

STUDIO

COLLECTION®

A BRAND OF ARISTECH SURFACES LLC



Declaration Owner

Aristech Surfaces LLC
7350 Empire Drive, Florence, Kentucky 41042
+1.800.354.9858
info@aristechsurfaces.com
www.aristechsurfaces.com

Product Line

STUDIO Collection® (translucent and non-translucent) Design Resin
UN CPC 369

Declared Unit

The declared unit is 1 square meter of panel.

EPD Number and Period of Validity

SCS-EPD-05007
EPD Valid June 8, 2018 through June 7, 2023
Version: October 6, 2020

Product Category Rule

Product Category Rule (PCR) for preparing an Environmental Product Declaration (EPD) for Construction Products and CPC 54 Construction Services, v2.2, 2017-05-30



Addendum for Adapting the International EPD® System PCR for use in North America Construction Products and Construction Services
Product Group Classification: Multiple UN CPC Codes, SCS Global Services, September 27, 2017.

CEN standard EN 15804 served as the core PCR

Program Operator

SCS Global Services
2000 Powell Street, Ste. 600, Emeryville, CA 94608
+1.510.452.8000 | www.SCSglobalServices.com



Declaration Owner:	Aristech Surfaces LLC
Address:	7350 Empire Drive, Florence, Kentucky 41042 USA
Declaration Number:	SCS-EPD-05007
Declaration Validity Period:	June 8, 2018 through June 7, 2023
Version Date:	October 6, 2020
Program Operator:	SCS Global Services
Declaration URL Link:	https://www.scsglobalservices.com/certified-green-products-guide
LCA Practitioner:	Jeremie Hakian
LCA Software:	openLCA v1.7 and Ecoinvent v3.4 database
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	<input type="checkbox"/> internal <input checked="" type="checkbox"/> external
LCA Reviewer:	 Thomas Gloria, Ph.D., Industrial Ecology Consultants
Product Category Rule:	Product Category Rule (PCR) for preparing an Environmental Product Declaration (EPD) for Construction Products and CPC 54 Construction Services, v2.2, 2017-05-30
PCR Review conducted by:	The Technical Committee of the International EPD® System. Chair: Massimo Marino Contact via info@environdec.com .
Independent verification of the declaration and data, according to ISO 14025 and the PCR	<input type="checkbox"/> internal <input checked="" type="checkbox"/> external
EPD Verifier:	 Thomas Gloria, Ph.D., Industrial Ecology Consultants
Declaration Contents:	<p>ABOUT ARISTECH SURFACES LLC.....2</p> <p>PRODUCT DESCRIPTION.....2</p> <p>PRODUCT CHARACTERISTICS AND PERFORMANCE.....2</p> <p>MATERIAL COMPOSITION.....4</p> <p>LIFE CYCLE ASSESSMENT STAGES AND REPORTED INFORMATION.....5</p> <p>PRODUCT LIFE CYCLE FLOW DIAGRAM.....6</p> <p>LIFE CYCLE INVENTORY.....8</p> <p>LIFE CYCLE IMPACT ASSESSMENT.....10</p> <p>ADDITIONAL ENVIRONMENTAL INFORMATION.....12</p> <p>SUPPORTING TECHNICAL INFORMATION.....12</p> <p>REFERENCES.....15</p>

Disclaimers: This EPD conforms to ISO 14025, 14040, and 14044.

Scope of Results Reported: The PCR requirements limit the scope of the LCA metrics such that the results exclude environmental and social performance benchmarks and thresholds, and exclude impacts from the depletion of natural resources, land use ecological impacts, ocean impacts related to greenhouse gas emissions, risks from hazardous wastes and impacts linked to hazardous chemical emissions.

Accuracy of Results: Due to PCR constraints, this EPD provides estimations of potential impacts that are inherently limited in terms of accuracy.

Comparability: The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.

ABOUT ARISTECH SURFACES LLC

Aristech Surfaces LLC produces and internationally markets its flagship brands: Avonite Surfaces® solid surface, STUDIO Collection® design resin, and Aristech Acrylics® acrylic sheet. Aristech provides first quality, environmentally responsible, high-end aesthetic solutions sought by architects, designers, fabricators, OEMs and building owners around the globe. We continually strive to improve our energy and water efficiency, landfill diversion, and air quality, using performance metrics we measure and report. Recent and ongoing environmental initiatives include conversion to LED lighting at our plants and offices, proactive recycling of office and industrial materials, high-efficiency motor upgrades to machine drives, industrial water filtration and recycling systems and thermal oxidizing units with heat recovery to reduce VOC emissions. Aristech is a member of the U.S. Green Building Council, and the American Chemistry Council's Responsible Care®, pledged to improve and report our progress on the health and safety of our employees, our communities and our environment.

