



## Product Description

3M™ FASARA™ Glass Finishes (the "Products") are decorative glass and window films available in over 100 designs. These decorative Products can be used in vertical applications in commercial buildings to control both light and privacy through a building's interior glass, including the interior of an outside glass wall (the "Interior Applications"). These Products have a clear, pressure-sensitive adhesive that can be applied to glass. The current Product line can be found in the 3M™ Glass Finishes Product Catalog (the "Catalog").

### IMPORTANT NOTE

Please refer to the 3M™ FASARA™ Installation Guide for additional information on wet application.

### Featured Benefits

- Based on a durable polyester film with a pressure-sensitive adhesive backing
- Privacy - capture the look of custom etched or sandblasted glass over a wide range of visible light transmission
- Designs - choose from a variety of designs created in collaboration with leading designers from across the globe
- New designs with an embossed textured surface add a dimensional effect
- Easy Application - wet application virtually eliminates bubbles, simplifying and speeding application
- Expected performance life of 5-20 years for indoor, vertical applications on non-perimeter glass, depending on the design

## Product Characteristics

The values in this table are typical, and are based on test data deemed reliable but are not warranted.

Characteristic		Value	
Material	Film	Polyester*	
	Adhesive	Pressure-sensitive acrylic, permanent	
	Release Liner	Silicone-coated polyester	
Thickness	Film + Adhesive	3.3 mils (85 microns) (approx.) See Table A.	
	Release Liner	1 mil (25 microns)	
Maximum Roll Size	Standard	50 in. x 98.4 ft. (1270mm x 30m)	
	Cloud, Mat Crystal-i, Milky Milky, Oslo, Fine Crystal, Frost Walnut, Frost Walnut Smoke, Pyrgos	60 in. x 98.4 ft. (1524mm x 30m)	
	Milky White	60 in. x 196.8 ft. (1524mm x 60m)	
	Emboss Series	48 in. x 98.4 ft. (1220mm x 30m)	
Maximum Sheet Size		<b>Pattern Area Size on Sheet (width x height)**</b>	<b>Sheet Size (width x height)**</b>
	Illumina Silky-W	47.6 in. x 94.4 in. (1210mm x 2400mm)	50.0 in. x 98.0 in. (1270mm x 2490mm)
		57.0 in. x 94.4 in. (1450mm x 2400mm)	60.0 in. x 98.0 in. (1524mm x 2490mm)
	Illumina Silky-S	47.6 in. x 74.8 in. (1210mm x 1900mm)	50.0 in. x 77.9 in. (1270mm x 1980mm)
		57.0 in. x 74.8 in. (1450mm x 2400mm)	60.0 in. x 77.9 in. (1524mm x 1980mm)
	Maximum Weight	35 lb. (16 kg) (approx.) for a 50 in. x 98.4 ft. roll	

\* Exterior Mat Crystal 2, Milky Crystal, and Emboss Series contain Polyester and Polyvinyl Chloride.

\*\* Note: The Pattern Area Size is smaller than the Sheet Size. The unprinted edges need to be trimmed when installed.

## Product Performance

The values in this table are typical, and are based on test data deemed reliable but are not warranted.

Characteristics	Value
<b>Adhesion 24 hours after application*</b>	Glass: 1.6 lb/in. (7.0 N/25 mm)
<b>Tensile Strength</b>	45 - 90 lb/in. (200 - 400 N/25 mm)
<b>Fire Resistance</b>	When used in Interior Applications on glass, all patterns have Class A fire rating per ASTM E84(as defined in NFPA 101 "Life Safety Code").
<b>Industry-Specific Testing</b>	IMO Certification/USCG Type Approval
<b>Heat Transmission Coefficient</b>	6 W/m <sup>2</sup> K, all products
<b>UV Blocking</b>	Blocks at least 99% of UV light to reduce the discoloring (fading caused by sunlight) of furniture and other items.

\* Test specimens were applied to the substrate and conditioned at 68 F (20 C), then peel tested at 180 degree at a tensile speed of 12 inches (300 mm) per minute.

### Optical Performance Characteristics Definitions

**Shading coefficient:** Measurement of sun-blocking effect, based on the percentage of sunlight passing through the Product applied to transparent glass, where the value "1" represents the amount of sunlight passing through 0.12 inch (3mm) thick transparent glass with no film applied. Lower shading coefficient numbers represent greater shading effect.

