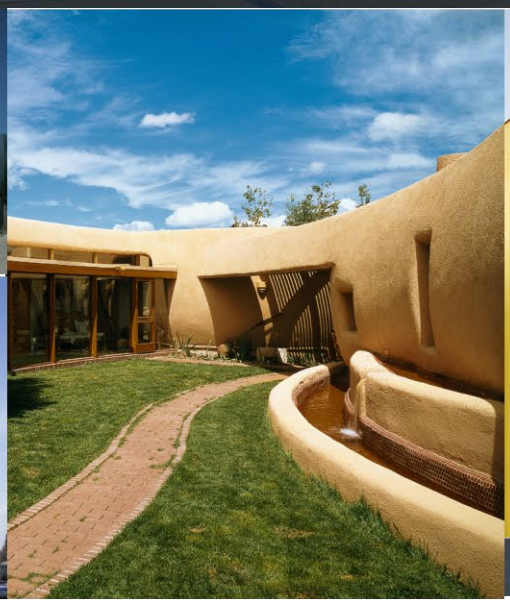
Building with conscience.

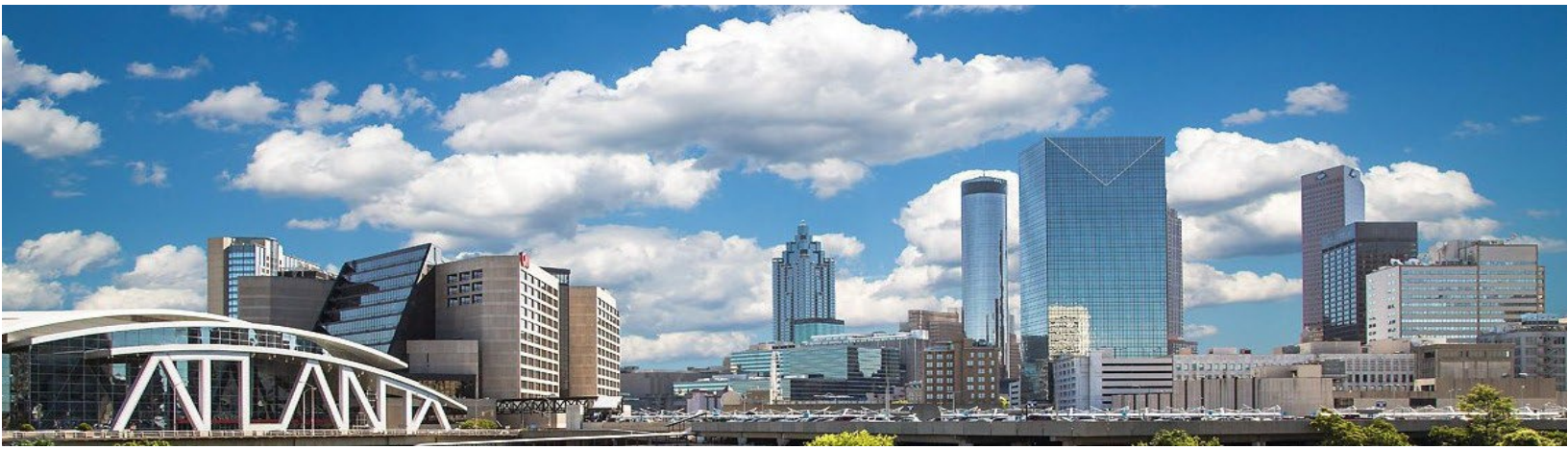
EPD for StoCast Wood

StoCast Wood are thin, lightweight, flexible resin cast wood grain planks for the decoration and protection of facades and interior walls and ceilings. StoCast Wood create an authentic wood grain appearance and can be top coated in a wide range of colors using StoColor Wood Stain, StoTique or other StoColor coatings.