PRODUCT DESCRIPTION

Luxurious design resin material meets inspired innovation in the STUDIO Collection®. Highly workable, durable and thermoformable, this collection expands the spectrum of design resins with brilliant chromas, natural neutrals and sparkling metallics that look and feel like nothing you've seen, and everything you desire. Crafted from a proprietary resin blend, this premier design resin line stands out from all other surface choices for its unique combination of transparent, translucent and opaque polymers blended to create an endless world of design possibilities. Color outside the lines with the Chromatix™ custom color matching program from the STUDIO Collection®.

STUDIO Collection® is available in 36 in (914 mm) x 120 in (3,048 mm) 0.5 in (12 mm) sheets; certain colors and patterns contain up to 40% pre-consumer recycled content.

PRODUCT CHARACTERISTICS AND PERFORMANCE

Table 1. Product characteristics for translucent STUDIO Collection®.

Characteristic	Nominal Value	Unit
Sheet thickness	12 (0.50)	mm (inch)
Sheet length	3,048 (120)	mm (inch)
Sheet width	914 (36.0)	mm (inch)
Sheet weight	15.5 (3.17)	kg/m ² (lb/ft ²)
VOC Emissions Test Method	Indoor Advantage Gold™	-

Table 2. Product characteristics for non- translucent STUDIO Collection®.

Characteristic	Nominal Value	Unit
Sheet thickness	12 (0.50)	mm (inch)
Sheet length	3,048 (120)	mm (inch)
Sheet width	914 (36.0)	mm (inch)
Sheet weight	20.59 (4.22)	kg/m ² (lb/ft ²)
VOC Emissions Test Method	Indoor Advantage Gold™	-

Table 3. Product specifications and performance test results for STUDIO Collection®.

Properties	Unit	Translucent	Non-Translucent	Test Method
General				
Nominal Thickness	mm	12	12	-
Density	g/cm ³	1.30	1.60	ASTM D-792
Water Absorption (24hrs.)	%	0.04	0.05	ASTM D-570
Mechanical				
Tensile Strength	psi	2,300	3,300	ASTM D-638
Tensile Modulus	psi	660,000	1,039,000	ASTM D-638
Tensile Elongation	%	0.34	0.65	ASTM D-638
Flexural Strength	psi	4,100	5,570	ASTM D-790
Flexural Modulus	psi	655,000	976,000	ASTM D-790
Barcol Hardness	-	48	53	ASTM D-2583
Rockwell Hardness (M Scale)	-	104	98	ASTM D-785
Charpy Impact	ft-lbs/inch	0.50	0.70	ASTM D-6110
Ball impact (1/2 lb. ball, no failure) Supported	inches	>150	>150	NEMA LD3-3.8
Ball Impact (1/2 l. ball, no failure) Un-supported	inches	54	96	NEMA LD3-3.8
Thermal				
DTUL @ 264 psi	°F	161	170	ASTM D-648
Coefficient of Thermal Expansion	in/in °F	2.9x10 ⁻⁵	2.1x10 ⁻⁵	ASTM D-696
Boiling Water Resistance	-	No Effect	No Effect	ISFA 2-01
High Temperature Resistance	-	No Effect	No Effect	ISFA 2-01
Flame Spread Index	-	180	20	ASTM E-84
Combustion Toxicity	-	19.3	62.3	Pittsburgh Protocol
Total Volatile Organic Compounds	µg/m ² /hr	13.9	3.9	ASTM D-5116
Surface				
Consistency of Color (Same Sheet)	-	Passes	Passes	ISFA 2-01
Light Resistance	-	No Effect	No Effect	ISFA 2-01
Cleanability/Stain Resistance	-	Passes	Passes	NEMA LD3-3.4
Stain Resistance	-	Passes	Passes	ANZI/ICPA SS-1
Bacterial Resistance	-	No Growth	No Growth	ASTM G-22
Fungi Resistance	-	No Growth	No Growth	ASTM G-21
Food Zone Use	-	Approved	Approved	NSF 51

MATERIAL COMPOSITION

Table 4. Material composition of translucent STUDIO Collection® by mass (kg) and as a percentage of total mass.

Material	Amount in Final Product (kg/m ²)	Percent of Total
Product		
Polyester resin	11.9	77%
Alumina trihydrate	3.31	21%
Other Ingredients (Confidential)	0.256	2.0%
Total	15.5	100%
Packaging		
Wood	4.76	97%
Corrugated board	0.140	2.9%
Total	4.90	100%

Table 5. Material composition of non- translucent STUDIO Collection® by mass (kg) and as a percentage of total mass.

Material	Amount in Final Product (kg/m ²)	Percent of Total
Product		
Polyester resin	11.8	57%
Alumina trihydrate	8.47	41%
Other Ingredients (Confidential)	0.360	2.0%
Total	20.6	100%
Packaging		
Wood	4.76	97%
Corrugated board	0.140	2.9%
Total	4.90	100%



Restaurant/Bar, "Shoeless Joe's Sports Grill – Vaughan, ON – Fabricator, Contours"

LIFE CYCLE ASSESSMENT STAGES AND REPORTED INFORMATION

In accordance with the PCR, the life cycle stages included in this EPD are as shown below (X = included, MND = module not declared).

