

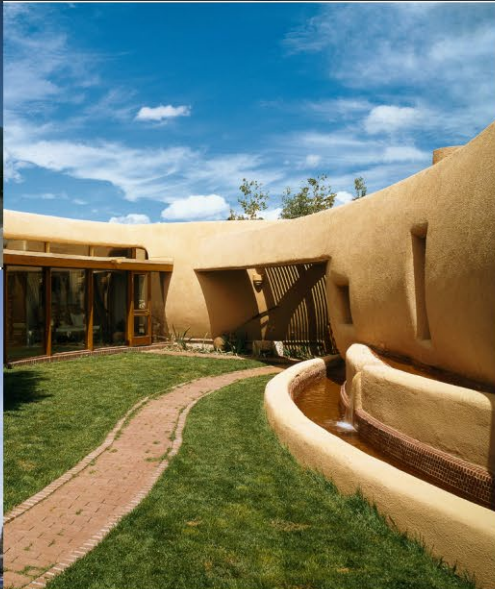


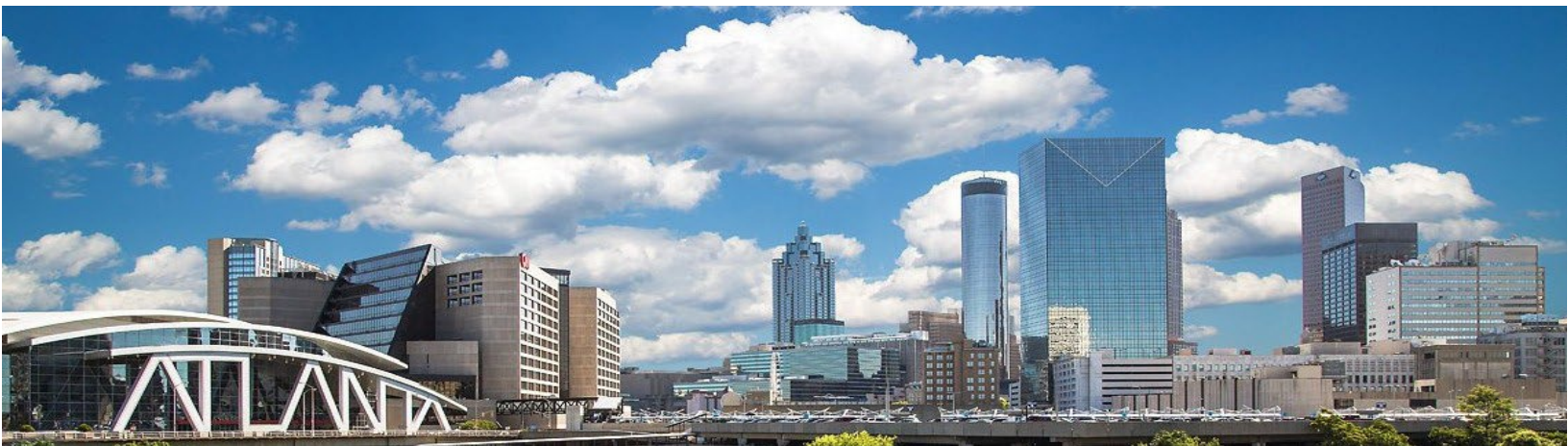
Building with conscience.





EPD for Sto AirSeal®

Sto AirSeal® is a vapor permeable fluid-applied membrane for use over prepared vertical above-grade concrete, concrete masonry, brick masonry, wood sheathing, cementitious sheathing, and glass mat gypsum sheathing, as part of a StoGuard® air and waterresistive barrier system. It is used in Sto proprietary wall systems and beneath multiple claddings types, including rainscreen claddings.





