

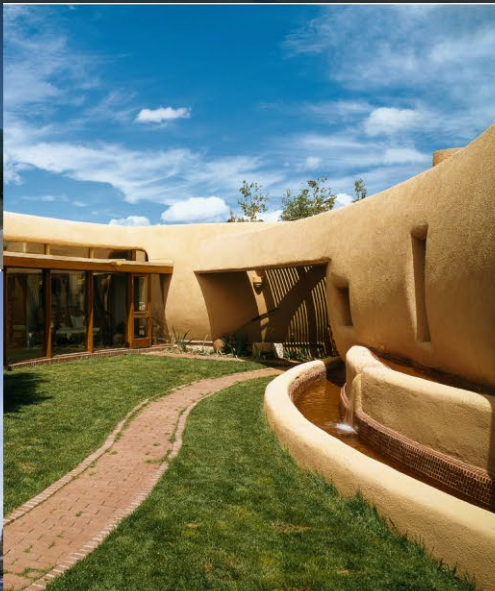


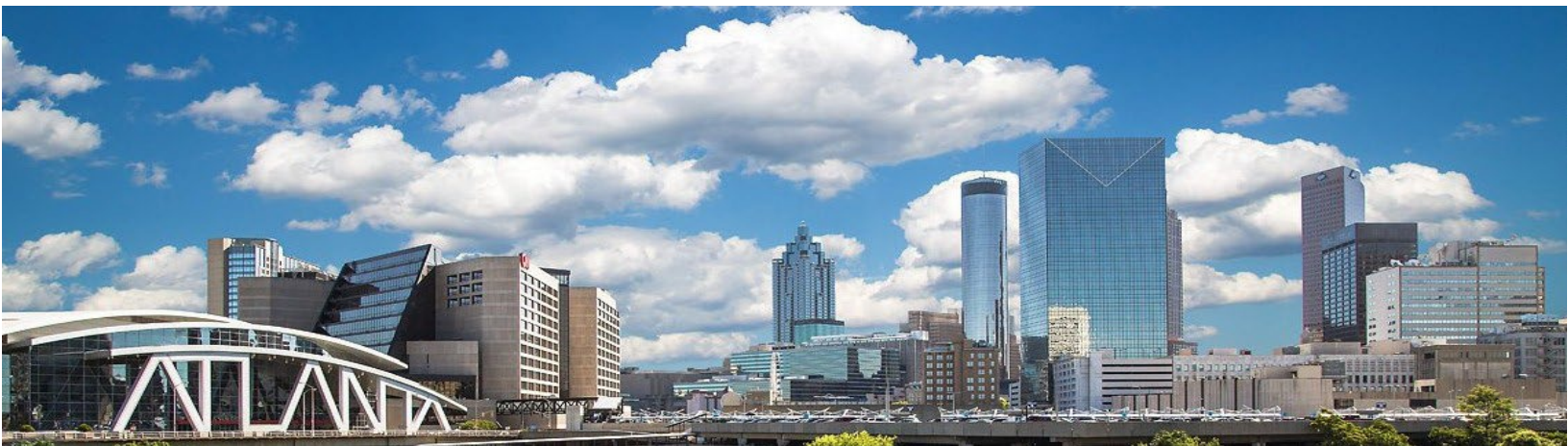
Building with conscience.





**EPD for StoGuard® Transition Membrane**

**StoGuard® Transition Membrane** is a flexible air barrier membrane for use on vertical above grade wall construction over properly prepared concrete, concrete masonry (CMU), glass mat gypsum sheathing and Exterior or Exposure I wood-based sheathing.





<b>PCR Identification</b>	<b>PCR for Water-Resistive and Air Barriers on the basis of ISO 21930: 2017, ASTM 2017. Valid through Sept, 2022</b>
PCR Review was conducted by	Thomas P. Gloria, Industrial Ecology Consultants. Graham Finch, RDH Building Science, Inc Paul H. Shipp, USG Corporation
Product Category	Flexible air barrier membrane
EPD Owner's name	Sto Corp. 3800 Camp Creek Parkway SW, Building 1400, Suite 120 Atlanta, GA 30331 <a href="http://www.stocorp.com">www.stocorp.com</a>   (800) 221-2397
EPD program operator	Epsten Group, a Salas O'Brien Company 101 Marietta St NW Suite 2600 Atlanta, GA 30303 <a href="http://www.epstengroup.com">www.epstengroup.com</a>
Declaration Number	01-017
Date of Certification	October 9 <sup>th</sup> , 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	Wörschach, Austria
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 <a href="mailto:Megan.Blizzard@salasobrien.com">Megan.Blizzard@salasobrien.com</a> 
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 <a href="mailto:angela@aspireustainability.com">angela@aspireustainability.com</a> 

#### 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

The manufacturing location is Wörschach, Austria.