Product			Construction Process		Use							End-of-Life				Benefits & Loads Beyond the System Boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw Materials	Transport	Manufacturing	Transport	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, recovery, and/or recycling potential
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

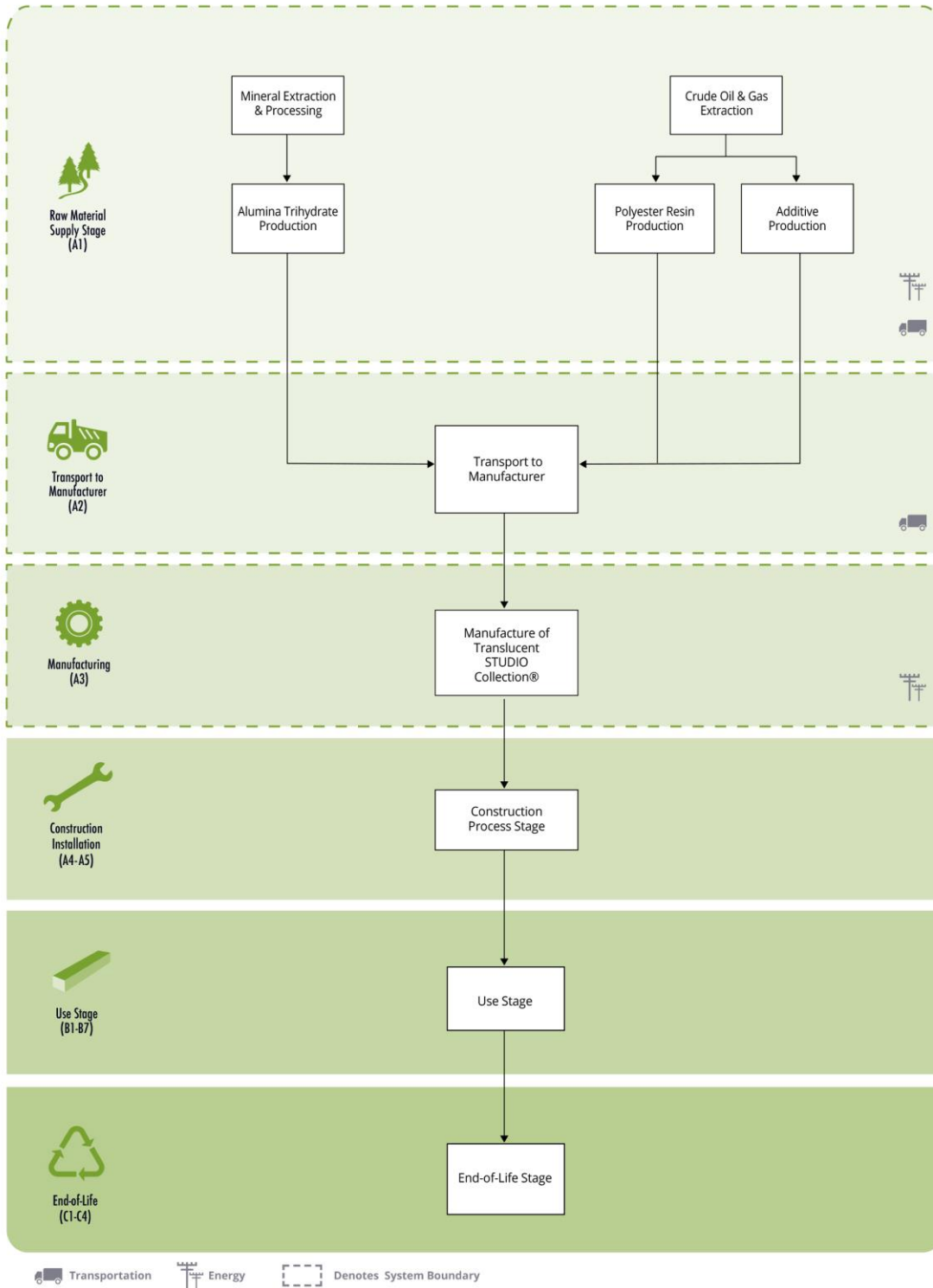
X = included, MND = module not declared

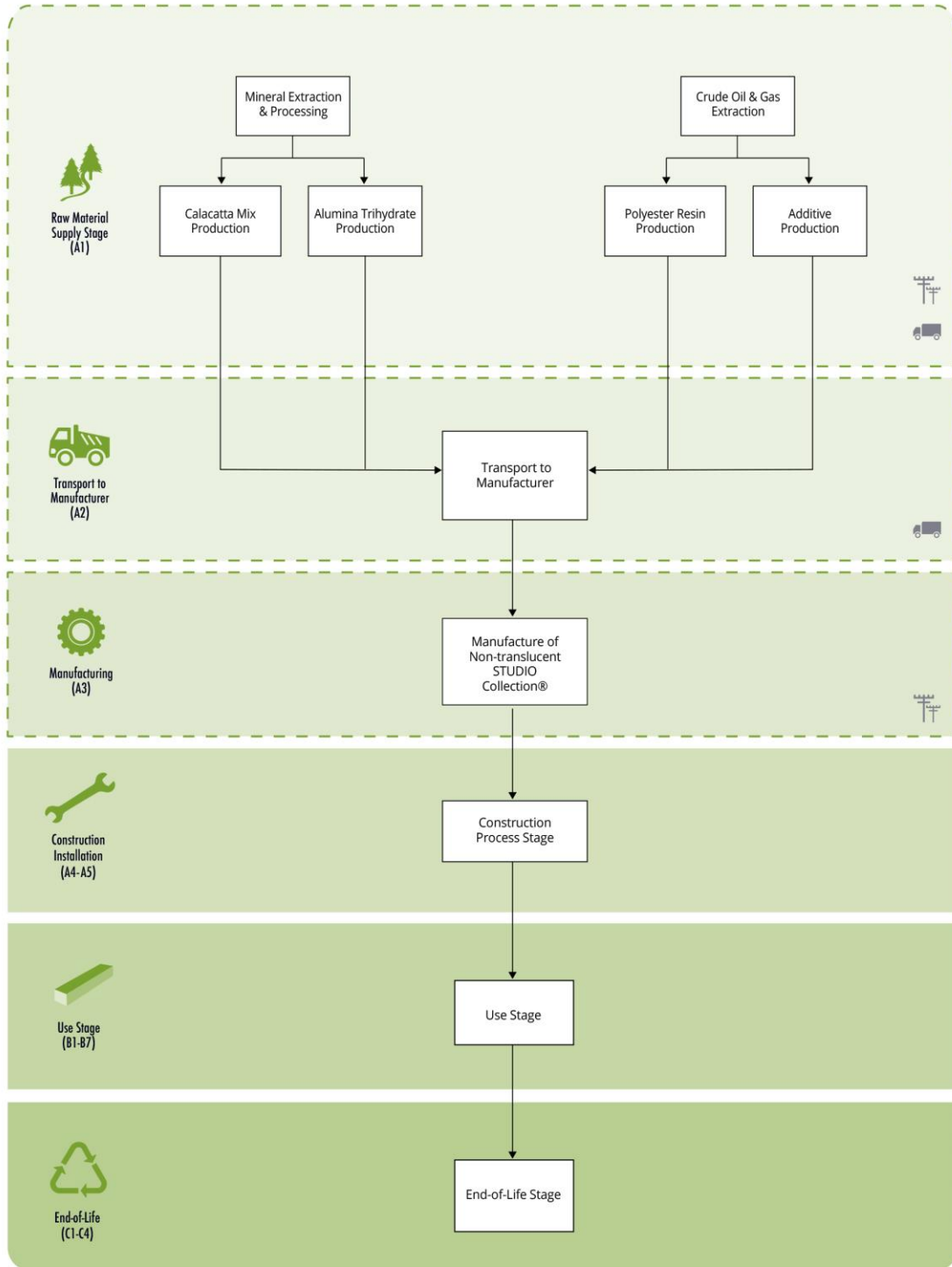


Food Service – Specialty Cake Shop, Albuquerque, New Mexico

PRODUCT LIFE CYCLE FLOW DIAGRAM

The diagrams below are a representation of the most significant contributions to the life cycle of translucent and non-translucent STUDIO Collection® products. This EPD includes material acquisition and pre-processing, transportation, and product manufacture.





 Transportation
  Energy
  Denotes System Boundary

LIFE CYCLE INVENTORY

The life cycle inventory (LCI) flows for the EPD are shown below in accordance with the requirements of the PCR.

Table 6. Resource use results for 1 m² translucent STUDIO Collection®.

