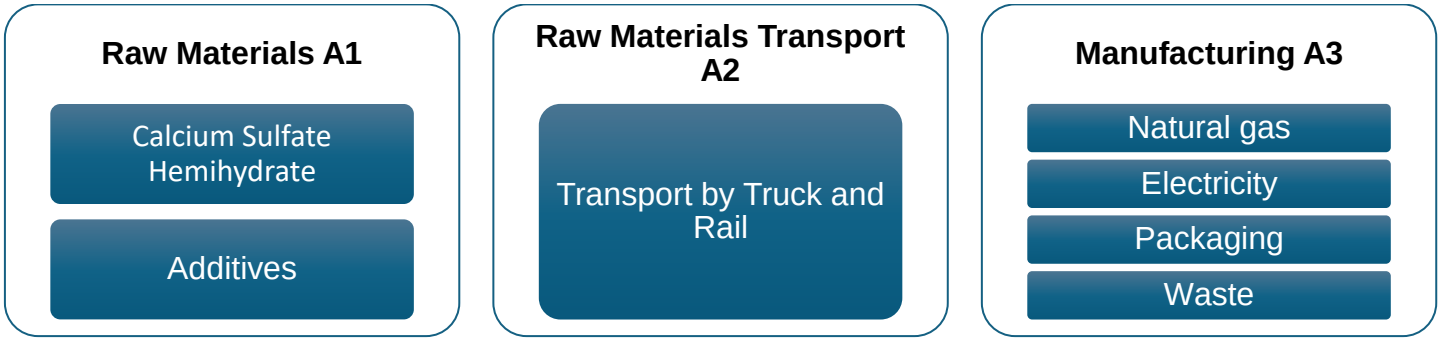
Table 3: Declared Unit

	Value and Units
Declared Unit	1,000 kg
Declared Unit	2,205 lbs.

3 System Boundary

This EPD represents a "cradle-to-gate" LCA analysis for USG Structo-Base® Gypsum Plaster. It covers all the production steps from raw material extraction (i.e., the cradle) to finished product on wooden pallets (i.e., the gate).

Figure 1: Specific processes covered by this EPD by life cycle stage



3.1 Estimates and Assumptions

These plaster products are USG products with well-defined formulations, energy inputs and raw material transport distances. No significant assumptions were required. All material and energy inputs were accounted for as were the raw material transportation mode and distances. Additional data limitations included the use of proxy processes rather than actual supplier generated primary data. This would include such processes as additives, which is representative of US-produced additives but may not necessarily be representative of USG's particular additive supplier. In addition, the data is limited in that the primary data was collected during the year 2024 and changes in operations may increase/decrease impacts in the future. Other data limitations include the use of secondary data sets instead of primary data for upstream and downstream processes, local impacts vs. global impacts, possible impacts vs. actual impacts, inherent uncertainty in the data sets, accuracy, and precision of impacts assessment methodology, etc.

3.2 Cut-off Criteria

All inputs and outputs to a (unit) process were included in the calculation for which data is available. In case of insufficient input data or data gaps for a unit process, the cut-off criteria were 1% of renewable and non-renewable primary energy usage and 1% of the total mass of that unit process. The total neglected input flows did not exceed 1% of energy usage and mass.

3.3 Background Data

All background data was sourced from critically reviewed LCA for Experts databases.

3.4 Data Requirements and Data Sources

The LCA model was created using LCA for Experts software (version 10.9.1.10) from Sphera. Specific comments related to data quality requirements cited in ISO 14025 Section 4.2.3.6.2 include the following.

Temporal: In the case of production, the LCI data was collected from the manufacturing plants for the 2024 production year.

Geographical: Where possible, all processes were chosen as being representative of US manufacturing processes.

Technical: The data selected for this study is specific to the technology used in the preparation of the various raw materials.

Precision: The raw material usage amounts were derived from plant quality data on finished products, energy usage plant data and product formulas.

Completeness: Virtually all the significant raw material flows (> 99%) used in production have been modeled. The exception consists of retarders which are biopolymers derived from animal byproducts.

Representative: Where possible all the data sets were selected to be representative of US-based production, are less than 10 years in age and are representative of the technology being employed.

Consistency: All the manufacturing processes were modeled in a consistent manner throughout this study in accordance with the goal and scope definitions.