epstengroup Environmental Product Declaration

epstengroup Solutions for a Sustainable World



EPD program operator	Epsten Group, a Salas O'Brien Company 101 Marietta St NW Suite 2600 Atlanta, GA 30303 www.epstengroup.com	
General program instructions & version		
Manufacturer's name	Sto Corp. 3800 Camp Creek Parkway SW, Building 1400, Suite 120 Atlanta, GA 30331 www.stocorp.com | (800) 221-2397	
Site(s) in which the results of the LCA are representative	STO manufacturing site in Rutland, VT	
Declaration Number	01-012	
Declared Product & Functional Unit	StoCast Wood One square meter (m^2) of installed StoCast Wood for 75 years	
PCR Identification	UL Part A: Life cycle Assessment Calculation Rules and Reporting Requirements v4.0 UL Part B: Cladding Product Systems EPD Requirements, UL 10010-25, v2.0	
Product's intented application and use	For protection of facades and interior walls/ceilings	
Porduct RSL	40 years	
Markets of applicability	North America	
Date of certification	October 8th, 2024	
Period of validity	5 years from date of certification	
EPD type	Product-specific	
EPD scope	Cradle to grave	
Year of reported primary data	Calendar year 2021	
LCA software and version Number	LCA for Experts (formerly GaBi) 10.7	
LCI database and version Number	MLC (formerly GaBi) Database Version 2023.2	
LCIA methodology and version number	IPCC AR5, TRACI 2.1 and CML-2016	
The sub-category PCR review was conducted by	Jim Mellentine Christopher White, Ph.D Philip S. Moser, P.E. (MA)	
This declaration was independently verified in accordance with ISO 21930:2017, ISO 14025: 2006 and the reference PCR: PCR for Architectural Coatings: NAICS 325510 ☐ Internal ☒ External	Megan Blizzard Megan.Blizzard@salasobrien.com	Megan Blizzard
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@aspiresustainability.com	Angela Fisher

Limitations

Environmental product declarations from different EPD programs (ISO 14025) may not be comparable.
Comparison of the environmental performance of Cladding Product Systems using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase.
Full conformance with this PCR allows EPD comparability only when all stages of a life cycle have been considered.

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 Site Covered in this EPD

Rutland, VT Plant

Product Identification

StoCast Wood is offered in various wood grain patterns that allow more freedom in building exterior and interior designing and finishing. The product declared in this EPD is product number 81688.

Product Description

StoCast Wood panels are thin, lightweight, flexible resin cast wood grain planks for the decoration and protection of facades and interior walls and ceilings. StoCast Wood create an authentic wood grain appearance and can be top coated in a wide range of colors using StoColor Wood Stain, StoTique or other StoColor coatings. Use in Sto proprietary wall systems and over prepared vertical above grade concrete, concrete masonry (CMU), and stucco walls, ceilings, and soffits or over prepared interior gypsum wallboard.

This product falls under CSI division 07 24 00 and the following production code: ASTM E2568.

Performance Features

Authentic wood appearance	Lightweight	Flexible	Easy to cut and install
Pre-fabricated	Adhesive attachment to substrate	Durable and freeze/thaw resistant	UV resistant when top coated with Sto coating

Technical Details

Table 1: Technical Data for Product

Performance	Test Method	Result	Unit
Tensile Strength	n/a	Not tested	MPa
Modulus of Elasticity	n/a	Not tested	MPa
Water Vapor Permeance	ASTM E96	>35	metric perms
Liquid Water Absorption	n/a	Not tested	% of dry weight
Airborne Sound Reduction	n/a	Not tested	dB
Sound Absorption Coefficient	n/a	Not tested	%

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 E2568	AC 235	ESR 1748 / ESR 4500 / CAN ULC-S134 / Sto/CWP 30-01

Material Composition

The material compositions of StoCast Wood are listed below:

Table 3: Material composition for StoCast Wood

Ingredient*	Mass %
Mineral fillers**	64%
Acrylic Polymer	13%
Water	13%
Aluminum trihydrate	5%
Latex	4%
Colorant	1%
Polyurethane	<1%
Thickening agent	<1%
Fiberglass	<1%
Additive	<1%

