



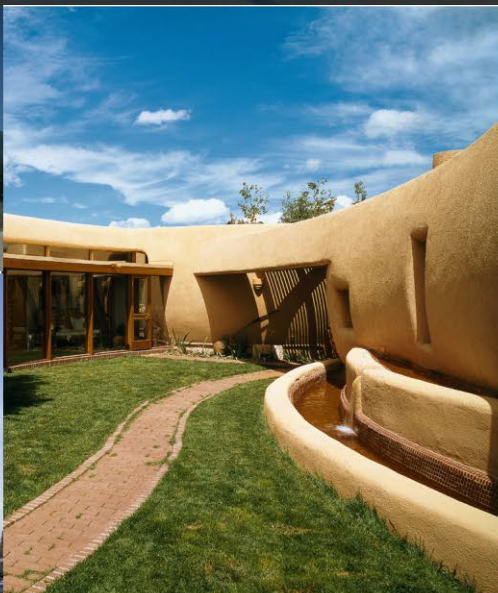
Building with conscience.



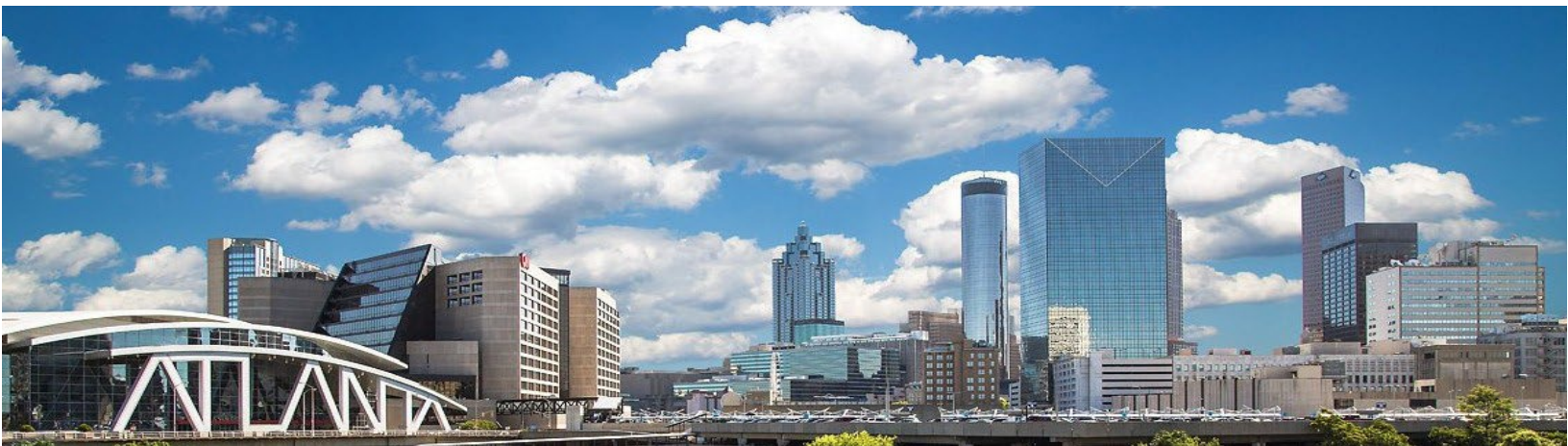
**EPD for Stolit®  
in varied textures**



Product Textures: 1.0, 1.0 Dark, 1.5, 1.5 Dark, R1.5, R1.5 Dark, Freeform, Freeform Dark.

Stolit® is a ready-mixed, acrylic-based exterior or interior textured wall finish. Stolit is used as a decorative and protective wall coating over prepared vertical above grade concrete, masonry and plaster substrates, and in StoTherm® ci Systems.







PCR Identification	PCR for Architectural Coatings: NAICS 325510 on the basis of ISO 21930: 2017, NSF International, 2017. Valid through June 30, 2024	
PCR Review was conducted by	Thomas P. Gloria, Ph.D. Bill Stough Michael Overcash, Ph.D.	
Product Category	Exterior Coating	
Manufacturer'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	01-016	
Date of Certification	October 8 <sup>th</sup> , 2024	
Period of Validity	5 years from date of certification	
Functional Unit	One square meter of covered and protected substrate for 60 years	
Market-base life / Design life used in assessment	10 Years / 5 Years	
System based life used in assessment	40 Years	
Test method employed for determination of design life	Product default warranty	
Amount of colorant needed	See Table 3	
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 <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

Atlanta, GA Plant

Glendale, AZ Plant

Rutland, VT Plant

## » Product Identification

Stolit® finishes are offered in various coarseness and color bases that allow more freedom in building exterior designing and finishing. Table 1 lists the products declared in this EPD.

Table 1: List of Stolit® Products

Product Name	Product Number	Base Type	Finish Type
Stolit® 1.0	80130	Tintable White	Fine
Stolit® 1.0 Dark Colors	82130	Deep	Fine
Stolit® 1.5	80131	Tintable White	Medium
Stolit® 1.5 Dark Colors	82131	Deep	Medium
Stolit® R1.5	80141	Tintable White	Medium
Stolit® R1.5 Dark Colors	82141	Deep	Medium
Stolit® Freeform	80156	Tintable White	Freeform
Stolit® Freeform Dark Colors	82156	Deep	Freeform

## » Product Description

Stolit® is a ready-mixed, acrylic-based exterior or interior textured wall finish. Stolit is used as a decorative and protective wall coating over prepared vertical above grade concrete, masonry and plaster sub-strates, and in StoTherm® ci Systems. In this study, Stolit® 1.0, 1.5, R1.5 and Freeform are included. Two tint bases are offered: standard and dark colors which respectively can be transcribed to tintable white base and deep base in the PCR.