Reproducibility: The information contained in this study, including raw material, energy and transportation distance inputs, have been fully documented in the LCA report.

Sources of Data: The sources for the processes used in this study have been fully provided in the LCA report and are representative of the material and energy sources used in actual production.

Uncertainty: The relative uncertainty associated with this study has been minimized. No significant assumptions have been made.

3.5 Allocation

At each production facility, energy was allocated to each department based on usage. The LCI product formula data was collected for the 2024 production year. The LCI product mining data was collected for the 2021 production year.

4. LCA: Scenarios and Additional Technical Information

Product Stage			Construction Process stage		Use							End of Life Stage			
Raw Material Supply	Transport	Manufacturing	Transport	Construction-Installation Process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational water Use	De-construction Demolition	Transport	Waste Processing	Disposal
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

Figure 2: System Boundary

5. Life Cycle Assessment Results

5.1 LCA Results

Note: Global Warming Potential – Total (GWP – Total) is the sum of the contributions from fossil fuels (GWP – Fossil), biogenic carbon (GWP – Biogenic) and land use change (GWP – Land Use Change)

Table 4: North American LCA Environmental Impacts – 1 Tonne of Structo-Base® Gypsum Plaster

Impact Category	Units	A1	A2	A3	A1-A3
Global Warming Potential – Total[1]	kg CO2 eq.	1.57E+02	4.62E-02	1.90E+01	1.76E+02
Global Warming Potential – Fossil[1]	kg CO2 eq.	1.57E+02	4.60E-02	3.18E+01	1.89E+02
Global Warming Potential – Biogenic[1]	kg CO2 eq.	-2.69E-01	1.57E-04	-1.29E+01	-1.32E+01
Global Warming Potential – Land Use Change[1]	kg CO2 eq.	2.80E-02	2.46E-05	3.86E-02	6.66E-02
Ozone Depletion Potential (ODP)[1]	kg CFC-11 eq.	7.30E-11	1.32E-14	3.03E-08	3.04E-08
Acidification Potential (AP)[1]	kg SO2 eq.	1.00E-01	2.05E-04	5.51E-02	1.56E-01
Eutrophication Potential (EP)[1]	kg N eq.	6.51E-02	1.90E-04	2.82E-02	9.35E-02
Photochemical Ozone Creation Potential (POCP)[1]	kg O3 eq.	2.37E+00	6.87E-03	1.00E+00	3.38E+00
Abiotic Depletion Potential (ADP) fossil fuels[2]	MJ	2.13E+03	5.93E-01	3.99E+02	2.53E+03

The LCIA characterization factors used in this study were taken from the following sources.

1 TRACI 2.2
2 CML 2001; Aug. 2016

Table 5: Resource and Waste Flows for 1 Tonne of Structo-Base® Gypsum Plaster

Use of Primary Resources	Units	A1	A2	A3	A1-A3
Renewable primary resources used as an energy carrier (RPRE)	MJ, NCV	1.11E+02	2.49E-02	2.73E+02	3.84E+02
Renewable primary resources with energy content used as material (RPRM)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable primary resources used as an energy carrier (NRPRE)	MJ, NCV	2.35E+03	5.99E-01	5.51E+02	2.91E+03
Non-renewable primary resources with energy content used as material (NRPRM)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Secondary material, fuel, and recovered energy	**Units**	**A1**	**A2**	**A3**	**A1-A3**
Secondary material (SM)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuel (RSF)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuel (NRSF)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable energy (RE)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Consumption of fresh water	m3	1.82E-01	2.69E-05	1.32E-01	3.14E-01
Emissions inventory parameters for transparency	**Units**	**A1**	**A2**	**A3**	**A1-A3**
Biogenic carbon content of product	kg CO2-eq.	-2.69E-01	0.00E+00	0.00E+00	-2.69E-01
Calcination uptake from carbonation	kg CO2-eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon of bio-based packaging	kg CO2-eq.	0.00E+00	0.00E+00	-1.29E+01	-1.29E+01
Combustion of waste from renewable sources used in production	kg CO2-eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Combustion of waste from non-renewable sources used in production	kg CO2-eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indicators describing waste	**Units**	**A1**	**A2**	**A3**	**A1-A3**
Hazardous waste disposed	kg	5.66E-07	9.93E-11	9.07E-05	9.13E-05
Non-hazardous waste disposed	kg	5.74E-01	6.13E-05	3.71E-01	9.44E-01
High-level radioactive waste	kg	7.94E-02	2.06E-06	5.40E-02	1.33E-01
Intermediate and low-level waste	kg	N/A	N/A	N/A	N/A
Assignments of output flows at the end-of-life	**Units**	**A1**	**A2**	**A3**	**A1-A3**
Components for re-use (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling (MR)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery (MER)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered energy exported (EE)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00

