



## 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”). The current Product line can be found in the *3M™ FASARA™ Glass Finishes Product Catalog* (the “Catalog”).

## Featured Benefits

Expected Performance Life is 5 to 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)
Maximum Sheet Size	Illumina Silky-W	50 in. x 116 in. (1270mm x 2950mm) 60 in. x 116 in. (1524mm x 2950mm)
	Illumina Silky-S	50 in. x 78 in. (1270mm x 1980mm) 60 in. x 78 in. (1524mm x 1980mm)
Weight		35 lb. (16 kg) (approx.) for a 50 in. x 98.4 ft. roll

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

## Product Performance

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

Characteristics	Value
Adhesion 24 hours after application*	Glass: 1.6 lb/in. (7.0 N/25 mm)
Tensile Strength	45 - 90 lb/in. (200 - 400 N/25 mm)
Fire Resistance	When used in Interior Applications on glass, all patterns have the National Fire Protection Association Class A (as defined in NFPA 101 “Life Safety Code” Test Method ASTM E84).
Heat Transmission Coefficient	6 W/m <sup>2</sup> K, all products
UV Blocking	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 transmission:** 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
2017 New Designs	Frost Walnut (SH2PTFW)	84	0.96	8	80	12	9	87	0.1
	String (SH2PTST)	77	0.88	17	74	9	22	74	0
	Buckram (SH2FGBU)	79	0.86	12	69	19	14	69	0
	Fine String (SH2PTFS)	76	0.86	13	69	18	16	69	0
	Weave pearl (SH2EMWP)	90	0.84	12	66	22	15	66	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
	Sensai Linen champagne gold (SH2CSSEC)	79	0.77	22	63	15	25	63	0
	Safari (SH2PTSR)	85	0.81	13	63	24	16	63	0
	Canvas champagne gold (SH2CSCVC)	78	0.74	25	61	14	29	61	0
	Wind (SH2PTWD)	88	0.81	11	61	28	13	61	0
	Fusion pearl (SH2CSFP)	78	0.78	16	60	24	21	60	0.1
	Diamond (SH2FGDM)	80	0.76	16	58	26	20	58	0
	Cut Glass pearl (SH2CSCP)	78	0.76	16	58	26	18	58	0.1
	Straight Washi (SH2FGSW)	90	0.77	14	57	29	18	57	0
	Burlap (SH2FGBL)	75	0.75	15	57	28	20	57	0
	Sensai Linen (SH2FGSE)	74	0.75	16	56	28	21	56	0
	Burlap champagne gold (SH2CSBLC)	79	0.71	23	56	21	26	56	0
	Cut Glass (SH2CSC)	76	0.75	15	55	30	20	55	0.1
	Grid reflect (SH2SIGDR)	76	0.7	25	55	20	30	55	0
	Buckram pearl + gray (SH2FGBUG)	77	0.76	11	55	34	12	55	0
	String Reverse (SH2PTSTR)	78	0.74	16	54	30	21	54	0
	Illumina Silky W (SH2SSIM-W)	78	0.7	29	57	14	36	54	0.1
	Grid (SH2FGGD)	79	0.72	18	53	29	23	53	0