## » Performance Features

Mildew Resistance	Ready Mixed	Moisture Resistance	Low VOC & Odor
Vapor Permeable	Integral Color	Water-based	

## » Material Composition

The material compositions of Stolit® are listed below:

Table 2: Material composition for Stolit®

	Stolit® 1.0 Dark Colors	Stolit® 1.0	Stolit® 1.5 Dark Colors	Stolit® 1.5	Stolit® 1.5 Dark Colors	Stolit® 1.5	Stolit® Free- dom Dark Colors	Stolit® Free- dom
Acrylic Polymer	8%	8%	10%	9%	9%	9%	10%	10%
Polyurethane	<1%	<1%	<1%	<1%	<1%	<1%	-	-
Water	16%	16%	14%	15%	14%	14%	15%	15%
Colorant	1%	1%	1%	1%	1%	1%	1%	1%
Mineral fillers*	49%	48%	50%	49%	68%	68%	66%	65%
Silica	25%	25%	24%	24%	6%	6%	6%	6%
Surfactant	1%	1%	1%	1%	1%	1%	1%	1%
Silicate	1%	1%	1%	1%	1%	1%	1%	1%
Additive**	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%

\*Mineral fillers include limestone, dolomite, etc.

\*\*Additives include light stabilizer, plasticizer, biocide, etc.

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

## » Components related to Life Cycle Assessment

The functional unit for the LCA study was covering and protecting 1 square meter (m<sup>2</sup>) of substrate for a period of 60 years—the assumed lifetime of a building. The reference flow required for the functional unit is calculated based on the product lifespan scenarios prescribed in the PCR. The market-based lifetime is 10 years, and the design lifetime is determined either based on quality determined by ASTM tests or on the product warrant. The EPD provides an additional lifetime scenario where the declared products

are installed as a component of the wall system. 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 for each lifetime.

Table 3: Reference flow by lifetime used

	Functional Unit	Reference Flow [kg]	Tint needed* [kg]	Reference Flow [kg]	Tint needed* [kg]	Reference Flow [kg]	Tint needed* [kg]
Lifespan		Design Lifetime [5 years]		Market-based Lifetime [10 years]		System-based Lifetime [40 years]	
Stolit® 1.0 Dark Colors	1	29.6	2.6	14.8	1.3	3.7	0.325
Stolit® 1.0	1	29.6	0.77	14.8	0.38	3.7	0.0958
Stolit® 1.5 Dark Colors	1	34.1	3	17	1.5	4.26	0.374
Stolit® 1.5	1	34.1	0.88	17	0.44	4.26	0.11
Stolit® R1.5 Dark Colors	1	30.6	2.69	15.3	1.35	3.82	0.336
Stolit® R1.5	1	30.6	0.79	15.3	0.4	3.82	0.0991
Stolit® Freeform Dark Colors	1	53.1	4.66	26.5	2.33	6.63	0.583
Stolit® Freeform	1	53.1	1.37	26.5	0.69	6.63	0.172

\* The reference flows of tint are calculated based on Architectural Coating PCR Section 3.5

## » 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 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	X	X	X	X	X	X	X	X	X	X	X	X	X	ND

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

Figure 1: Life stages for the cradle-to-grave 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 functional 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)

Stolit® 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. Stolit® is supplied in 5-gallon pails.

## » Delivery and Installation Stage (A4-A5)

The design and construction process stage starts with the packaged product leaving the production site and ends with being delivered to the application site.

During this stage, the finished product is moved from a shipping dock for distribution. The end gate is the application site after the purchaser acquires the finished product and transports it to the application site.

The installation stage begins when the user prepares the product before applying it to a substrate and ends with any leftover coating and discarded packaging entering the end-of-life stage. Detailed application instructions are provided online. The application procedure includes mixing and applying. As recommended, an electric drill/mixer and a spray pump are assumed to be used for mixing and application. The equipment is not included in the study as these are multi-use tools and the impacts per declared unit is considered negligible, but electricity to power application tools has been included.

As prescribed in the PCR, 10% of the wet mass of Stolit® is assumed to be unused and properly disposed of. Other than VOC emissions, no other direct emissions to soil and water.

Table 4: Transport to building site (A4)

Property	Sto Stolit
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]	Stolit 1.0 – 2.56E+00
	Stolit 1.5 – 2.95E+00
	Stolit R1.5 – 2.65E+00
	Stolit Freeform – 4.60E+00
Product Density [kg/m <sup>3</sup> ]	1.68E+03
Capacity utilization volume factor	=1

Table 5: Installation scenario details (A5)

Property	Sto Stolit
Tint [kg]	Stolit 1.0 Dark Colors – 2.17E-01
	Stolit 1.0 – 6.39E-02
	Stolit 1.5 Dark Colors – 2.49E-01
	Stolit 1.5 – 7.35E-02
	Stolit R1.5 Dark Colors – 2.24E-01
	Stolit R1.5 – 6.60E-02
Net Freshwater Consumption [m <sup>3</sup> ]	Stolit Freeform Dark Colors – 3.89E-01
	Stolit Freeform – 1.15E-01
VOC emission [kg]	0
	Stolit 1.0 – 4.01E-02
	Stolit 1.5 – 4.61E-02
Electricity Usage [kWh]	Stolit R1.5 – 4.14E-02
	Stolit Freeform – 7.19E-02
	Stolit 1.0 – 9.06E-03
	Stolit 1.5 – 1.04E-02
Product wastage [%]	Stolit R1.5 – 9.37E-03
	Stolit Freeform – 1.63E-02
	10%
Waste materials at the construction site before waste processing, generated by product installation [kg]	Stolit 1.0 Dark Colors – 3.40E-01
	Stolit 1.0 – 3.26E-01
	Stolit 1.5 Dark Colors – 3.91E-01
	Stolit 1.5 – 3.75E-01
	Stolit R1.5 Dark Colors – 3.52E-01
	Stolit R1.5 – 3.37E-01
Packaging Waste to Landfill [kg]	Stolit Freeform Dark Colors – 6.10E-01
	Stolit Freeform – 5.85E-01
	Stolit 1.0 – 7.04E-02
Packaging Waste to Incineration [kg]	Stolit 1.5 – 8.11E-02
	Stolit R1.5 – 7.28E-02
	Stolit Freeform – 1.26E-01
	Stolit 1.0 – 1.55E-02
Packaging Waste to Recycling [kg]	Stolit 1.5 – 1.78E-02
	Stolit R1.5 – 1.60E-02
	Stolit Freeform – 2.77E-02
Distance to disposal facility [km]	Stolit 1.0 – 1.02E-02
	Stolit 1.5 – 1.18E-02
	Stolit R1.5 – 1.06E-02
	Stolit Freeform – 1.84E-02
	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. Stolit does not require any energy or material for providing its functions. The reference service life of the product is 40 years. This service life scenario is valid only when the product is used as intended in Sto's proprietary engineered wall system assemblies. The referenced PCR also prescribes two service life scenarios – design life and market-based life. The details are in Table 6.