## » Product Identification

StoGuard® Transition Membrane is offered in five different width options. It is a flexible air barrier membrane for use on vertical above grade wall construction over properly prepared concrete, concrete masonry (CMU), glass mat gypsum sheathing and Exterior or Exposure I wood-based sheathing. Table 1 lists the products declared in this EPD.

Table 1: Product Identification

Product Name	Product Number	Width
StoGuard® Transition Membrane	81272	120 mm (4.75")
	81342	152 mm (6")
	81343	228 mm (9")
	81344	304 mm (12")
	81349	457 mm (18")

## » Product Description

StoGuard® Transition Membrane is applicator-friendly and cost-saving:

- StoGuard® Transition Membrane can be easily applied without the use of special tools or applicator training.
- Thanks to the durability of StoGuard® Transition Membrane, it will not tear or lose effectiveness while in service.
- Because StoGuard® Transition Membrane is a fully adhered product, it will not peel or suffer loss of adhesion along edges.
- StoGuard® Transition Membrane will not stain surfaces due to adhesive leaching or streaking.
- StoGuard® Transition Membrane does not require the use of primers or terminations mastics for proper installation.
- Because StoGuard® Transition Membrane is a flexible material, it can be used in a wide range of applications for both static and dynamic joint conditions. One product solves multiple job site conditions.
- StoGuard® Transition Membrane is compatible with all StoGuard® vapor permeable or vapor impermeable membranes.

## » Performance Features

Waterproof	Flexible	Fully adhered membrane	No adhesive leaching	Compatible with other StoGuard® products
Fast and easy to install	Durable	UV-resistant	Versatile	Sustainability

## » Technical Details

Performance*	Test Method	Result	Unit
Air Permeance	ASTM E2718	<0.02	L/m <sup>2</sup> *s @ 75 Pa
Water Vapor Permeance	ASTM E96	1.48	perms @ 25 mils
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 CRRR-0454 / CAN ULC-S101 / CAN ULC-S134 / CCMC 12416-R

## » Material Composition

The material compositions of StoGuard® Transition Membrane are listed below:

Table 3: Material composition for StoGuard® Transition Membrane

Material	StoGuard® Transition Membrane
Thermoplastic Elastomer	75-80%
Polyester	20-25%
Colorant	0.4%
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 (m<sup>2</sup>) of substrate. 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]

## » 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 the manufacturing facility in Wörschach, Austria 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)

StoGuard® Transition Membrane is produced at the manufacturing facility in Wörschach, Austria. This stage includes an aggregation of raw material extraction, supplier processing, delivery, manufacturing and packaging by Sto. StoGuard® Transition Membrane is supplied in 50-meter rolls.



## » 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
<b>IPCC AR5</b>		
GWP	Global warming potential (100 years, includes biogenic CO <sub>2</sub> )	kg CO <sub>2</sub> eq
<b>TRACI 2.1</b>		
AP	Acidification potential of soil and water	kg SO <sub>2</sub> eq
EP	Eutrophication potential	kg N eq
ODP	Depletion of stratospheric ozone layer	kg CFC 11 eq
SFP	Smog formation potential	kg O <sub>3</sub> eq
<b>CML 2001-Jan 2016</b>		
ADPF	Abiotic depletion potential for fossil resources	MJ, net calorific value
<b>Carbon Emissions and Uptake</b>		
BCRP	Biogenic Carbon Removal from Product	[kg CO <sub>2</sub> ]
BCEP	Biogenic Carbon Emission from Product	[kg CO <sub>2</sub> ]
BCRK	Biogenic Carbon Removal from Packaging	[kg CO <sub>2</sub> ]
BCEK	Biogenic Carbon Emission from Packaging	[kg CO <sub>2</sub> ]
BCEW	Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	[kg CO <sub>2</sub> ]
CCE	Calcination Carbon Emissions	[kg CO <sub>2</sub> ]
CCR	Carbonation Carbon Removals	[kg CO <sub>2</sub> ]
CWNR	Carbon Emissions from Combustion of Waste from Non- Renewable Sources used in Production Processes	[kg CO <sub>2</sub> ]
<b>Resource Use Parameters</b>		
RPR <sub>E</sub>	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value (LHV)
RPR <sub>M</sub>	Use of renewable primary energy resources used as raw materials	MJ, net calorific value
NRPR <sub>E</sub>	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value
NRPR <sub>M</sub>	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 <sup>3</sup>
<b>Waste Parameters</b>		
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

» StoGuard® Transition Membrane

The LCIA results presented below are for 1 m<sup>2</sup> of StoGuard® Transition Membrane.