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	Product Design	Thickness Film + adhesive (microns)	Shading Coefficient	Solar Heat (%)			Visible Light (%)		UV (%)
				Reflectance	Transmit tance	Absorbance	Reflectance	Transmit tance	Transmit tance
2017 New Designs	Weave pearl + dark gray (SH2EMWG)	94	0.73	10	50	40	10	50	0
	Frost Walnut smoke (SH2PTFWS)	87	0.75	7	50	43	7	49	0
	Illumina Silky S (SH2SSIM-S)	78	0.66	32	53	16	40	48	0.1
	Canvas (SH2FGCV)	77	0.66	21	47	33	28	47	0
	Cut Glass silver (SH2CSCS)	77	0.63	26	46	27	30	46	0
	Pyrgos (SH2PTPG)	88	0.66	19	45	36	25	43	0
	Diamond reflect (SH2SIDR)	77	0.56	37	43	20	43	43	0
	Chain Mesh reflect (SH2SICMR)	76	0.46	51	36	14	59	36	0
	Diamond Ghost reflect (SH2SIDGR)	77	0.36	60	27	14	69	27	0
Gradation	Sabrina (SH2FGSB)	90	0.93	9	77	14	10	83	0
	Aerina (SH2FGAR)	81	0.91	12	76	13	13	79	0
	Cloud (SH2FGCL)	90	0.87	11	70	19	13	73	0.1
	Illumina Alpha (SH4FGMIX)	153	0.8	16	63	21	22	65	0.4
	Lontano (SH2FGLO)	81	0.74	20	57	23	22	61	0
	Tsurugi (SH2FGTG)	81	0.75	19	58	23	21	61	0
	Venetian (SH2FGVN)	85	0.73	18	55	27	23	54	0
	Illumina Silver (SH2SIIM)	77	0.44	50	33	17	59	36	0
	Robe (SH2FGRB)	85	0.59	23	39	38	31	35	0
	Illumina Black (SH2BKIM)	79	0.52	6	19	75	6	20	0
Stripe	Seattle (SH2DGST)	81	0.85	16	70	14	22	74	0
	Seattle Fine (SH2DGST-F)	80	0.85	16	71	13	25	68	0
	Arpa (SH2FGAP)	79	0.78	17	61	22	22	67	0.1
	Shutie (SH2FGST)	81	0.77	17	60	24	22	59	0
	Arpa Crystal (SH2APCR)	81	0.78	13	59	28	17	58	0
	Shutie Black (SH2BKST)	81	0.7	21	53	26	29	51	0
	Fine (SH2FGFN)	81	0.65	22	46	32	27	48	0
	Arpa Black (SH2BKAP)	81	0.54	8	25	67	8	22	0
	Nokto (SH2SCSNK)	81	0.44	7	12	81	7	13	0
	Radius (SH2CSRDR)	81	0.4	7	7	86	7	6	0
Border / Horizontal	Leise (SH2FGLS)	81	0.96	9	81	11	9	88	0
	Lattice g (SH2FGLT)	79	0.8	13	62	26	14	60	0
	Pixela (SH2FGPX)	81	0.78	16	62	22	18	60	0
	Slat g (SH2FGSL-G)	83	0.77	14	58	28	16	56	0
	Paracell (SH2FGPR)	80	0.71	17	53	30	20	50	0
	Lattice (SH2FGLT-G)	84	0.6	22	41	37	28	36	0
	Slat (SH2FGSL)	88	0.6	22	41	37	28	36	0