Table 6: Replacement scenario details

Product	Sto Stolit
ESL [years]	60
Design Life [years]*	5
Replacement (Design Life)	11
Market-based Life [years]*	10
Replacement (Market-based Life)	5
System-based Life [years]*	40
Replacement (System-based Life)	0.5
* Design life and market-based lifetime are both reference service lifetime scenarios required by the architectural Coating PCR. The system-based lifetime scenario is included as additional information.	

## » End-of-Life Stage (C1-C4)

In this stage, the disposal of installation waste, packaging waste and product waste at its end of life is included. The disposal pathway of each waste stream is modeled based on the recommendation of PCR and US EPA's 2018 waste management fact sheet.

Table 7: End-of-life scenario details

	RSL Scenario	Sto Stolit
Collected as mixed construction waste [kg]	Design Life	Stolit 1.0 Dark Colors – 2.93E+01
		Stolit 1.0 – 2.76E+01
		Stolit 1.5 Dark Colors – 3.37E+01
		Stolit 1.5 – 3.18E+01
		Stolit R1.5 Dark Color – 3.03E+01
		Stolit R1.5 – 2.85E+01
		Stolit Freeform Dark Colors – 5.25E+01
Stolit Freeform – 4.95E+01		
Waste to Landfill [kg]		Same as above
Collected as mixed construction waste [kg]	Market-based lifetime	Stolit 1.0 Dark Colors – 1.46E+01
		Stolit 1.0 – 1.38E+01
		Stolit 1.5 Dark Colors – 1.69E+01
		Stolit 1.5 – 1.59E+01
		Stolit R1.5 Dark Color – 1.51E+01
		Stolit R1.5 – 1.43E+01
		Stolit Freeform Dark Colors – 2.62E+01
Stolit Freeform – 2.48E+01		
Waste to Landfill [kg]		Same as above
Collected as mixed construction waste [kg]	System-based lifetime	Stolit 1.0 Dark Colors – 3.66E+00
		Stolit 1.0 – 3.45E+00
		Stolit 1.5 Dark Colors – 4.21E+00
		Stolit 1.5 – 3.97E+00
		Stolit R1.5 Dark Color – 3.78E+00
		Stolit R1.5 – 3.57E+00
		Stolit Freeform Dark Colors – 6.56E+00
Stolit Freeform – 6.19E+00		
Waste to Landfill [kg]		Same as above
Distance to Landfill [km]	-	3.22E+01