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

**Mineral fillers include limestone, dolomite, etc

Properties of Declared Product as Delivered

Table 4: Properties of declared product

Parameter	Value
Sizes	1.8m long x152mm wide planks (6 ft x 6 in)
Packaging	Cartons (25 planks, 7.0m2 [75 ft2] per carton)
Color	Light Beige (must be top coated)
Shelf Life	3 years in original, unopened, properly stored packaging
Storage	Store flat, off the ground in a cool, dry environment. Do not store at temperatures less than 60°F (15°C) before application
Product Bulletin and Product Test Results can be found at Sto's website	

Components related to Life Cycle Assessment

The functional unit for the LCA study was 1 square meter (m^2) of installed product for a period of 75 years—the assumed lifetime of a building. The reference flow required for the functional unit is calculated based on the product service life. This service life is estimated at 40 years based on combined data from performance studies on Sto's wall systems, past life cycle assessments of Sto's wall systems, and EPDs published by Sto in Europe (Frauenhofer IBP, 2015; BTY Group, 2001; Sto SE & Co. KGaA and Sto Scandinavia AB, 2020). The reference flow required for one functional unit is provided in Table 3.

Table 5: Reference flow by lifetime used

Parameter	Value	Unit
Functional unit	1 m^2 for 75 years	
Mass	3.20E+00	kg
Mass of one installation	1.71E+00	kg
Thickness to achieve functional unit	1.75E-03	m
Density	1.41E+03	kg/m^3
Length	1.80E+00	m
Width	1.52E-01	m

Scope and Boundaries of the Life Cycle Assessment

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

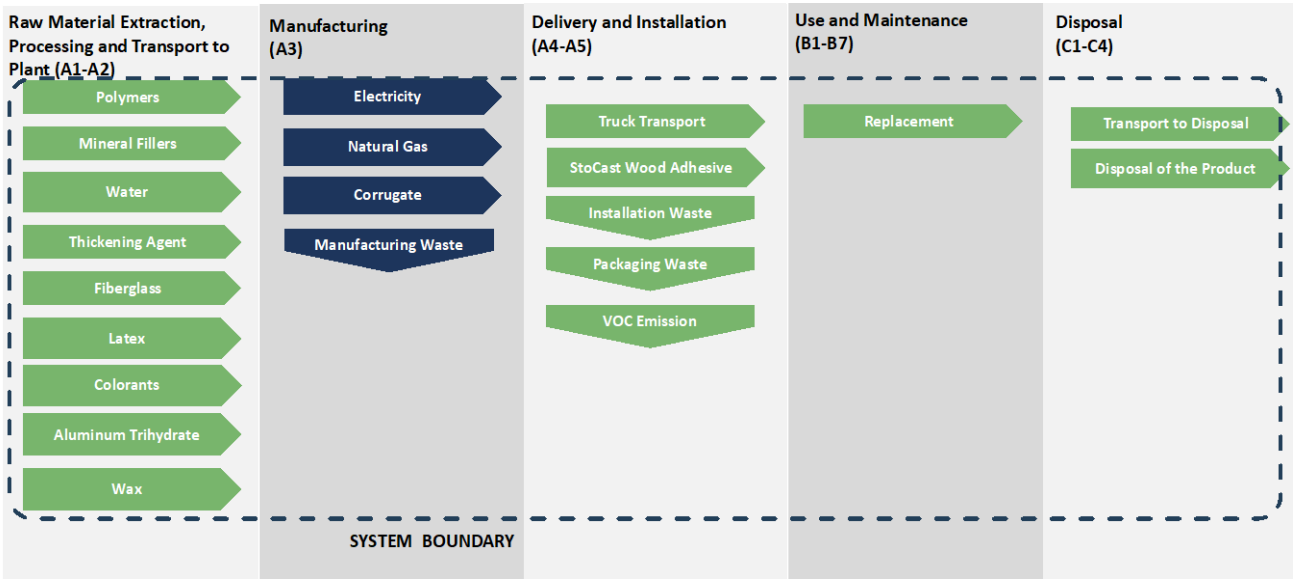


Figure 1: System boundary diagram of StoCast Wood

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 functional unit.