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	Product Design	Thickness Film + adhesive (microns)	Shading Coefficient	Solar Heat (%)			Visible Light (%)		UV (%)
				Reflectance	Transmittance	Absorbance	Reflectance	Transmittance	Transmittance
Prism / Dot	Aura 9 (SH2PCA9)	81	0.96	8	89	3	8	87	0
	KANON (SH2FGKN)	79	0.88	13	73	14	14	78	0
	Vista (SH2FGVI)	81	0.83	15	67	18	17	72	0
	SHIZUKU (SH2FGSK)	81	0.84	13	68	19	16	71	0
	Cielo (SH2FGCE)	81	0.74	19	58	23	26	56	0
	Prism Silver (SH2CSPS)	78	0.64	28	49	24	31	53	0
	Luna 6 (SH2PCL6)	76	0.68	17	48	34	22	46	0
	Prism Noir (SH2CSPN)	78	0.67	7	42	51	7	42	0
	Luna 9 (SH2PCL9)	83	0.63	19	43	39	24	39	0
	Astral Silver (SH2CSAS)	82	0.42	44	28	28	51	30	0
Fabric/Japan Paper	YAMATO (SH2PTYA)	89	0.89	12	74	14	15	79	0
	RIKYU (SH2PTRK)	103	0.86	7	67	26	8	72	0
	SAGANO (SH2PTSA2)	89	0.83	14	66	20	18	68	0
	Linen (SH2FGLN)	78	0.79	17	64	19	23	65	0
	Linen Crystal (SH2LNCR)	81	0.81	13	62	25	17	63	0
	Altair (SH2FGAT)	86	0.77	17	60	22	23	60	0
	Vega (SH2FGVG)	86	0.77	16	60	24	21	60	0
	SAFU (SH2PTSF)	95	0.72	20	54	26	27	54	0
	KEN-UN (SH2PTKU)	97	0.7	21	53	26	28	51	0
Frost / Matte	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
	LAUSANNE (SH2EMLA)	113	0.94	8	78	14	9	84	0.1
	Fine Crystal (SH2FNCR)	113	0.94	8	78	14	9	84	0.1
	OSLO (SH2EMOS)	119	0.92	8	76	16	9	83	0.1
	OSLO-P (SH2EMOS-P)	119	0.92	8	76	16	9	83	0.1
	Mare (SH2FGMR)	90	0.91	9	74	18	10	78	0
	Milky White (Milano) (SH2MAML)	77	0.75	17	57	26	21	59	0
	Glaze (SH2MAGL)	85	0.77	14	58	28	18	56	0
	ESSEN (SH2EMES)	120	0.67	23	50	27	26	55	0.1
	CHAMONIX (SH2EMCH)	120	0.67	26	51	23	35	47	0
	Luce (SH2FGLU)	85	0.59	23	39	38	31	34	0
	Milky Milky (San Marino) (SH2MAMM)	105	0.44	34	25	41	43	21	0
	Milky Crystal (SH2MLCRX)	126	0.4	31	18	51	42	19	0
	Opaque White (SH2MAOW)	142	0.3	46	13	41	57	10	0
	Opaque Black (SH2BKOP)	79	0.39	5	1	94	5	0	0
	Silver 1 (RE1SAIR)	74	0.08	78	0	21	91	0	0
	Transparent Glass Substrate *	-	1.00	8	86	6	8	90	71

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

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## 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:** Illumina Alpha, 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. Illumina-P (SH2FGIM-P) and OSLO-P (SH2EMOS-P) product designs are for use on plastic substrates on a user test and approve basis.
Application Location	Mat Crystal 2, Milky Crystal, and Illumina Alpha 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](http://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.

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## LEEDv4 Credits

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

## Warranty

### Products

3M FASARA Glass Finishes (the “Product(s)”) are decorative films for use in vertical interior glass applications in commercial buildings (“Interior Applications”). Three of the Product designs can be used in vertical applications on the exterior of an outside glass wall (the “Exterior Applications”).

### 3M Basic Product Warranty

The Product(s) specified in this document are warranted to be free of defects in materials and manufacture (“3M Basic Product Warranty”) on the date of shipment (“Warranty Period”) by 3M or its authorized distributor.

### Limited Warranty

- For Products used in the United States, 3M makes the following warranty (the “3M Limited Warranty”) for the applicable time period stated below (“Warranty Period”), which will begin on the earlier of: (a) Product installation date; or (b) six months after 3M’s Product shipment date.

The Product will have no significant discoloration, cracking, swelling or other similar visual defects for the applicable time period below:

Application		Warranty Period - Vertical Applications <sup>1</sup>
Interior Applications - 2017 New Designs	Excluding building perimeter glass	3 years
	Building perimeter glass	1 year
Interior Applications (including Illumina Silky-W & -S)	Excluding building perimeter glass	5 years
	Building perimeter glass (except Illumina Black (SH2BKIM) and Opaque Black (SH2BKOP))	3 years
Interior Applications (not recommended for building perimeter glass)	Illumina Black (SH2BKIM)	2 years
	Opaque Black (SH2BKOP)	
Exterior Applications	Mat Crystal 2 (SH2MACRX2) Milky Crystal (SH2MLCRX) Illumina Alpha (SH4FGMIX)	3 years
Plastic application surfaces		3M Basic Product Warranty only