## 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 8: 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

The LCIA results presented below are for 1 m<sup>2</sup> of Stolit 1.0 Dark Colors for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>IPCC AR5</b>																
<b>GWP [kg CO<sub>2</sub> eq]</b>	1.20E+00	1.76E-01	6.65E-01	0	0	0	2.24E+01	1.02E+01	1.02E+00	0	0	0	0	5.84E-03	0	5.14E-02
<b>TRACI LCIA Impacts (North America)</b>																
<b>AP [kg SO<sub>2</sub> eq]</b>	4.74E-03	8.64E-04	1.57E-03	0	0	0	7.89E-02	3.59E-02	3.59E-03	0	0	0	0	1.73E-05	0	2.65E-04
<b>EP [kg N eq]</b>	2.05E-04	7.50E-05	1.19E-04	0	0	0	4.38E-03	1.99E-03	1.99E-04	0	0	0	0	1.77E-06	0	1.16E-05
<b>ODP [kg CFC 11 eq]</b>	3.34E-10	4.50E-16	3.35E-11	0	0	0	4.04E-09	1.84E-09	1.84E-10	0	0	0	0	1.50E-17	0	2.46E-15
<b>SFP [kg O<sub>3</sub> eq]</b>	4.89E-02	2.00E-02	1.36E-01	0	0	0	2.26E+00	1.03E+00	1.03E-01	0	0	0	0	3.96E-04	0	4.84E-03
<b>CML 2001-Jan 2016</b>																
<b>ADPF [MJ]</b>	2.59E+01	2.43E+00	1.56E+01	0	0	0	4.83E+02	2.20E+02	2.20E+01	0	0	0	0	8.09E-02	0	7.76E-01
<b>Carbon Emissions and Uptake</b>																
<b>BCRP [kg CO<sub>2</sub>]</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>BCEP [kg CO<sub>2</sub>]</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>BCRK [kg CO<sub>2</sub>]</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>BCEK [kg CO<sub>2</sub>]</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>BCEW [kg CO<sub>2</sub>]</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>CCE [kg CO<sub>2</sub>]</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>CCR [kg CO<sub>2</sub>]</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>CWNR [kg CO<sub>2</sub>]</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCI results presented below are for 1 m<sup>2</sup> of Stolit 1.0 Dark Colors for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>Resource Use Indicators</b>																
RPR <sub>E</sub> [MJ]	2.31E+00	9.76E-02	1.02E+00	0	0	0	3.76E+01	1.71E+01	1.71E+00	0	0	0	0	3.25E-03	0	9.38E-02
RPR <sub>M</sub> [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPR <sub>E</sub> [MJ]	2.02E+01	2.45E+00	4.43E-01	0	0	0	2.54E+02	1.16E+02	1.16E+01	0	0	0	0	8.16E-02	0	8.01E-01
NRPR <sub>M</sub> [MJ]	4.08E+00	0	7.81E+00	0	0	0	1.31E+02	5.94E+01	5.94E+00	0	0	0	0	0	0	0
SM [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW [m <sup>3</sup> ]	1.01E-02	3.35E-04	4.01E-03	0	0	0	1.59E-01	7.22E-02	7.22E-03	0	0	0	0	1.11E-05	0	9.92E-05
<b>Output Flows and Waste Categories</b>																
HWD [kg]	7.98E-07	7.05E-12	7.93E-08	0	0	0	9.65E-06	4.39E-06	4.39E-07	0	0	0	0	2.35E-13	0	2.00E-11
NHWD [kg]	1.50E-01	2.13E-04	3.14E-01	0	0	0	5.10E+00	2.32E+00	2.32E-01	0	0	0	0	7.10E-06	0	2.40E+00
HLRW [kg]	1.03E-06	8.34E-09	2.01E-07	0	0	0	1.37E-05	6.21E-06	6.21E-07	0	0	0	0	2.78E-10	0	9.90E-09
ILLRW [kg]	8.65E-04	7.02E-06	1.76E-04	0	0	0	1.15E-02	5.24E-03	5.24E-04	0	0	0	0	2.34E-07	0	8.86E-06
CRU [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MR [kg]	0	0	1.02E-02	0	0	0	1.13E-01	5.12E-02	5.12E-03	0	0	0	0	0	0	0
MER [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCIA results presented below are for 1 m<sup>2</sup> of Stolit 1.0 for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>IPCC AR5</b>																
GWP [kg CO <sub>2</sub> eq]	1.26E+00	1.76E-01	3.32E-01	0	0	0	1.94E+01	8.82E+00	8.82E-01	0	0	0	0	5.50E-03	0	4.85E-02
<b>TRACI LCIA Impacts (North America)</b>																
AP [kg SO <sub>2</sub> eq]	7.23E-03	8.64E-04	1.14E-03	0	0	0	1.02E-01	4.62E-02	4.62E-03	0	0	0	0	1.63E-05	0	2.50E-04
EP [kg N eq]	2.14E-04	7.50E-05	9.27E-05	0	0	0	4.20E-03	1.91E-03	1.91E-04	0	0	0	0	1.67E-06	0	1.10E-05
ODP [kg CFC 11 eq]	3.34E-10	4.50E-16	3.34E-11	0	0	0	4.04E-09	1.84E-09	1.84E-10	0	0	0	0	1.41E-17	0	2.32E-15
SFP [kg O <sub>3</sub> eq]	5.14E-02	2.00E-02	1.32E-01	0	0	0	2.24E+00	1.02E+00	1.02E-01	0	0	0	0	3.73E-04	0	4.56E-03
<b>CML 2001-Jan 2016</b>																
ADPF [MJ]	2.67E+01	2.43E+00	6.79E+00	0	0	0	3.95E+02	1.80E+02	1.80E+01	0	0	0	0	7.63E-02	0	7.31E-01
<b>Carbon Emissions and Uptake</b>																
BCRP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCRK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEW [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCE [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWNR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