**Transmittance, reflectance and absorbance:** Measurement of the respective rates at which UV (ultraviolet), brightness (visible light), and heat (sunlight) are transmitted, reflected, or absorbed.

**Heat transmittance:** Measurement of the ease of heat escape caused by a temperature difference between interior and exterior, based on the amount of heat that would escape in 1 hour from a surface area of 10.8 square feet (1m<sup>2</sup>) when there is a temperature difference of 34°F (1°C).

**Table A.** Optical Performance Characteristics for All Product Designs. The optical values are calculated as theoretical values and compiled with existing data. In patterned Product designs, the value is an average across the pattern. The values in this table are typical, and are based on test data deemed reliable but are not warranted.

	Product Design	Thickness Film + adhesive (microns)	Shading Coefficient	Solar Heat (%)			Visible Light (%)		UV (%)
				Reflectance	Transmittance	Absorbance	Reflectance	Transmittance	Transmittance
New Designs	<b>Cloud Patterns</b>								
	Cloud Narrow (SH2FGCN)	93	0.93	9.2	77	13.8	10.8	83.4	0
	Cloud Narrow blue gray (SH2FGCNB)	92	0.84	7.5	63.6	28.9	8.1	66.2	0
	Cloud Narrow dark gray (SH2FGCND)	92	0.79	7	56.7	36.3	7.6	59.4	0
	Cloud Narrow light gray (SH2FGCNL)	93	0.88	7.9	69.5	22.6	8.7	73	0
	<b>Milky Milky Patterns</b>								
	Milky Milky blue gray (SH2MAMMB)	95	0.77	10.5	55.3	34.2	11	54.9	0
	Milky Milky dark gray (SH2MAMMD)	93	0.74	9.7	51.1	39.2	10.3	51.4	0
	Milky Milky light gray (SH2MAMML)	93	0.79	11.2	58.5	30.3	12.3	61	0
	<b>Embossed Patterns</b>								
	Cross Hairline blue gray (SH2CHMAB)	129	0.83	6.7	61.6	31.7	6.8	61.2	0
	Cross Hairline light gray (SH2CHMAL)	126	0.78	6.4	54.7	38.9	6.4	51.1	0
	Cross Hairline Matte (SH2CHMA)	126	0.96	7.9	80.8	11.3	8.7	89.6	0
	Cross Hairline Milky (SH2CHML)	125	0.52	28.8	31.4	39.8	38.8	26.4	0
	Cross Hairline Sucre (SH2CHSC)	127	0.77	14.5	58	27.5	18.8	56.7	0
	Hairline Matte (SH2HLMMA)	126	0.96	8.4	80.7	10.9	9.5	89.8	0
	Mosaic Matte (SH2SMMA)	125	0.96	8.4	80.5	11.1	9.1	88.2	0
	Wave Matte (SH2LWMA)	128	0.96	7.5	80.6	11.9	8.2	90	0
Gradation	Aerina (SH2FGAR)	81	0.91	12	76	13	13	79	0
	Cloud (SH2FGCL)	90	0.87	11	70	19	13	73	0.1
	Diamond (SH2FGDM)	80	0.76	16	58	26	20	58	0
	Diamond reflect (SH2SIDR)	77	0.56	37	43	20	43	43	0
	Diamond Ghost reflect (SH2SIDGR)	77	0.36	60	27	14	69	27	0
	Illumina Alpha (SH4FGMIX)	153	0.8	16	63	21	22	65	0.4
	Illumina Silky S (SH2SSIM-S)	78	0.66	32	53	16	40	48	0.1
	Illumina Silky W (SH2SSIM-W)	78	0.7	29	57	14	36	54	0.1
	Illumina Silver (SH2SIIM)	77	0.44	50	33	17	59	36	0
	Illumina Black (SH2BKIM)	79	0.52	6	19	75	6	20	0
	Lontano (SH2FGLO)	81	0.74	20	57	23	22	61	0
	Sabrina (SH2FGSB)	90	0.93	9	77	14	10	83	0
Tsurugi (SH2FGTG)	81	0.75	19	58	23	21	61	0	
Venetian (SH2FGVN)	85	0.73	18	55	27	23	54	0	