Parameter	Unit	Module A1	Module A2	Module A3	Total
		Sourcing/ Extraction	Transport	Manufacturing	
Use of renewable primary energy excluding the renewable primary energy resources used as raw materials [PERE]	MJ	88	0.49	44	130
		67%	0.37%	33%	100%
Use of renewable primary energy resources used as raw materials [PERM]	MJ	0	0	55	55
		0.0%	0.0%	100%	100%
Total use of renewable primary energy resources [PERT]	MJ	88	0.49	99	190
		47%	0.26%	53%	100%
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials [PENRE]	MJ	1,100	37	340	1,500
		74%	2.6%	24%	100%
Use of non-renewable primary energy resources used as raw materials [PENRM]	MJ	INA	INA	INA	INA
Total use of non-renewable primary energy resources [PENRT]	MJ	1,100	37	340	1,500
		74%	2.6%	24%	100%
Use of secondary materials [SM]	kg	0	0	0	0
Use of renewable secondary fuels [RSF]	MJ	INA	INA	INA	INA
Use of non-renewable secondary fuels [NRSF]	MJ	INA	INA	INA	INA
Net use of fresh water resources [FW]	m ³	5.0	2.4x10 ⁻²	2.4	7.5
		68%	0.32%	32%	100%

INA = Indicator Not Assessed

Table 7. Resource use results for 1 m² non-translucent STUDIO Collection®.