**1 - Non-vertical applications are not warranted.**



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## Warranty (continued)

2. For a buyer's convenience, 3M may provide engineering or technical information, recommendations, installation instructions, and other information or materials relating to Product ("Other Product Information"), but 3M makes only the 3M Basic Product Warranty and the 3M Limited Warranty and does not warrant any Other Product Information.
3. 3M has no obligation under the 3M Basic Product Warranty or the 3M Limited Warranty as to Product that has been: (a) modified, altered or processed in any manner; (b) stored, applied, installed, or used in a manner other than that 3M recommends in this document and in all Other Product Information; (c) damaged through contact with a person or thing, misuse, accident, neglect, or other action by anyone other than 3M; (d) improperly installed, including, without limitation, installation after the expiration the Product's shelf life or installation without proper surface preparation, (e) exposed to excessive heat, humidity, dirt or UV light, or (f) installed in a non-vertical application.
4. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, THE 3M BASIC PRODUCT WARRANTY AND 3M LIMITED WARRANTY ARE MADE IN LIEU OF ALL OTHER WARRANTIES, RIGHTS OR CONDITIONS, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY, SATISFACTORY QUALITY, FITNESS FOR A PARTICULAR PURPOSE AND THOSE ARISING FROM A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. THE BUYER IS RESPONSIBLE FOR DETERMINING IF A PRODUCT IS SUITABLE FOR ITS PARTICULAR PURPOSE AND ITS APPLICATION METHODS.
5. 3M must receive any 3M Basic Product Warranty or 3M Limited Warranty claim in writing no later than 10 business days after (a) the end of the Warranty Period or (b) the discovery of the 3M Warranty claim, whichever is earlier.

## Limited Remedy

IF ANY PRODUCT IS PROVEN NOT TO HAVE MET THE 3M BASIC PRODUCT WARRANTY OR THE 3M LIMITED WARRANTY DURING THE WARRANTY PERIOD, THEN THE BUYER'S EXCLUSIVE REMEDY, AND 3M'S SOLE OBLIGATION, WILL BE, AT 3M'S OPTION, TO REPLACE THE NONCONFORMING PRODUCT OR TO REFUND THE NONCONFORMING PRODUCT'S PURCHASE PRICE.

## No Extension of Warranty

In the case of an approved warranty claim, the replacement Product will carry only the remaining term of the original warranty period.

## Limitation of Liability

3M WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO A BUYER FOR DIRECT (other than the Limited Remedy stated above), SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS) IN ANY WAY RELATED TO THE PRODUCT, THE TECH DATA SHEET OR OTHER PRODUCT INFORMATION, REGARDLESS OF THE LEGAL OR EQUITABLE THEORY ON WHICH SUCH DAMAGES ARE SOUGHT.

### Commercial Solutions

3M Center, Building 220-12E-04  
St. Paul, MN 55144

1-888-650-3497  
3M.com/AMD

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## Product Description

3M FASARA Glass Finishes (the “Products”) are decorative glass and window films available in over 50 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”). 3M™ FASARA™ Whiteboard Finish WH-111-G has a writable and erasable surface that can be used to convert interior glass surfaces into creative, collaborative environments. Additional information on the current Product line can be found in the *3M™ FASARA™ Glass Finishes Product Catalog* (the “Catalog”).

## Application Surfaces

Based on available test data, the following application surfaces are recommended:

- Interior glass
- Interior of an outside glass wall

Applying FASARA Glass Finishes to plastic application surfaces, such as acrylic and polycarbonate, is not recommended or warranted. Plastic materials may outgas, causing the finish to bubble or peel. Outgassing is the release of a gas as certain plastics or coated surfaces dry and cure. This occurs over a period of time, but not indefinitely. Product that is applied to a surface that is still outgassing will develop air bubbles in the Product that may appear some time after the installation. 3M assumes no liability for bubbles that appear in the applied Product due to outgassing.