The LCI results presented below are for 1 m<sup>2</sup> of Stolit 1.0 for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>Resource Use Indicators</b>																
RPR <sub>E</sub> [MJ]	2.39E+00	9.76E-02	5.00E-01	0	0	0	3.29E+01	1.49E+01	1.49E+00	0	0	0	0	3.06E-03	0	8.84E-02
RPR <sub>M</sub> [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPR <sub>E</sub> [MJ]	2.11E+01	2.45E+00	1.95E+00	0	0	0	2.80E+02	1.27E+02	1.27E+01	0	0	0	0	7.69E-02	0	7.55E-01
NRPR <sub>M</sub> [MJ]	4.08E+00	0	2.59E+00	0	0	0	7.34E+01	3.34E+01	3.34E+00	0	0	0	0	0	0	0
SM [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW [m <sup>3</sup> ]	1.06E-02	3.35E-04	2.04E-03	0	0	0	1.42E-01	6.47E-02	6.47E-03	0	0	0	0	1.05E-05	0	9.35E-05
<b>Output Flows and Waste Categories</b>																
HWD [kg]	7.97E-07	7.05E-12	7.95E-08	0	0	0	9.64E-06	4.38E-06	4.38E-07	0	0	0	0	2.21E-13	0	1.88E-11
NHWD [kg]	2.36E-01	2.13E-04	3.21E-01	0	0	0	6.13E+00	2.79E+00	2.79E-01	0	0	0	0	6.69E-06	0	2.26E+00
HLRW [kg]	1.07E-06	8.34E-09	1.44E-07	0	0	0	1.34E-05	6.11E-06	6.11E-07	0	0	0	0	2.62E-10	0	9.33E-09
ILLRW [kg]	8.95E-04	7.02E-06	1.23E-04	0	0	0	1.13E-02	5.12E-03	5.12E-04	0	0	0	0	2.20E-07	0	8.35E-06
CRU [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MR [kg]	0	0	1.02E-02	0	0	0	1.13E-01	5.12E-02	5.12E-03	0	0	0	0	0	0	0
MER [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCIA results presented below are for 1 m<sup>2</sup> of Stolit 1.5 Dark Colors for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>IPCC AR5</b>																
GWP [kg CO <sub>2</sub> eq]	1.36E+00	2.03E-01	7.64E-01	0	0	0	2.56E+01	1.17E+01	1.17E+00	0	0	0	0	6.72E-03	0	5.92E-02
<b>TRACI LCIA Impacts (North America)</b>																
AP [kg SO <sub>2</sub> eq]	5.45E-03	9.94E-04	1.81E-03	0	0	0	9.08E-02	4.13E-02	4.13E-03	0	0	0	0	1.99E-05	0	3.05E-04
EP [kg N eq]	2.35E-04	8.63E-05	1.36E-04	0	0	0	5.03E-03	2.29E-03	2.29E-04	0	0	0	0	2.03E-06	0	1.34E-05
ODP [kg CFC 11 eq]	3.12E-10	5.17E-16	3.13E-11	0	0	0	3.78E-09	1.72E-09	1.72E-10	0	0	0	0	1.72E-17	0	2.83E-15
SFP [kg O <sub>3</sub> eq]	5.63E-02	2.30E-02	1.57E-01	0	0	0	2.60E+00	1.18E+00	1.18E-01	0	0	0	0	4.56E-04	0	5.57E-03
<b>CML 2001-Jan 2016</b>																
ADPF [MJ]	2.97E+01	2.80E+00	1.79E+01	0	0	0	5.54E+02	2.52E+02	2.52E+01	0	0	0	0	9.32E-02	0	8.93E-01
<b>Carbon Emissions and Uptake</b>																
BCRP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCRK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEW [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCE [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWNR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCI results presented below are for 1 m<sup>2</sup> of Stolit 1.5 Dark Colors for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>Resource Use Indicators</b>																
RPR <sub>E</sub> [MJ]	2.56E+00	1.12E-01	1.16E+00	0	0	0	4.22E+01	1.92E+01	1.92E+00	0	0	0	0	3.74E-03	0	1.08E-01
RPR <sub>M</sub> [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPR <sub>E</sub> [MJ]	2.30E+01	2.82E+00	4.86E-01	0	0	0	2.90E+02	1.32E+02	1.32E+01	0	0	0	0	9.39E-02	0	9.22E-01
NRPR <sub>M</sub> [MJ]	4.69E+00	0	8.99E+00	0	0	0	1.50E+02	6.84E+01	6.84E+00	0	0	0	0	0	0	0
SM [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW [m <sup>3</sup> ]	1.15E-02	3.85E-04	4.61E-03	0	0	0	1.82E-01	8.26E-02	8.26E-03	0	0	0	0	1.28E-05	0	1.14E-04
<b>Output Flows and Waste Categories</b>																
HWD [kg]	7.35E-07	8.11E-12	7.29E-08	0	0	0	8.89E-06	4.04E-06	4.04E-07	0	0	0	0	2.70E-13	0	2.30E-11
NHWD [kg]	1.71E-01	2.45E-04	3.61E-01	0	0	0	5.85E+00	2.66E+00	2.66E-01	0	0	0	0	8.17E-06	0	2.76E+00
HLRW [kg]	1.16E-06	9.59E-09	2.29E-07	0	0	0	1.54E-05	6.99E-06	6.99E-07	0	0	0	0	3.19E-10	0	1.14E-08
ILLRW [kg]	9.71E-04	8.08E-06	2.01E-04	0	0	0	1.30E-02	5.90E-03	5.90E-04	0	0	0	0	2.69E-07	0	1.02E-05
CRU [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MR [kg]	0	0	1.18E-02	0	0	0	1.30E-01	5.89E-02	5.89E-03	0	0	0	0	0	0	0
MER [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCIA results presented below are for 1 m<sup>2</sup> of Stolit 1.5 for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>IPCC AR5</b>																
GWP [kg CO <sub>2</sub> eq]	1.45E+00	2.03E-01	3.82E-01	0	0	0	2.24E+01	1.02E+01	1.02E+00	0	0	0	0	6.33E-03	0	5.58E-02
<b>TRACI LCIA Impacts (North America)</b>																
AP [kg SO <sub>2</sub> eq]	8.42E-03	9.94E-04	1.33E-03	0	0	0	1.18E-01	5.37E-02	5.37E-03	0	0	0	0	1.88E-05	0	2.88E-04
EP [kg N eq]	2.56E-04	8.63E-05	1.08E-04	0	0	0	4.94E-03	2.25E-03	2.25E-04	0	0	0	0	1.92E-06	0	1.26E-05
ODP [kg CFC 11 eq]	3.13E-10	5.17E-16	3.13E-11	0	0	0	3.79E-09	1.72E-09	1.72E-10	0	0	0	0	1.62E-17	0	2.67E-15
SFP [kg O <sub>3</sub> eq]	6.19E-02	2.30E-02	1.52E-01	0	0	0	2.61E+00	1.18E+00	1.18E-01	0	0	0	0	4.29E-04	0	5.25E-03
<b>CML 2001-Jan 2016</b>																
ADPF [MJ]	3.08E+01	2.80E+00	7.82E+00	0	0	0	4.56E+02	2.07E+02	2.07E+01	0	0	0	0	8.78E-02	0	8.41E-01
<b>Carbon Emissions and Uptake</b>																
BCRP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCRK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEW [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCE [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWNR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