PCR Identification	PCR for Water-Resistive and Air Barriers on the basis of ISO 21930: 2017, ASTM 2017. Valid through Sept, 2022
PCR Review was conducted by	Thomas P. Gloria, Industrial Ecology Consultants. Graham Finch, RDH Building Science, Inc Paul H. Shipp, USG Corporation
Product Category	Water-Resistive and Air Barrier
Manufacturer's name	Sto Corp. 3800 Camp Creek Parkway SW, Building 1400, Suite 120 Atlanta, GA 30331 www.stocorp.com (800) 221-2397
EPD program operator	Epsten Group, a Salas O'Brien Company 101 Marietta St NW Suite 2600 Atlanta, GA 30303 www.epstengroup.com
Declaration Number	01-018
Date of Certification	October 9 th , 2024
Period of Validity	5 years from date of certification
Declared Unit	One square meter of covered and protected substrate
Overall Data Quality Assessment Score	Good
Site(s) in which the results of the LCA are representative	STO manufacturing sites in Atlanta, GA; Glendale, AZ; and Rutland, VT
Information on where explanatory material can be obtained	See references at the end of this document.
LCA Software and Version Number	LCA for Experts (formerly GaBi) 10.7
LCI Database and Version Number	MLC (formerly GaBi) Database Version 2023.2
This declaration was independently verified in accordance with ISO 21930:2017, ISO 14025: 2006 and the reference PCR: PCR for Architectural Coatings: NAICS 325510 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	Megan Blizzard Megan.Blizzard@salasobrien.com 
This life cycle assessment was conducted in accordance with ISO21930:2017, ISO 14044 and the reference PCR by:	WAP Sustainability Consulting, LLC
This life cycle assessment was independently verified in accordance with ISO 21930:2017, ISO 14044 and the reference PCR by:	Angela Fisher, Aspire Sustainability angela@aspireustainability.com 

Comparability

In order to support comparative assertions, 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, as the EPD results may not be entirely comparable. Any EPD comparison must be carried out at the building level per ISO 21930 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.

» Company

We believe in ‘**Building with conscience**’.

That means ensuring that all building products are not only safe, effective and easy to install, but also environmentally responsible and sustainable. We know you’re always looking for the smartest and newest technology to create energy efficient buildings with superior aesthetics.

That’s exactly what our products help you achieve. Products like our wall systems, coatings and finishes are consistent favorites among design professionals, contractors and property owners alike. Whatever your needs or vision may be, we offer products for every type of building project; whether it’s new construction, restoration or panelization, commercial or residential work.

An architect or specifier focuses on aesthetics and feasibility, a contractor needs products that are easy to work with, and a building owner requires high value and low costs on properties. Sto understands these unique needs, and delivers the smart, innovative materials and solutions that make this all possible. That’s why Sto remains the innovative leader in integrated exterior wall systems.

When you combine that commitment to product support and innovation with value-added offerings like consultative design and color services through [Sto Studio](#) or training in proper application techniques through the Sto Institute, you get an integrated exterior wall system solution unmatched in the industry.

» Manufacturing Sites Covered in this EPD

- Atlanta, GA Plant
- Glendale, AZ Plant
- Rutland, VT Plant

» Performance Features

Three Installation Options	High Elongation	Cold Temperature Crack Bridging	Spray Applied with Airless Spray Equipment
Vapor Permeable	UV Durable	Structural and Durable	Water-base and Low VOC

» Technical Details

» Product Identification

Sto AirSeal® is a fluid-applied vapor permeable air barrier offered in 5-gallon pails. There are no finish or color base options provided.

Table 1: List of Sto AirSeal® Products

Product Name	Product Number	Base Type	Finish Type
Sto AirSeal®	81646	n/a	n/a

» Product Average

Results in this EPD are declared as an arithmetic average across all manufacturing sites.

» Product Description

Sto AirSeal® is a vapor permeable fluid-applied membrane for use over prepared vertical above-grade concrete, concrete masonry, brick masonry, wood sheathing, cementitious sheathing, and glass mat gypsum sheathing, as part of a StoGuard® air and waterresistive barrier system. It is used in Sto proprietary wall systems and beneath multiple cladding types, including rainscreen claddings.



Performance*	Test Method	Result	Unit
Air Permeance	ASTM E2718	<0.02	L/m ² *s @ 75 Pa
Water Vapor Permeance	ASTM E96	>12	perms at 40 mils DFT
Water Penetration	ASTM E2570/AATCC 127 (modified)	No water penetration for 5 hour water column (55 cm)	

Because this product can serve several functions and is an individual component intended for use in Sto's wall systems, not all technical properties specified by the PCR for individual components apply. The technical properties and product performance criteria depend on the combination of products in the wall system. As such, the following table declares the product performance when used in Sto wall systems.