Impact Category	A1	A2	A3	Total
IPCC AR5				
GWP [kg CO <sub>2</sub> eq]	9.97E-01	2.74E-02	3.77E-01	1.40E+00
TRACI LCIA Impacts (North America)				
AP [kg SO <sub>2</sub> eq]	1.38E-03	4.60E-05	2.16E-04	1.64E-03
EP [kg N eq]	1.22E-04	4.11E-06	2.95E-05	1.56E-04
ODP [kg CFC 11 eq]	8.09E-14	1.42E-16	3.83E-14	1.19E-13
SFP [kg O <sub>3</sub> eq]	2.79E-02	9.68E-04	3.62E-03	3.25E-02
CML 2001-Jan 2016				
ADPF [MJ]	3.33E+01	3.72E-01	1.47E+00	3.52E+01
Carbon Emissions and Uptake				
BCRP [kg CO <sub>2</sub> ]	0	0	0	0
BCEP [kg CO <sub>2</sub> ]	0	0	0	0
BCRK [kg CO <sub>2</sub> ]	0	0	4.68E-03	4.68E-03
BCEK [kg CO <sub>2</sub> ]	0	0	0	0
BCEW [kg CO <sub>2</sub> ]	0	0	0	0
CCE [kg CO <sub>2</sub> ]	0	0	0	0
CCR [kg CO <sub>2</sub> ]	0	0	0	0
CWNR [kg CO <sub>2</sub> ]	0	0	0	0



The LCI results presented below are for 1 m<sup>2</sup> of StoGuard® Transition Membrane.

Impact Category	A1	A2	A3	Total
Resource Use Indicators				
RPR <sub>E</sub> [MJ]	1.99E+00	2.50E-02	1.83E+00	3.84E+00
RPR <sub>M</sub> [MJ]	0	0	4.45E-02	4.45E-02
NRPR <sub>E</sub> [MJ]	2.92E+00	3.73E-01	1.74E+00	5.04E+00
NRPR <sub>M</sub> [MJ]	1.56E+01	0	0	1.56E+01
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 <sup>3</sup> ]	4.38E-03	2.22E-05	1.79E-03	6.19E-03
Output Flows and Waste Categories				
HWD [kg]	1.95E-09	6.29E-13	-1.16E-10	1.84E-09
NHWD [kg]	1.28E-02	5.59E-05	5.36E-03	1.82E-02
HLRW [kg]	2.96E-07	5.17E-10	1.09E-07	4.06E-07
ILLRW [kg]	2.90E-04	4.91E-07	9.65E-05	3.87E-04
CRU [kg]	0	0	0	0
MR [kg]	0	0	1.27E-02	1.27E-02
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

- Life Cycle Assessment, LCA report for Sto Corp. WAP Sustainability, July 2024
- ASTM International. (2017). PCR for Water-Resistive and Air Barriers. Retrieved from ASTM.org: [https://pcr-epd.s3.us-east-2.amazonaws.com/368.PCR\\_for\\_Water-Resistive\\_Air\\_Barrier\\_PCR\\_final.pdf](https://pcr-epd.s3.us-east-2.amazonaws.com/368.PCR_for_Water-Resistive_Air_Barrier_PCR_final.pdf)
- BTY Group. (2001). Life-cycle Cost Study of Stucco and EIFS Exterior Wall Systems.
- CML - Department of Industrial Ecology. (2016, September 05). CML-IA Characterisation Factors. Retrieved from <https://www.universiteitleiden.nl/en/research/research-output/science/cml-ia-characterisation-factors>
- Fraunhofer IBP. (2015). Assessing The Long-Term Performance of Applied External Thermal Insulation Composite Systems (ETICs).
- IPCC. (2013). Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press.
- ISO. (2006). ISO 14025: Environmental labels and declarations - Type III environmental declarations - Principles and procedures. Geneva: International Organization for Standardization.
- ISO. (2006). ISO 14040/Amd 1:2020: Environmental management - Life cycle assessment - Principles and framework. Geneva: International Organization for Standardization.
- ISO. (2006). ISO 14044/Amd 1:2017/Amd 2:2020: Environmental Management - Life cycle assessment - Requirements and Guidelines. Geneva: International Organization for Standardization.
- ISO. (2017). ISO 21930: Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services. Geneva: International Organization for Standardization.
- Sto SE & Co. KGaA and Sto Scandinavia AB. (2020). ENVIRONMENTAL PRODUCT DECLARATION: StoVentec R. Institut Bauen und Umwelt e.V. (IBU).
- US EPA. (2012). TRACI: The Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts. Version 2.1 - User Guide. Retrieved from <https://nepis.epa.gov/Adobe/PDF/P100HN53.pdf>
- US EPA. (2020). Advancing Sustainable Materials Management: 2018 Fact Sheet.
- US EPA. (2020). Advancing Sustainable Materials Management: 2018 Fact Sheet. Retrieved from [epa.gov: https://www.epa.gov/sites/default/files/2021-01/documents/2018\\_ff\\_fact\\_sheet\\_dec\\_2020\\_fnl\\_508.pdf](https://www.epa.gov/sites/default/files/2021-01/documents/2018_ff_fact_sheet_dec_2020_fnl_508.pdf)
- US EPA. (2023). Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM) Background Chapters. U.S. Environmental Protection Agency