	Product Design	Thickness Film + adhesive (microns)	Shading Coefficient	Solar Heat (%)			Visible Light (%)		UV (%)
				Reflectance	Transmittance	Absorbance	Reflectance	Transmittance	Transmittance
Frost / Matte	CHAMONIX (SH2EMCH)	120	0.67	26	51	23	35	47	0
	Cielo (SH2FGCE)	81	0.74	19	58	23	26	56	0
	ESSEN (SH2EMES)	120	0.67	23	50	27	26	55	0.1
	Fine Crystal (SH2FNCR)	113	0.94	8	78	14	9	84	0.1
	Glace (SH2MAGL)	85	0.77	14	58	28	18	56	0
	LAUSANNE (SH2EMLA)	113	0.94	8	78	14	9	84	0.1
	Luce (SH2FGLU)	85	0.59	23	39	38	31	34	0
	Mare (SH2FGMR)	90	0.91	9	74	18	10	78	0
	Mat Crystal 2 (SH2MACRX2)	126	0.95	7	79	14	8	86	0.2
	Mat Crystal-i (SH2MACR-I)	95	0.94	8	78	14	9	85	0.1
	Milky Crystal (SH2MLCRX)	126	0.4	31	18	51	42	19	0
	Milky Milky (San Marino) (SH2MAMM)	105	0.44	34	25	41	43	21	0
	Milky White (Milano) (SH2MAML)	77	0.75	17	57	26	21	59	0
	Opaque Black (SH2BKOP)	79	0.39	5	1	94	5	0	0
	Opaque White (SH2MAOW)	142	0.3	46	13	41	57	10	0
	OSLO (SH2EMOS)	119	0.92	8	76	16	9	83	0.1
	Silver 1 (RE1SAIR)	74	0.08	78	0	21	91	0	0
Natural / Washi	Altair (SH2FGAT)	86	0.77	17	60	22	23	60	0
	Frost Walnut (SH2PTFW)	84	0.96	8	80	12	9	87	0.1
	Frost Walnut smoke (SH2PT-FWS)	87	0.75	7	50	43	7	49	0
	Grain champagne gold (SH2CSGC)	78	0.78	22	64	14	24	64	0
	Grain silver (SH2CSGS)	76	0.76	29	64	7	33	64	0
	Pyrgos (SH2PTPG)	88	0.66	19	45	36	25	43	0
	RIKYU (SH2PTRK)	103	0.86	7	67	26	8	72	0
	SAGANO (SH2PTSA2)	89	0.83	14	66	20	18	68	0
	Straight Washi (SH2FGSW)	90	0.77	14	57	29	18	57	0
	Vega (SH2FGVG)	86	0.77	16	60	24	21	60	0
YAMATO (SH2PTYA)	89	0.89	12	74	14	15	79	0	

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	Product Design	Thickness Film + adhesive (microns)	Shading Coefficient	Solar Heat (%)			Visible Light (%)		UV (%)
				Reflectance	Transmittance	Absorbance	Reflectance	Transmittance	Transmittance
Fabric	Buckram (SH2FGBU)	79	0.86	12	69	19	14	69	0
	Buckram pearl + gray (SH2FG-BUG)	77	0.76	11	55	34	12	55	0
	Burlap (SH2FGBL)	75	0.75	15	57	28	20	57	0
	Burlap champagne gold (SH2CS-BLC)	79	0.71	23	56	21	26	56	0
	Canvas (SH2FGCV)	77	0.66	21	47	33	28	47	0
	Canvas champagne gold (SH2CSCVC)	78	0.74	25	61	14	29	61	0
	Linen (SH2FGLN)	78	0.79	17	64	19	23	65	0
	Linen Crystal (SH2LNCR)	81	0.81	13	62	25	17	63	0
	Sensai Linen (SH2FGSE)	74	0.75	16	56	28	21	56	0
	Sensai Linen champagne gold (SH2CSSEC)	79	0.77	22	63	15	25	63	0
	Weave pearl (SH2EMWP)	90	0.84	12	66	22	15	66	0
Weave pearl + dark gray (SH2EMWG)	94	0.73	10	50	40	10	50	0	
Geometric	Chain Mesh reflect (SH2SICMR)	76	0.46	51	36	14	59	36	0
	Cut Glass (SH2CSC)	76	0.75	15	55	30	20	55	0.1
	Cut Glass pearl (SH2CSCP)	78	0.76	16	58	26	18	58	0.1
	Cut Glass silver (SH2CSCS)	77	0.63	26	46	27	30	46	0
	Grid (SH2FGGD)	79	0.72	18	53	29	23	53	0
	Grid reflect (SH2SIGDR)	76	0.7	25	55	20	30	55	0
Stripe	Arpa (SH2FGAP)	79	0.78	17	61	22	22	67	0.1
	Arpa Black (SH2BKAP)	81	0.54	8	25	67	8	22	0
	Arpa Crystal (SH2APCR)	81	0.78	13	59	28	17	58	0
	Fine (SH2FGFN)	81	0.65	22	46	32	27	48	0
	Fine String (SH2PTFS)	76	0.86	13	69	18	16	69	0
	Fusion pearl (SH2CSFP)	78	0.78	16	60	24	21	60	0.1
	Safari (SH2PTSR)	85	0.81	13	63	24	16	63	0
	Seattle (SH2DGST)	81	0.85	16	70	14	22	74	0
	Seattle Fine (SH2DGST-F)	80	0.85	16	71	13	25	68	0
	Shutie (SH2FGST)	81	0.77	17	60	24	22	59	0
	Shutie Black (SH2BKST)	81	0.7	21	53	26	29	51	0
	String (SH2PTST)	77	0.88	17	74	9	22	74	0
	String Reverse (SH2PTSTR)	78	0.74	16	54	30	21	54	0
	Wind (SH2PTWD)	88	0.81	11	61	28	13	61	0
Border	Leise (SH2FGLS)	81	0.96	9	81	11	9	88	0
	Paracell (SH2FGPR)	80	0.71	17	53	30	20	50	0
	Slat (SH2FGSL)	88	0.6	22	41	37	28	36	0
	Slat g (SH2FGSL-G)	83	0.77	14	58	28	16	56	0