Table 2: Technical Data for Product as a Component of Sto Wall Systems

Meets Requirements of	ASTM Classification	Evaluation Criteria:	Evaluation Report Reference
2021 IBC, IRC and IECC	ASTM E2570 / ASTM E2568	ICC AC 212	ESR 1233 / ESR 1748 / ESR 2323 / ESR 2536 / ESR 4500 / Sto/CWP 30-01 and Sto/CWP 30-02 / Intertek CCRR-0454 / CAN ULC-S716-1-12

» Material Composition

The material compositions of Sto AirSeal® are listed below:

Table 3: Material composition for Sto AirSeal®

	Sto AirSeal®
Water	29%
Acrylic Polymer	20%
Mineral Fillers*	13%
Aluminum Trihydrate	13%
Ethylene Vinyl Acetate Copolymer	10%
Additive**	9%
Silica	4%
Surfactant	1%
Colorant	1%
Wax	1%
Caustic Soda	<1%
Polyurethane	<1%

*Mineral Fillers include limestone, silicate, etc.

**Additives include light stabilizer, plasticier, biocide, etc.

The product does not contain hazardous substances per per the EPA's Resource Conservation and Recovery Act.

» Components related to Life Cycle Assessment

The declared unit for the LCA study was covering and protecting 1 square meter (m²) of substrate. The reference flow required for the declared unit is calculated based on the product coverage at 40 wet mils. The reference flow required for one declared unit is provided in Table 3.

Table 4: Reference flow for one declared unit

Product	Declared Unit	Reference Flow [kg]
Sto AirSeal®	1	1.20

» Scope and Boundaries of the Life Cycle Assessment

The LCA was performed in accordance with ISO 14040 standards. The study is a cradle-to-gate LCA and includes the following life stages as prescribed in the PCR.

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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

X = Module Included in LCA Report, ND = Module not Declared

Figure 1: Life stages for the cradle-to-gate LCA

» Cut-off Criteria

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 declared unit.

» Data Quality

The overall data quality level was determined to be good. Primary data was collected from Sto's facilities in Atlanta, GA, Glendale, AZ and Rutland, VT for the 2021 reference year. When primary data did not exist, secondary data were obtained from the MLC Database Service. Overall, both primary and secondary data are considered good quality in terms of geographic, temporal and technological coverage.

» Estimates and Assumption

Assumptions were made to represent the cradle-to-grave environmental performance of Sto's products. These assumptions were made in accordance with the PCR and include the transportation distances, the disposal of packaging material and the product at its end of life and use phase assumptions.

» Allocation

General principles of allocation were based on ISO 14040/44. Where possible, allocation was avoided. When allocation was necessary it was done on a physical mass basis.

» Product Stage (A1-A3)

Sto AirSeal® is produced at Sto's Atlanta, GA, Glendale, AZ and Rutland, VT facilities. This stage includes an aggregation of raw material extraction, supplier processing, delivery, manufacturing and packaging by Sto. Sto AirSeal® is supplied in 5-gallon pails.

» Life Cycle Assessment Results

As prescribed by the PCR, TRACI 2.1 impact characterization methodology and IPCC 5th assessment report are adopted to calculate the environment impacts. Table 4 provides the acronym key of the impact indicators declared in this EPD.