The LCI results presented below are for 1 m<sup>2</sup> of Stolit 1.5 for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>Resource Use Indicators</b>																
RPR <sub>E</sub> [MJ]	2.63E+00	1.12E-01	5.63E-01	0	0	0	3.63E+01	1.65E+01	1.65E+00	0	0	0	0	3.53E-03	0	1.02E-01
RPR <sub>M</sub> [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPR <sub>E</sub> [MJ]	2.43E+01	2.82E+00	2.25E+00	0	0	0	3.23E+02	1.47E+02	1.47E+01	0	0	0	0	8.85E-02	0	8.69E-01
NRPR <sub>M</sub> [MJ]	4.69E+00	0	2.98E+00	0	0	0	8.44E+01	3.84E+01	3.84E+00	0	0	0	0	0	0	0
SM [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW [m <sup>3</sup> ]	1.21E-02	3.85E-04	2.34E-03	0	0	0	1.63E-01	7.40E-02	7.40E-03	0	0	0	0	1.21E-05	0	1.08E-04
<b>Output Flows and Waste Categories</b>																
HWD [kg]	7.35E-07	8.11E-12	7.33E-08	0	0	0	8.90E-06	4.04E-06	4.04E-07	0	0	0	0	2.55E-13	0	2.17E-11
NHWD [kg]	2.70E-01	2.45E-04	3.69E-01	0	0	0	7.03E+00	3.20E+00	3.20E-01	0	0	0	0	7.70E-06	0	2.60E+00
HLRW [kg]	1.19E-06	9.59E-09	1.61E-07	0	0	0	1.50E-05	6.81E-06	6.81E-07	0	0	0	0	3.01E-10	0	1.07E-08
ILLRW [kg]	9.96E-04	8.08E-06	1.38E-04	0	0	0	1.26E-02	5.71E-03	5.71E-04	0	0	0	0	2.54E-07	0	9.61E-06
CRU [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MR [kg]	0	0	1.18E-02	0	0	0	1.30E-01	5.89E-02	5.89E-03	0	0	0	0	0	0	0
MER [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCIA results presented below are for 1 m<sup>2</sup> of Stolit R1.5 Dark Colors for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>IPCC AR5</b>																
GWP [kg CO <sub>2</sub> eq]	1.18E+00	1.82E-01	6.82E-01	0	0	0	2.25E+01	1.02E+01	1.02E+00	0	0	0	0	6.04E-03	0	5.32E-02
<b>TRACI LCIA Impacts (North America)</b>																
AP [kg SO <sub>2</sub> eq]	5.01E-03	8.93E-04	1.63E-03	0	0	0	8.29E-02	3.77E-02	3.77E-03	0	0	0	0	1.79E-05	0	2.74E-04
EP [kg N eq]	2.32E-04	7.76E-05	1.25E-04	0	0	0	4.77E-03	2.17E-03	2.17E-04	0	0	0	0	1.83E-06	0	1.20E-05
ODP [kg CFC 11 eq]	2.88E-10	4.65E-16	2.88E-11	0	0	0	3.48E-09	1.58E-09	1.58E-10	0	0	0	0	1.55E-17	0	2.54E-15
SFP [kg O <sub>3</sub> eq]	5.63E-02	2.06E-02	1.41E-01	0	0	0	2.40E+00	1.09E+00	1.09E-01	0	0	0	0	4.09E-04	0	5.00E-03
<b>CML 2001-Jan 2016</b>																
ADPF [MJ]	2.59E+01	2.51E+00	1.60E+01	0	0	0	4.89E+02	2.22E+02	2.22E+01	0	0	0	0	8.37E-02	0	8.02E-01
<b>Carbon Emissions and Uptake</b>																
BCRP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCRK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEW [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCE [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWNR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCI results presented below are for 1 m<sup>2</sup> of Stolit R1.5 Dark Colors for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>Resource Use Indicators</b>																
RPR <sub>E</sub> [MJ]	1.93E+00	1.01E-01	1.01E+00	0	0	0	3.35E+01	1.52E+01	1.52E+00	0	0	0	0	3.36E-03	0	9.70E-02
RPR <sub>M</sub> [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPR <sub>E</sub> [MJ]	1.99E+01	2.53E+00	3.53E-01	0	0	0	2.50E+02	1.14E+02	1.14E+01	0	0	0	0	8.44E-02	0	8.28E-01
NRPR <sub>M</sub> [MJ]	4.06E+00	0	8.06E+00	0	0	0	1.33E+02	6.06E+01	6.06E+00	0	0	0	0	0	0	0
SM [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW [m <sup>3</sup> ]	9.85E-03	3.46E-04	4.09E-03	0	0	0	1.57E-01	7.14E-02	7.14E-03	0	0	0	0	1.15E-05	0	1.03E-04
<b>Output Flows and Waste Categories</b>																
HWD [kg]	6.60E-07	7.29E-12	6.54E-08	0	0	0	7.98E-06	3.63E-06	3.63E-07	0	0	0	0	2.43E-13	0	2.06E-11
NHWD [kg]	1.33E-01	2.20E-04	3.23E-01	0	0	0	5.02E+00	2.28E+00	2.28E-01	0	0	0	0	7.34E-06	0	2.48E+00
HLRW [kg]	8.72E-07	8.62E-09	1.88E-07	0	0	0	1.18E-05	5.34E-06	5.34E-07	0	0	0	0	2.87E-10	0	1.02E-08
ILLRW [kg]	7.29E-04	7.26E-06	1.66E-04	0	0	0	9.93E-03	4.51E-03	4.51E-04	0	0	0	0	2.42E-07	0	9.16E-06
CRU [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MR [kg]	0	0	1.06E-02	0	0	0	1.16E-01	5.30E-02	5.30E-03	0	0	0	0	0	0	0
MER [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCIA results presented below are for 1 m<sup>2</sup> of Stolit R1.5 for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>IPCC AR5</b>																
GWP [kg CO <sub>2</sub> eq]	1.22E+00	1.82E-01	3.35E-01	0	0	0	1.91E+01	8.69E+00	8.69E-01	0	0	0	0	5.69E-03	0	5.01E-02
<b>TRACI LCIA Impacts (North America)</b>																
AP [kg SO <sub>2</sub> eq]	7.39E-03	8.93E-04	1.17E-03	0	0	0	1.04E-01	4.73E-02	4.73E-03	0	0	0	0	1.69E-05	0	2.59E-04
EP [kg N eq]	2.32E-04	7.76E-05	9.69E-05	0	0	0	4.48E-03	2.03E-03	2.03E-04	0	0	0	0	1.72E-06	0	1.13E-05
ODP [kg CFC 11 eq]	2.80E-10	4.65E-16	2.80E-11	0	0	0	3.38E-09	1.54E-09	1.54E-10	0	0	0	0	1.46E-17	0	2.40E-15
SFP [kg O <sub>3</sub> eq]	5.69E-02	2.06E-02	1.37E-01	0	0	0	2.36E+00	1.07E+00	1.07E-01	0	0	0	0	3.86E-04	0	4.72E-03
<b>CML 2001-Jan 2016</b>																
ADPF [MJ]	2.64E+01	2.51E+00	6.90E+00	0	0	0	3.94E+02	1.79E+02	1.79E+01	0	0	0	0	7.89E-02	0	7.56E-01
<b>Carbon Emissions and Uptake</b>																
BCRP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCRK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEW [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCE [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWNR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