	Product Design	Thickness Film + adhesive (microns)	Shading Coefficient	Solar Heat (%)			Visible Light (%)		UV (%)
				Reflectance	Transmittance	Absorbance	Reflectance	Transmittance	Transmittance
Dot	Aura 9 (SH2PCA9)	81	0.96	8	89	3	8	87	0
	Cielo (SH2FGSK)	81	0.74	19	58	23	26	56	0
	KANON (SH2FGKN)	79	0.88	13	73	14	14	78	0
	Luna 6 (SH2PCL6)	76	0.68	17	48	34	22	46	0
	Luna 9 (SH2PCL9)	83	0.63	19	43	39	24	39	0
	SHIZUKU (SH2FGSK)	81	0.84	13	68	19	16	71	0
	Vista (SH2FGVI)	81	0.83	15	67	18	17	72	0
Transparent AR (SH2CLAR)*	76	0.98	8	83	9	8	90	0.1	

\* All product designs were applied to a 3 mm transparent glass substrate to calculate the values in this table.

## IMPORTANT NOTE

Please see 3M Glass Finishes sample book for contemporary Frost Matte patterns.

## Product Use

**Interior Use:** Most Products are designed for application to building interior glass and building interior perimeter glass, meaning the interior of an outside glass wall.

**Exterior Use:** Mat Crystal 2 and Milky Crystal are the only Products designed for use on exterior glass.

**Anti-reflection effect:** When used in Exterior Applications, the Mat Crystal 2 and Milky Crystal Product designs scatter sunlight to reduce reflected light.

## Application and Removal Guidelines

Avoid scratching, denting, or stretching the Product during installation. The values in these tables are typical, and are based on test data deemed reliable but are not warranted. See the 3M FASARA Glass Finishes Installation Guide for additional information.

Characteristic	Value
Application Surface Type	Flat
Application Surface Material	Use only glass substrates.
Application Location	Mat Crystal 2 and Milky Crystal Product designs can be applied to Exterior Applications. All other Product designs are only for Interior Applications.
Application Temperature	54°F - 100°F (12°C - 38°C) air and application surface
Application Method	Wet application
Applied Product Shrinkage	Nominal
Applied Product Exposure Temperature	Exterior Applications: -40°F - +149°F (-40°C - +65°C) Interior Applications: maximum 176°F (+80°C)
High Humidity Environments	Products are not recommended for Interior Applications where condensation consistently occurs.
Product Removal	Low heat or 3M Adhesive Remover Citrus Base and scraper

**NOTE:** Removing the Product too quickly can result in excessive adhesive left on the substrate. If necessary, heat a small section of the film with a heat gun to soften the adhesive, peel back slowly, then heat and remove the next section.

## Processing Options

Processing of the Product is on a user test and approve basis only. The user is responsible for results in all processing applications.