Data Quality

The overall data quality level was determined to be good. Primary data was collected from Sto's facility in 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 referenced PCRs 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)

StoCast Wood is produced at Sto's Rutland, VT facility. This stage includes an aggregation of raw material extraction, supplier processing, delivery, manufacturing and packaging by Sto. StoCast Wood is supplied in 25-plank cartons.

Transport to Construction Site (A4)

The product is assumed to be shipped from the manufacturing facility to distribution facilities in the US via truck. From the

distribution facilities, the product is shipped to construction sites. Table 5 gives the transportation details including the distances and the truck dataset used in the model. Transport distances are calculated based on the locations of the manufacturing facility, the distribution facilities, and customers' zip codes retrieved from the sales records.

Table 6: Transport to Building Site (A4)

Parameter	Value
Vehicle Type	Heavy Heavy-duty Diesel Truck / 53,333 lb payload - 8b
Fuel Efficiency [L/100km]	42
Fuel Type	Diesel
Distance [km]	9.93E+02
Capacity Utilization [%]	67%
Weight of Products Transported [kg]	1.83E+00
Product Density [kg/m^3]	1.42E+03
Capacity utilization volume factor	=1

Installation (A5)

StoCast Wood is recommended to be installed with StoCast Wood Adhesive. The impacts of StoCast Wood Adhesive are accounted for in this stage. As per the referenced PCRs, a 5% of the product is assumed as installation waste and is disposed of in this stage. Packaging waste is generated and disposed of also in this stage.

Table 7: Installation Scenario Details (A5)

Parameter	Value
StoCast Wood Adhesive [kg]	2.37E+00
Net Freshwater Consumption [m^3]	0.00E+00
Electricity Usage [kWh]	0.00E+00
Product wastage [%]	5%
Waste materials at the construction site before waste processing, generated by product installation [kg]	4.73E-01
Packaging Waste to Landfill [kg]	1.04E-01
Packaging Waste to Incineration [kg]	2.28E-02
Packaging Waste to Recycling [kg]	9.17E-02
Distance to disposal facility [km]	3.22E+01

Use Stage (B1-B7)

This stage contains all of the energy, water, and materials related to the use of the product, including cleaning, maintenance, and replacements. StoCast Wood does not require any energy or material for providing its functions. The reference service life of the product is 40 years. The details are in Table 7.

Table 8: Replacement Scenario Details

Parameter	Value
ESL [years]	75
RSL [years]	40
Replacement	0.9

End-of-Life Stage (C1-C4)

In this stage, the disposal of product waste at its end of life is included. The disposal pathway the waste stream is modeled is land-filling, as per the referenced PCRs.

Table 9: End-of-life scenario details

Parameter	Value
Collected as mixed construction waste [kg]	3.05E+00
Waste to Landfill [kg]	3.05E+00
Distance to Landfill [km]	3.22E+01

Life Cycle Assessment Results

As prescribed by the refereced PCRs, 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 10: LCIA impact category and LCI Indicator keys

Abbreviation	Parameter	Unit
	IPCC AR5	
GWP	Global warming potential (100 years, includes biogenic CO2)	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

StoCast Wood

The LCIA results presented below are for 1 m^2 of installed StoCast Wood for 75 years.