5.2 LCA Results

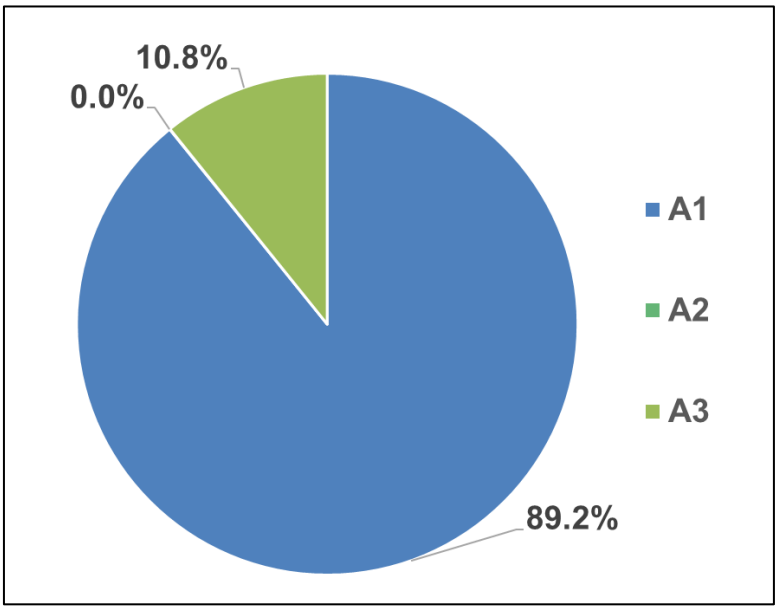
Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building or construction works has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase only when product or construction 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 an erroneous selection of materials or products that have higher impact, at least in some impact categories.

5.3 LCA Interpretation

The LCA results for the production of 1 tonne of Structo-Base® Gypsum Plaster (A1-A3) produced at the Shoals, IN plant were dominated by stucco usage. Future efforts to reduce the GWP for these products should focus on the formula; specifically the use of high-impact stucco.

Figure 3: Process Dominance Analysis for GWP for the Production of 1 Tonne of Structo-Base® Gypsum Plaster (A1-A3) – Shoals, IN Plant



6. References

LCA Report

A Cradle-to-Gate Life Cycle Assessment of USG Building Plaster Products, 4/29/25. USG (Confidential)

Product PCR

Smart EPD® Part A Product Category Rules for Building and Construction Products and Services. Standard 1000, version 1.2, March 14, 2025

Smart EPD® Part B PCR for Portland, Blended, Masonry, Mortar and Plastic (Stucco) Cement v4.0, 2025

ASTM Program Instructions, v8.0, 4/29/2020, ASTM International

Sustainability Reporting Standards

EN 15804:2012+A2:2019 - Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction product

ISO 14025:2006 - Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 14040:2006/Amended 1:2020 - Environmental management – Life cycle assessment – Principles and framework

ISO 14044:2006/Amended 2:2020 - Environmental management – Life cycle assessment – Requirements and guidelines

ISO 14046:2014 - Environmental management- Water footprint- Principles, requirements and guidelines

ISO 15392:2008 - Sustainability in building construction- General principles

ISO 15686-1:2011 - Buildings and constructed assets- Service life planning- Part 1: General principles

ISO 15686-2:2012 - Buildings and constructed assets- Service life planning Part 2: Service life prediction procedures

ISO 15686-7:2017 - Buildings and constructed assets- Service life planning Part 7: Performance evaluation for feedback of service life data from practice

ISO 15686-8:2008 - Buildings and constructed assets- Service life planning Part 8: Reference service life and service life estimation

ISO 21930:2017 - Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services