## Printing

The Products are not designed for surface printing and have various surface textures. Printing is on a user test and approve basis only. No warranty is made for the quality or durability of printed Product.

## Cutting

Electronic cutting, weeding and application tape with the Product is on a user test and approve basis. The user should consider the following: (1) the type of liner used for the Product is not intended for electronic cutting; (2) there is currently no recommended application tape that adheres properly to the face of the Product to hold cut shapes in place.

## Shelf Life and Storage

### Shelf Life

Apply the Product within 1 year of the date of purchase. The storage conditions specified in this document must be maintained for full shelf life.

### Storage Conditions

- 40°F - 90°F (4°C - 32°C)
- Away from direct sunlight and high humidity
- Clean, dry area
- Original container with end caps, in the plastic sleeve, stored horizontally, a maximum of 6 cartons high

## Cleaning and Maintenance

**NOTE:** The Product may be cleaned beginning 30 days after installation.

Regular cleaning will help maintain the Product's appearance. Use only clean, nick-free tools and wipe gently only in one direction. Do not use ammonia, chlorine, or organic-based cleaning products, polishing or cleaning compound, sponges, brushes or electric polishing equipment.

- If there is dust and grit, wipe it off with a soft, damp cloth.
- If it is soiled, but not gritty, use water and squeegee.
- If there is heavier soil, use a mild liquid detergent and water solution, then clear water, and wipe gently with a cloth wipe.

## Health and Safety

### CAUTION

When handling any chemical products, read the manufacturers' container labels and the Safety Data Sheets (SDS) for important health, safety and environmental information. To obtain SDS sheets for 3M products go to [3M.com/SDS](https://www.3m.com/SDS), or by mail or in case of an emergency, call 1-800-364-3577 or 1-651-737-6501.

When using any equipment, always follow the manufacturers' instructions for safe operation.

### WARNING

#### **To reduce the risks of personal injury and/or property damage associated with glass breakage:**

A glass surface covered by a film with areas of high opacity or dark-colored ink will absorb more heat than other glass surfaces when exposed to sunlight. Heat absorption can create thermal expansion that could result in glass breakage or cracking. Do not use a film with areas of high opacity or dark-colored ink on glass surfaces with significant exposure to sunlight.

## Technical Information

Technical information and data, recommendations, and other statements provided by 3M are based on information, tests, or experience which 3M believes to be reliable, but the accuracy or completeness of such information is not guaranteed. Such technical information and data are intended for persons with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. The typical values shown should not be used for the purpose of specification limits. If you have questions about this Product, contact the Technical Service helpline at 1-888-650-3497.



## LEEDv4 Credits

This section describes some of the options for acquiring LEED credits using 3M™ FASARA™ Glass Finishes.

**NOTE:** Each application is different. It is the sole responsibility of the end user to evaluate and determine whether LEED credits can be acquired.

### ID+C MR Credit, Interiors Life-Cycle Impact Reduction

- Option 1: Interior Reuse - Product can be used to refinish salvaged, refurbished, or reused building materials

### ID+C, BD+C EQ Credit, Low-Emitting Materials

- Product has been tested to and is in compliance with the General Emissions Evaluation (California Department of Public Health (CDPH) Standard Method V1.1-2010)

### ID+C, BD+C EQ Credit, Daylight

- Product can be used to enable daylight in enclosed spaces

### BD+C MR Credit, Building Life-Cycle Impact Reduction

- Option 3: Building and Material Reuse - Product can be used to refinish salvaged, refurbished, or reused building materials

### O+M MR Credit, Purchasing - Facility Maintenance and Renovation

- Product can be used to refinish salvaged, refurbished, or reused building materials
- Product has been tested to and is in compliance with the General Emissions Evaluation (California Department of Public Health (CDPH) Standard Method V1.1-2010)

## BUILDING PRODUCT DISCLOSURE AND OPTIMIZATION INFORMATION

### Environmental Product Declaration (EPD) or Life Cycle Analysis (LCA)

EPD and/or LCA information not available.

### Raw Material Source and Extraction Reporting

Raw Material source and extraction information for this product is considered to be 3M confidential and is therefore not available.

### Extended Producer Responsibility

Take-back or recycling program for this product is not available.

### Bio-based Materials

Product have not been tested to ASTM D6866.

### Wood Products

Product does not contain wood-based materials.

### Materials Reuse

Product can be used to refinish salvaged, refurbished, or reused building materials.

### Recycled Content

Product does not contain pre- or post-consumer recycled content.