Parameter	Unit	Module A1	Module A2	Module A3	Total
		Sourcing/ Extraction	Transport	Manufacturing	
Use of renewable primary energy excluding the renewable primary energy resources used as raw materials [PERE]	MJ	28	0.88	58	87
		32%	1.0%	67%	100%
Use of renewable primary energy resources used as raw materials [PERM]	MJ	0	0	55	55
		0.0%	0.0%	100%	100%
Total use of renewable primary energy resources [PERT]	MJ	28	0.88	110	140
		20%	0.62%	80%	100%
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials [PENRE]	MJ	600	67	460	1,100
		54%	6.0%	40%	100%
Use of non-renewable primary energy resources used as raw materials [PENRM]	MJ	INA	INA	INA	INA
Total use of non-renewable primary energy resources [PENRT]	MJ	600	67	460	1,100
		54%	6.0%	40%	100%
Use of secondary materials [SM]	kg	0	0	0	0
Use of renewable secondary fuels [RSF]	MJ	INA	INA	INA	INA
Use of non-renewable secondary fuels [NRSF]	MJ	INA	INA	INA	INA
Net use of fresh water resources [FW]	m ³	2.8	4.3x10 ⁻²	3.2	6.0
		46%	0.72%	53%	100%

INA = Indicator Not Assessed

Table 8. Waste and outflow results for 1 m² translucent STUDIO Collection®.

Parameter	Unit	Module A1	Module A2	Module A3	Total
		Sourcing/ Extraction	Transport	Manufacturing	
Hazardous waste disposed [HWD]	kg	1.1x10 ⁻³ 2.1%	2.4x10 ⁻⁵ 0.050%	5.1x10 ⁻² 98%	5.2x10 ⁻² 100%
Non-hazardous waste disposed [NHWD]	kg	7.8 60%	1.9 14%	3.4 26%	13 100%
Radioactive waste disposed [RWD]	kg	2.0x10 ⁻³ 47%	2.7x10 ⁻⁴ 6.2%	2.0x10 ⁻³ 47%	4.3x10 ⁻³ 100%
Components for re-use [CRU]	kg	0	0	0	0
Materials for recycling [MFR]	kg	0 0.0%	0 0.0%	0.12 100%	0.12 100%
Materials for energy recovery [MER]	kg	INA	INA	INA	INA
Exported energy [EEE]	MJ	INA	INA	INA	INA
Use of renewable material resources [RMR]	kg	INA	INA	2.7 100%	2.7 100%

INA = Indicator Not Assessed

Table 9. Waste and outflow results for 1 m² non-translucent STUDIO Collection®.

Parameter	Unit	Module A1	Module A2	Module A3	Total
		Sourcing/ Extraction	Transport	Manufacturing	
Hazardous waste disposed [HWD]	kg	6.2x10 ⁻⁴ 0.90%	4.4x10 ⁻⁵ 0.060%	6.8x10 ⁻² 99%	6.9x10 ⁻² 100%
Non-hazardous waste disposed [NHWD]	kg	7.2 48%	3.4 22%	4.6 30%	15 100%
Radioactive waste disposed [RWD]	kg	1.1x10 ⁻³ 25%	4.8x10 ⁻⁴ 11%	2.7x10 ⁻³ 64%	4.3x10 ⁻³ 100%
Components for re-use [CRU]	kg	0	0	0	0
Materials for recycling [MFR]	kg	0 0.0%	0 0.0%	0.16 100%	0.16 100%
Materials for energy recovery [MER]	kg	INA	INA	INA	INA
Exported energy [EEE]	MJ	INA	INA	INA	INA
Use of renewable material resources [RMR]	kg	INA	INA	2.7 100%	2.7 100%

INA = Indicator Not Assessed



Healthcare – Porter Ranch Medical Plaza, Reception Desk

LIFE CYCLE IMPACT ASSESSMENT

The life cycle impact assessment (LCIA) for the EPD is conducted in accordance with requirements of the PCR. Impact category indicators are estimated using the TRACI 2.1 and CML-IA baseline characterization methods. The LCIA results are calculated using openLCA 1.7 software.

Table 10. Cradle-to-Gate CML-IA Life Cycle Impact Assessment Results for 1 m² translucent STUDIO Collection®.