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
IPCC AR5														
GWP [kg CO_2 eq]	5.05E-01	1.32E-01	1.45E+00	0.00E+00	0.00E+00	0.00E+00	1.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.97E-03	0.00E+00	3.50E-02
TRACI LCIA Impacts (North America)														
AP [kg SO_2 eq]	2.14E-03	6.46E-04	3.52E-03	0.00E+00	0.00E+00	0.00E+00	8.99E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-05	0.00E+00	1.81E-04
EP [kg N eq]	4.53E-04	5.61E-05	5.12E-04	0.00E+00	0.00E+00	0.00E+00	1.38E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-06	0.00E+00	7.92E-06
ODP [kg CFC 11 eq]	8.24E-12	3.36E-16	1.24E-11	0.00E+00	0.00E+00	0.00E+00	3.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-17	0.00E+00	1.67E-15
SFP [kg O_3 eq]	3.18E-02	1.49E-02	2.65E-01	0.00E+00	0.00E+00	0.00E+00	5.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.69E-04	0.00E+00	3.29E-03
CML 2001-Jan 2016														
ADPF [MJ]	1.16E+01	1.82E+00	2.56E+01	0.00E+00	0.00E+00	0.00E+00	5.96E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.51E-02	0.00E+00	5.28E-01
Carbon Emissions and Uptake														
BCRP [kg CO_2]	1.56E-02	0.00E+00	2.35E-02	0.00E+00	0.00E+00	0.00E+00	5.68E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP [kg CO_2]	0.00E+00	0.00E+00	2.35E-02	0.00E+00	0.00E+00	0.00E+00	1.61E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.56E-02
BCRK [kg CO_2]	1.79E-01	0.00E+00	8.93E-03	0.00E+00	0.00E+00	0.00E+00	1.64E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK [kg CO_2]	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	5.22E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

The LCI results presented below are for 1 m^2 of installed StoCast Wood for 75 years.

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Resource Use Indicators														
RPR_E [MJ]	4.11E+00	7.30E-02	2.20E+00	0.00E+00	0.00E+00	0.00E+00	7.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.21E-03	0.00E+00	6.38E-02
RPR_M [MJ]	1.50E-01	0.00E+00	2.26E-01	0.00E+00	0.00E+00	0.00E+00	5.47E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
$NRPR_E$ [MJ]	1.01E+01	1.83E+00	2.36E+01	0.00E+00	0.00E+00	0.00E+00	5.45E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.55E-02	0.00E+00	5.45E-01
$NRPR_M$ [MJ]	1.49E+00	0.00E+00	2.25E+00	0.00E+00	0.00E+00	0.00E+00	5.45E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SM [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RE [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW [m^3]	1.08E-02	2.50E-04	1.90E-02	0.00E+00	0.00E+00	0.00E+00	4.48E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.58E-06	0.00E+00	6.75E-05
Output Flows and Waste Categories														
HWD [kg]	2.98E-09	5.27E-12	6.95E-10	0.00E+00	0.00E+00	0.00E+00	3.78E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.60E-13	0.00E+00	1.36E-11
NHWD [kg]	5.80E-02	1.59E-04	3.33E-01	0.00E+00	0.00E+00	0.00E+00	1.99E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.83E-06	0.00E+00	1.63E+00
HLRW [kg]	5.35E-07	6.23E-09	8.89E-07	0.00E+00	0.00E+00	0.00E+00	2.12E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-10	0.00E+00	6.74E-09
ILLRW [kg]	5.20E-04	5.25E-06	8.55E-04	0.00E+00	0.00E+00	0.00E+00	2.04E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.59E-07	0.00E+00	6.03E-06
CRU [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR [kg]	0.00E+00	0.00E+00	9.17E-02	0.00E+00	0.00E+00	0.00E+00	9.09E-02	0.00E+00	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Interpretation

For the product in study, the majority of the environmental impacts come from the Installation Stage which includes the impacts derived from the production of StoCast Wood Adhesive. The second largest stage is the Product Stage which includes raw material sourcing, transportation and manufacturing.

Reference

- Life Cycle Assessment, LCA report for Sto Corp. WAP Sustainability, July 2024
- BTY Group. (2001). Life-cycle Cost Study of Stucco and EIFS Exterior Wall Systems.
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