Table 5: LCIA impact category and LCI Indicator keys

Abbreviation	Parameter	Unit
IPCC AR5		
GWP	Global warming potential (100 years, includes biogenic CO ₂)	kg CO ₂ eq
TRACI 2.1		
AP	Acidification potential of soil and water	kg SO ₂ eq
EP	Eutrophication potential	kg N eq
ODP	Depletion of stratospheric ozone layer	kg CFC 11 eq
SFP	Smog formation potential	kg O ₃ eq
CML 2001-Jan 2016		
ADPF	Abiotic depletion potential for fossil resources	MJ, net calorific value
Carbon Emissions and Uptake		
BCRP	Biogenic Carbon Removal from Product	[kg CO ₂]
BCEP	Biogenic Carbon Emission from Product	[kg CO ₂]
BCRK	Biogenic Carbon Removal from Packaging	[kg CO ₂]
BCEK	Biogenic Carbon Emission from Packaging	[kg CO ₂]
BCEW	Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	[kg CO ₂]
CCE	Calcination Carbon Emissions	[kg CO ₂]
CCR	Carbonation Carbon Removals	[kg CO ₂]
CWNR	Carbon Emissions from Combustion of Waste from Non- Renewable Sources used in Production Processes	[kg CO ₂]
Resource Use Parameters		
RPR _E	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value (LHV)
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 Parameters		
HWD	Disposed-of-hazardous waste	kg
NHWD	Disposed-of non-hazardous waste	kg
HLRW	High-level radioactive waste, conditioned, to final repository	kg
ILLRW	Intermediate- and low-level radioactive waste, conditioned, to final repository	kg
CRU	Components for reuse	kg
MR	Materials for recycling	kg
MER	Materials for energy recovery	kg
EEE	Exported electrical energy	MJ
EET	Exported thermal energy	MJ

The LCIA results presented below are for 1 m² of Sto AirSeal®.

Impact Category	A1	A2	A3	Total
IPCC AR5				
GWP [kg CO ₂ eq]	1.70E+00	1.01E-01	2.27E-01	2.02E+00
TRACI LCIA Impacts (North America)				
AP [kg SO ₂ eq]	3.34E-03	4.59E-04	3.69E-04	4.17E-03
EP [kg N eq]	2.79E-04	4.07E-05	3.76E-05	3.57E-04
ODP [kg CFC 11 eq]	3.45E-11	2.59E-16	9.66E-15	3.45E-11
SFP [kg O ₃ eq]	5.30E-02	1.06E-02	7.80E-03	7.14E-02
CML 2001-Jan 2016				
ADPF [MJ]	4.00E+01	1.40E+00	5.74E+00	4.71E+01
Carbon Emissions and Uptake				
BCRP [kg CO ₂]	0	0	0	0
BCEP [kg CO ₂]	0	0	0	0
BCRK [kg CO ₂]	0	0	0	0
BCEK [kg CO ₂]	0	0	0	0
BCEW [kg CO ₂]	0	0	0	0
CCE [kg CO ₂]	0	0	0	0
CCR [kg CO ₂]	0	0	0	0
CWNR [kg CO ₂]	0	0	0	0

The LCI results presented below are for 1 m² of Sto AirSeal®.

Impact Category	A1	A2	A3	Total
Resource Use Indicators				
RPR _E [MJ]	2.91E+00	5.63E-02	3.52E-01	3.32E+00
RPR _M [MJ]	0	0	0	0
NRPR _E [MJ]	2.39E+01	1.41E+00	6.14E+00	3.14E+01
NRPR _M [MJ]	9.66E+00	0	0	9.66E+00
SM [kg]	0	0	0	0
RSF [MJ]	0	0	0	0
NRSF [MJ]	0	0	0	0
RE [MJ]	0	0	0	0
FW [m ³]	1.35E-02	1.93E-04	3.15E-03	1.69E-02
Output Flows and Waste Categories				
HWD [kg]	1.48E-09	4.06E-12	2.89E-03	2.89E-03
NHWD [kg]	5.94E-02	1.23E-04	3.57E-02	9.52E-02
HLRW [kg]	1.34E-06	4.81E-09	1.71E-07	1.52E-06
ILLRW [kg]	1.12E-03	4.05E-06	1.43E-04	1.27E-03
CRU [kg]	0	0	0	0
MR [kg]	0	0	0	0
MER [kg]	0	0	0	0
EE [MJ]	0	0	0	0

» Interpretation

For the product in study, the largest contributor of the environmental impacts is the raw material sourcing stage, indicating efforts in reducing manufacturing scrap and improving material efficiency will help improve all the evaluated environmental impacts.

» Reference

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