Impact category	Unit	Module A1	Module A2	Module A3	Total
		Sourcing/Extraction	Transport	Manufacturing	
Global Warming Potential (GWP-100)	kg CO ₂ eq	87	2.6	32	120
		72%	2.2%	26%	100%
Acidification Potential	kg SO ₂ eq	0.33	1.0x10 ⁻²	6.8x10 ⁻²	0.41
		81%	2.5%	17%	100%
Eutrophication Potential	kg PO ₄ ³⁻ eq	0.16	2.3x10 ⁻³	4.3x10 ⁻²	0.20
		78%	1.2%	21%	100%
Photochemical Ozone Creation Potential	kg C ₂ H ₄ eq	0.13	4.4x10 ⁻⁴	4.8x10 ⁻³	0.13
		96%	0.33%	3.6%	100%
Ozone Depletion Potential	kg CFC-11 eq	9.6x10 ⁻⁶	4.7x10 ⁻⁷	3.0x10 ⁻⁶	1.3x10 ⁻⁵
		74%	3.7%	23%	100%
Abiotic Resource Depletion (Elements)	kg Sb eq	3.6x10 ⁻⁴	7.8x10 ⁻⁶	1.9x10 ⁻⁵	3.9x10 ⁻⁴
		93%	2.0%	4.9%	100%
Abiotic Resource Depletion (Fossil)	MJ	1,400	39	430	1,800
		74%	2.1%	23%	100%

Table 11. Cradle-to-Gate CML-IA Life Cycle Impact Assessment Results for 1 m² non-translucent STUDIO Collection®.

Impact category	Unit	Module A1	Module A2	Module A3	Total
		Sourcing/Extraction	Transport	Manufacturing	
Global Warming Potential (GWP-100)	kg CO ₂ eq	52	4.7	42	99
		53%	4.7%	43%	100%
Acidification Potential	kg SO ₂ eq	0.21	1.8x10 ⁻²	9.1x10 ⁻²	0.32
		66%	5.7%	28%	100%
Eutrophication Potential	kg PO ₄ ³⁻ eq	8.7x10 ⁻²	4.2x10 ⁻³	5.7x10 ⁻²	0.15
		59%	2.9%	38%	100%
Photochemical Ozone Creation Potential	kg C ₂ H ₄ eq	1.6x10 ⁻²	7.9x10 ⁻⁴	6.3x10 ⁻³	2.3x10 ⁻²
		69%	3.4%	28%	100%
Ozone Depletion Potential	kg CFC-11 eq	5.5x10 ⁻⁶	8.5x10 ⁻⁷	3.9x10 ⁻⁶	1.0x10 ⁻⁵
		53%	8.3%	38%	100%
Abiotic Resource Depletion (Elements)	kg Sb eq	2.0x10 ⁻⁴	1.4x10 ⁻⁵	2.5x10 ⁻⁵	2.4x10 ⁻⁴
		84%	5.7%	10%	100%
Abiotic Resource Depletion (Fossil)	MJ	780	70	570	1,400
		55%	5.0%	40%	100%

Table 12. Cradle-to-Gate TRACI 2.1 Life Cycle Impact Assessment Results for 1 m² translucent STUDIO Collection®.

Impact category	Unit	Module A1	Module A2	Module A3	Total
		Sourcing/Extraction	Transport	Manufacturing	
Global Warming Potential (GWP-100)	kg CO ₂ eq	91	2.6	33	130
		72%	2.05%	26%	100%
Acidification Potential	kg SO ₂ eq	0.33	1.2x10 ⁻²	7.8x10 ⁻²	0.42
		78%	2.8%	19%	100%
Eutrophication Potential	kg N eq	0.27	2.9x10 ⁻³	8.5x10 ⁻²	0.36
		76%	0.79%	24%	100%
Photochemical Ozone Creation Potential	kg O ₃ eq	4.1	0.28	1.3	5.7
		72%	4.9%	23%	100%
Ozone Depletion Potential	kg CFC-11 eq	1.1x10 ⁻⁵	6.3x10 ⁻⁷	3.8x10 ⁻⁶	1.5x10 ⁻⁵
		71%	4.2%	25%	100%

Table 13. Cradle-to-Gate TRACI 2.1 Life Cycle Impact Assessment Results for 1 m² non-translucent STUDIO Collection®.

Impact category	Unit	Module A1	Module A2	Module A3	Total
		Sourcing/Extraction	Transport	Manufacturing	
Global Warming Potential (GWP-100)	kg CO ₂ eq	53	4.7	44	100
		52%	4.58%	44%	100%
Acidification Potential	kg SO ₂ eq	0.21	2.1x10 ⁻²	0.10	0.33
		63%	6.4%	31%	100%
Eutrophication Potential	kg N eq	0.16	5.1x10 ⁻³	0.11	0.28
		57%	1.9%	41%	100%
Photochemical Ozone Creation Potential	kg O ₃ eq	2.3	0.50	1.8	4.5
		50%	11%	39%	100%
Ozone Depletion Potential	kg CFC-11 eq	6.0x10 ⁻⁶	1.1x10 ⁻⁶	5.0x10 ⁻⁶	1.2x10 ⁻⁵
		49%	9.3%	41%	100%



Retail – Boots Perfumery, retail shelving

ADDITIONAL ENVIRONMENTAL INFORMATION



INDOOR ADVANTAGE GOLD
BUILDING MATERIALS

The STUDIO Collection® product line is certified Indoor Advantage Gold™ by SCS Global Services (SCS-IAQ-04802), which conforms to the CDPH/EHLB Standard Method (CA 01350) v1.2-2017. The measured concentration of total volatile organic compounds (TVOC) less than or equal to 0.5 mg/m³.