The LCI results presented below are for 1 m<sup>2</sup> of Stolit R1.5 for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>Resource Use Indicators</b>																
RPR <sub>E</sub> [MJ]	2.01E+00	1.01E-01	4.70E-01	0	0	0	2.84E+01	1.29E+01	1.29E+00	0	0	0	0	3.17E-03	0	9.14E-02
RPR <sub>M</sub> [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPR <sub>E</sub> [MJ]	2.04E+01	2.53E+00	1.88E+00	0	0	0	2.74E+02	1.24E+02	1.24E+01	0	0	0	0	7.95E-02	0	7.80E-01
NRPR <sub>M</sub> [MJ]	4.05E+00	0	2.66E+00	0	0	0	7.39E+01	3.36E+01	3.36E+00	0	0	0	0	0	0	0
SM [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW [m <sup>3</sup> ]	1.02E-02	3.46E-04	2.04E-03	0	0	0	1.39E-01	6.30E-02	6.30E-03	0	0	0	0	1.09E-05	0	9.67E-05
<b>Output Flows and Waste Categories</b>																
HWD [kg]	6.60E-07	7.29E-12	6.59E-08	0	0	0	7.99E-06	3.63E-06	3.63E-07	0	0	0	0	2.29E-13	0	1.95E-11
NHWD [kg]	2.19E-01	2.20E-04	3.29E-01	0	0	0	6.03E+00	2.74E+00	2.74E-01	0	0	0	0	6.92E-06	0	2.33E+00
HLRW [kg]	9.06E-07	8.62E-09	1.28E-07	0	0	0	1.15E-05	5.21E-06	5.21E-07	0	0	0	0	2.71E-10	0	9.65E-09
ILLRW [kg]	7.57E-04	7.26E-06	1.10E-04	0	0	0	9.62E-03	4.37E-03	4.37E-04	0	0	0	0	2.28E-07	0	8.63E-06
CRU [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MR [kg]	0	0	1.06E-02	0	0	0	1.16E-01	5.30E-02	5.30E-03	0	0	0	0	0	0	0
MER [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCIA results presented below are for 1 m<sup>2</sup> of Stolit Freeform Dark Colors for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>IPCC AR5</b>																
GWP [kg CO <sub>2</sub> eq]	2.22E+00	3.16E-01	1.20E+00	0	0	0	4.10E+01	1.87E+01	1.87E+00	0	0	0	0	1.05E-02	0	9.23E-02
<b>TRACI LCIA Impacts (North America)</b>																
AP [kg SO <sub>2</sub> eq]	9.61E-03	1.55E-03	2.93E-03	0	0	0	1.55E-01	7.04E-02	7.04E-03	0	0	0	0	3.11E-05	0	4.76E-04
EP [kg N eq]	4.30E-04	1.35E-04	2.19E-04	0	0	0	8.62E-03	3.92E-03	3.92E-04	0	0	0	0	3.17E-06	0	2.09E-05
ODP [kg CFC 11 eq]	3.58E-13	8.07E-16	9.42E-14	0	0	0	4.98E-12	2.26E-12	2.26E-13	0	0	0	0	2.69E-17	0	4.41E-15
SFP [kg O <sub>3</sub> eq]	1.08E-01	3.58E-02	2.46E-01	0	0	0	4.29E+00	1.95E+00	1.95E-01	0	0	0	0	7.10E-04	0	8.68E-03
<b>CML 2001-Jan 2016</b>																
ADPF [MJ]	4.84E+01	4.36E+00	2.81E+01	0	0	0	8.90E+02	4.04E+02	4.04E+01	0	0	0	0	1.45E-01	0	1.39E+00
<b>Carbon Emissions and Uptake</b>																
BCRP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCRK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEW [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCE [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWNR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCI results presented below are for 1 m<sup>2</sup> of Stolit Freeform Dark Colors for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>Resource Use Indicators</b>																
RPR <sub>E</sub> [MJ]	3.58E+00	1.75E-01	1.77E+00	0	0	0	6.07E+01	2.76E+01	2.76E+00	0	0	0	0	5.83E-03	0	1.68E-01
RPR <sub>M</sub> [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPR <sub>E</sub> [MJ]	3.67E+01	4.40E+00	8.35E-01	0	0	0	4.61E+02	2.10E+02	2.10E+01	0	0	0	0	1.46E-01	0	1.44E+00
NRPR <sub>M</sub> [MJ]	7.76E+00	0	1.41E+01	0	0	0	2.40E+02	1.09E+02	1.09E+01	0	0	0	0	0	0	0
SM [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW [m <sup>3</sup> ]	1.77E-02	6.01E-04	7.16E-03	0	0	0	2.80E-01	1.27E-01	1.27E-02	0	0	0	0	2.00E-05	0	1.78E-04
<b>Output Flows and Waste Categories</b>																
HWD [kg]	1.13E-09	1.26E-11	-9.19E-	0	0	0	2.45E-09	1.11E-09	1.11E-10	0	0	0	0	4.21E-13	0	3.58E-11
NHWD [kg]	2.49E-01	3.83E-04	5.61E-01	0	0	0	8.92E+00	4.05E+00	4.05E-01	0	0	0	0	1.27E-05	0	4.30E+00
HLRW [kg]	1.61E-06	1.50E-08	3.37E-07	0	0	0	2.16E-05	9.82E-06	9.82E-07	0	0	0	0	4.98E-10	0	1.78E-08
ILLRW [kg]	1.35E-03	1.26E-05	2.96E-04	0	0	0	1.82E-02	8.29E-03	8.29E-04	0	0	0	0	4.19E-07	0	1.59E-05
CRU [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MR [kg]	0	0	1.84E-02	0	0	0	2.02E-01	9.19E-02	9.19E-03	0	0	0	0	0	0	0
MER [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The LCIA results presented below are for 1 m<sup>2</sup> of Stolit Freeform for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>IPCC AR5</b>																
GWP [kg CO <sub>2</sub> eq]	2.33E+00	3.16E-01	6.03E-01	0	0	0	3.57E+01	1.62E+01	1.62E+00	0	0	0	0	9.87E-03	0	8.70E-02
<b>TRACI LCIA Impacts (North America)</b>																
AP [kg SO <sub>2</sub> eq]	1.44E-02	1.55E-03	2.19E-03	0	0	0	1.99E-01	9.05E-02	9.05E-03	0	0	0	0	2.93E-05	0	4.49E-04
EP [kg N eq]	4.48E-04	1.35E-04	1.73E-04	0	0	0	8.31E-03	3.78E-03	3.78E-04	0	0	0	0	2.99E-06	0	1.97E-05
ODP [kg CFC 11 eq]	3.63E-13	8.07E-16	5.45E-14	0	0	0	4.60E-12	2.09E-12	2.09E-13	0	0	0	0	2.53E-17	0	4.16E-15
SFP [kg O <sub>3</sub> eq]	1.13E-01	3.58E-02	2.39E-01	0	0	0	4.26E+00	1.94E+00	1.94E-01	0	0	0	0	6.70E-04	0	8.18E-03
<b>CML 2001-Jan 2016</b>																
ADPF [MJ]	4.99E+01	4.36E+00	1.24E+01	0	0	0	7.33E+02	3.33E+02	3.33E+01	0	0	0	0	1.37E-01	0	1.31E+00
<b>Carbon Emissions and Uptake</b>																
BCRP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEP [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCRK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEK [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEW [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCE [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWNR [kg CO <sub>2</sub> ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