MINIMUM 40% RECYCLED CONTENT
PRE-CONSUMER

Several STUDIO Collection® products are certified Recycled Content™ by SCS Global Services (SCS-MC-01332), which conforms to SCS Recycled Content Standard v7-0, for an average minimum 40% pre-consumer recycled polymer content. The material quantification is calculated by a mass-balance on a dry-weight basis.



The STUDIO Collection® product line is certified NSF/ANSI 51 by NSF International (Certificate #: 02932-02), which establishes the minimum health and sanitation requirements for materials used in the making of commercial food equipment. The product line materials were assessed, for use only as a table or countertop, to not contaminate all food contact types with a maximum temperature of use of 300 °F.

The STUDIO Collection® product line is represented by a self-declared Health Product Declaration, prepared in accordance to the Health Product Declaration® Open Standard Version 1.0 (December 15, 2012). The content of the product was assessed for health hazard warnings as required using MSDS (1,000 & 10,000 ppm). This product is pending an updated HPD in conformance to the Health Product Declaration® Open Standard, Version 2.1 (May 1, 2017). The updated HPD is planned to undergo a third-party verification upon completion.

For more information and to access all certifications and sustainability initiatives, please visit:

<http://www.aristechsurfaces.com/studio/technical-library>

SUPPORTING TECHNICAL INFORMATION

Unit processes are developed with openLCA 1.7 software, drawing upon data from multiple sources. Primary data were provided by Aristech Surfaces for their manufacturing process and upstream transportation. The primary source of secondary LCI data is from the Ecoinvent Database.

Table 14. Data sources used for the LCA study.

Flow	Dataset	Data Source	Database Year
Product Materials			
Alumina trihydrate	aluminium hydroxide production aluminium hydroxide Cutoff, U - GLO	Ecoinvent 3.4	2017
Polyester resin	polyester resin production, unsaturated polyester resin, unsaturated Cutoff, U - RoW	Ecoinvent 3.4	2017
Packaging			
Cardboard slips	corrugated board box production corrugated board box Cutoff, U - RoW	Ecoinvent 3.4	2017
Wooden Pallet	EUR-flat pallet production EUR-flat pallet Cutoff, U - RoW	Ecoinvent 3.4	2017
Electricity/Heat/Resources for Manufacturing			
Electricity	Electricity, medium voltage, at grid/AZNM 2016 U	Ecoinvent 3.4; eGRID2016	2017; 2018
Natural Gas	market for heat, district or industrial, natural gas heat, district or industrial, natural gas Cutoff, U - RoW	Ecoinvent 3.4	2017
Propane	market for propane, burned in building machine propane, burned in building machine Cutoff, U - GLO	Ecoinvent 3.4	2017
Water	market for tap water tap water Cutoff, U - RoW	Ecoinvent 3.4	2017
Transportation			
Road	market for transport, freight, lorry 16-32 metric ton, EURO4 transport, freight, lorry 16-32 metric ton, EURO4 Cutoff, U - GLO	Ecoinvent 3.4	2017

Allocation

Resource use at the Belen, New Mexico facility (e.g., water and energy) was allocated to the product based on the product mass as a fraction of the total facility productions.

Impacts from transportation were allocated based on the mass of material and distance transported.

Cut-off criteria

According to the PCR, mass and energy flows that consist of less than 1% may be omitted from the inventory analysis. Cumulative omitted mass or energy flows shall not exceed 5%. In the present study, except as noted, all known materials and processes were included in the life cycle inventory.

System boundaries

The EPD for STUDIO Collection® is cradle-to-gate (i.e., Production Stage). The system boundaries for this study are as follows:

- **Sourcing/extraction stage (A1)** – This stage includes extraction of all raw materials and any relevant processing prior to being transported to the manufacturing facility. Resource use and emissions associated with these processes are included.
- **Transport stage (A2)** – This stage includes the impacts associated with the transport of the processed raw materials to the manufacturing facility.
- **Manufacturing stage (A3)** – This stage includes all the relevant manufacturing processes and flows, including the impacts from energy use and emissions at the facility. Production of capital goods, infrastructure, manufacturing equipment, and personnel-related activities are not included. This stage also includes the production of the product packaging materials.

Data Quality

Data Quality Parameter	Data Quality Discussion
Time-Related Coverage: Age of data and the minimum length of time over which data is collected	The most recent available data are used, based on other considerations such as data quality and similarity to the actual operations. Typically, these data are representative of 2016 or more recent. All of the data used represented an average of at least one year's worth of data collection, and up to three years in some cases. Manufacturer-supplied data (primary data) are based on annual production for 2017.
Geographical Coverage: Geographical area from which data for unit processes is collected to satisfy the goal of the study	The data used in the analysis provide the best possible representation available with current data. Actual processes for upstream operations are primarily North American. Surrogate data used in the assessment are representative of North American or European operations. Data representative of European operations are considered sufficiently similar to actual processes.
Technology Coverage: Specific technology or technology mix	For the most part, data are representative of the actual technologies used for processing, transportation, and manufacturing operations. Representative material datasets are used to represent the actual processes where needed.
Precision: Measure of the variability of the data values for each data expressed	Precision of results are not quantified due to a lack of data. Data collected for operations were typically averaged for one or more years and over multiple operations, which is expected to reduce the variability of results.
Completeness: Percentage of flow that is measured or estimated	The LCA model included all known mass and energy flows for production of product. In some instances, surrogate data used to represent upstream and downstream operations may be missing some data which is propagated in the model. No known processes or activities contributing to more than 1% of the total environmental impact for each indicator are excluded. In total, these missing data represent less than 5% of the mass or energy flows.
Representativeness: Qualitative assessment of the degree to which the data set reflects the true population of interest	Data used in the assessment represent typical or average processes as currently reported from multiple data sources, and are therefore generally representative of the range of actual processes and technologies for production of these materials. Considerable deviation may exist among actual processes on a site-specific basis; however, such a determination would require detailed data collection throughout the supply chain back to resource extraction.
Consistency: Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	The consistency of the assessment is considered to be high. Data sources of similar quality and age are used taken from Ecoinvent v3.4. Different portions of the product life cycle are equally considered.
Reproducibility: Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Based on the description of data and assumptions used, this assessment would be reproducible by other practitioners. All assumptions and data sources are documented.
Sources of the Data: Description of all primary and secondary data sources	Data representing energy use at the manufacturing facility represent an annual average and are considered of high quality due to the length of time over which these data are collected, as compared to a snapshot that may not accurately reflect fluctuations in production. The Ecoinvent v3.4 database is used for secondary LCI datasets.
Uncertainty of the Information: Uncertainty related to data, models, and assumptions	Uncertainty related to materials in the product and packaging is low. Actual supplier data for upstream operations was not available for suppliers and the study relied upon the use of existing representative datasets. These datasets contained relatively recent data (<10 years), but lacked geographical representativeness. Uncertainty related to the impact assessment methods used in the study are high. The impact assessment method required by the PCR includes impact potentials, which lack characterization of providing and receiving environments or tipping points.

REFERENCES

1. Addendum for Adapting the International EPD® System PCR for use in North America. Construction Products and Construction Services. Product Group Classification. SCS Global Services. September 27, 2017.
2. ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA, 19428-2959 USA.
<http://www.astm.org/Standard/index.shtml>
3. CML-IA Characterization Factors. Institute of Environmental Sciences. Leiden University. Netherlands.
4. Ecoinvent Centre (2017) Ecoinvent data from v3.4. Swiss Center for Life Cycle Inventories, Dubendorf, 2017,
<http://www.ecoinvent.org>
5. ISO 14025: 2006 Environmental labels and declarations – Type III environmental declarations – Principles and Procedures
6. ISO 14040: 2006 Environmental Management – Life cycle assessment – Principles and framework
7. ISO 14044: 2006 Environmental Management – Life cycle assessment – Requirements and Guidelines.
8. ISO 21930: 2007 Sustainability in building construction – Environmental declaration of building products.
9. Product Category Rule for Construction Products and Construction Services. Product Group Classification: Multiple UN CPC Codes. International EPD® System. 2012:01. Version 2.2. May 2017.
10. SCS Global Services. Life Cycle Assessment of STUDIO Collection®. April 2018. Final Report. Prepared for Aristech Surfaces LLC.
11. SCS Type III Environmental Declaration Program: Program Operator Manual v9.0. January 2018. SCS Global Services
12. Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI). Version 2.1. US Environmental Protection Agency.
13. Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B., 2016. The ecoinvent database version 3 (part I): overview and methodology. *The International Journal of Life Cycle Assessment*, [online] 21(9), pp.1218–1230. Available at: <http://link.springer.com/10.1007/s11367-016-1087-8>

STUDIO
COLLECTION®
A BRAND OF ARISTECH SURFACES LLC

For more information contact:



7350 Empire Drive, Florence, Kentucky 41042
+1.800.354.9858 | info@aristechsurfaces.com
www.aristechsurfaces.com



SCS Global Services

2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA
Main +1.50.452.8000 | fax +1.510.452.8001