The LCI results presented below are for 1 m<sup>2</sup> of Stolit Freeform for 60 years. Three lifetime scenarios are presented for module of replacement (B4).

Impact Category	A1-A3	A4	A5	B1	B2	B3	Design Life B4	Market-Based Life B4	System Based B4	B5	B6	B7	C1	C2	C3	C4
<b>Resource Use Indicators</b>																
RPR <sub>E</sub> [MJ]	3.74E+00	1.75E-01	8.42E-01	0	0	0	5.24E+01	2.38E+01	2.38E+00	0	0	0	0	5.50E-03	0	1.59E-01
RPR <sub>M</sub> [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPR <sub>E</sub> [MJ]	3.83E+01	4.40E+00	3.55E+00	0	0	0	5.09E+02	2.31E+02	2.31E+01	0	0	0	0	1.38E-01	0	1.35E+00
NRPR <sub>M</sub> [MJ]	7.77E+00	0	4.69E+00	0	0	0	1.37E+02	6.23E+01	6.23E+00	0	0	0	0	0	0	0
SM [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW [m <sup>3</sup> ]	1.86E-02	6.01E-04	3.63E-03	0	0	0	2.51E-01	1.14E-01	1.14E-02	0	0	0	0	1.89E-05	0	1.68E-04
<b>Output Flows and Waste Categories</b>																
HWD [kg]	1.17E-09	1.26E-11	-1.84E-	0	0	0	1.10E-08	4.98E-09	4.98E-10	0	0	0	0	3.97E-13	0	3.38E-11
NHWD [kg]	4.15E-01	3.83E-04	5.75E-01	0	0	0	1.09E+01	4.95E+00	4.95E-01	0	0	0	0	1.20E-05	0	4.05E+00
HLRW [kg]	1.68E-06	1.50E-08	2.34E-07	0	0	0	2.13E-05	9.66E-06	9.66E-07	0	0	0	0	4.69E-10	0	1.67E-08
ILLRW [kg]	1.41E-03	1.26E-05	2.00E-04	0	0	0	1.78E-02	8.11E-03	8.11E-04	0	0	0	0	3.95E-07	0	1.50E-05
CRU [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MR [kg]	0	0	1.84E-02	0	0	0	2.02E-01	9.19E-02	9.19E-03	0	0	0	0	0	0	0
MER [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## » Interpretation

For all the products in study, the majority of the environmental impacts come from the Product Stage, which includes raw material sourcing, transportation and manufacturing. The only exception is SFP whose dominant source is Use & Maintenance Stage because of VOC emission in the curing process. From a functional unit perspective, the lifetime of the product and the coverage rate play a major role in scaling the impacts. This explains why products of coarse finishes have a higher impact than those of fine finishes.

## » Reference

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