Illumina-P and OSLO-P are designated for use on plastic substrates. However, due to the variability of these substrates users must proceed on a test and approve basis, and user assumes all risk related to the installation. Applications on plastic substrates are not warranted.

Mat Crystal 2 (SH2MACRX2) and Milky Crystal (SH2MLCRX) are designated for use on the exterior of an outside glass wall (the “Exterior Applications”). However, due to the variability of local climates users must proceed on a test and approve basis, and user assumes all risk related to the installation. Exterior Applications are not warranted.

## Suggested Test for Plastic Application Surfaces for Outgassing

1. Apply a 5 in. x 5 in. (135mm x 135mm) piece of the Product to the plastic application surface in question.
2. If possible, oven bake the sample for 2 hours at 150°F (65°C) or bake for 5 minutes at 350°F (176°C). If oven baking is not an option, allow the sample to sit at room temperature for 24 hours.
3. Examine the sample. Bubbles under the Product indicate that the plastic application surface is outgassing. If no bubbles occur, the application surface is not outgassing.
4. To estimate how long outgassing may continue, repeat the test daily, using a new sample, until bubbles no longer appear under the Product.
5. If outgassing continues for a long period of time, consult the plastic manufacturer for assistance.

## High Humidity Conditions

Do not install FASARA Glass Finishes in locations in which the film may frequently come into contact with water or where condensation often occurs.

## Seams in WH-111-G

Seams in FASARA™ Whiteboard Finish WH-111-G tend to accumulate marker residue. Make seams as tight as possible.

## Installation Tools and Supplies

- Rubber application squeegee, 4 in., rubber hardness 80, 6mm or greater thickness, nick free
- 3M™ Hand Applicator PA-1 (Blue or Gold) with 3M™ Low Friction Sleeve SA-1 (for use over the hand applicator)
- 4 in. felt-wrapped plastic applicator, 6 mm or greater thickness, nick free (for Custom FASARA)
- 4 in. Window scraper with stainless steel replacement blades
- 8 in. Window cleaning squeegee with replacement rubbers
- Razor blade knife with stainless steel replacement break-away blades
- Ruler with nick-free edges
- Scotch™ Masking Tape
- Clean, lint-free paper towels
- Drop cloths (absorbent) or plastic sheeting
- Spray bottle (garden style 1 - 2 gallon, low pressure sprayer works well)
- Water
- Mild, non-lotion containing liquid detergent; no soaps, waxes, oils, or enzymes
- Isopropyl alcohol (70% or industrial strength)



**Figure 1.** Felt-wrapped and rubber squeegees for FASARA installation

## Surface and Work Area Preparation

Use the following steps to prepare the application surface for Product application. An experienced installer's techniques may vary.

### Prepare the Application Solution

Prepare a water and liquid detergent solution to use for applying the finish. It should have a concentration of approximately 0.1% to 0.2% detergent. A solution of about 1 teaspoon (5 ml) of mild detergent to 1 gallon (3.8 L) of water is sufficient for about 36 square yards of application surface. Pour this solution into your sprayer.

- High detergent concentration causes the squeegee and finish to slip, resulting in insufficient application pressure.
- Low detergent concentration causes the finish to stick or prevents the squeegee from traveling smoothly across the finish, which results in an inconsistent application and leaves excess water behind.

### Prepare the Installation Area

- Protect the areas surrounding the installation from the application solution over spray and drips, using masking tape and/or drop cloths as appropriate.
- If possible, turn off or cover the heating or air conditioning units and ventilation ducts in the application area prior to starting the installation.
- For the best bonding conditions, the recommended application temperature is 60°F - 100°F (16°C - 38°C) and the application surface should be at room temperature or higher. In the lower end of this range, additional application pressure on the Product can encourage better adhesive bonding. Attempting to install the Product at temperatures below the recommended range can cause the adhesive to become so firm that it will not develop maximum contact with the application surface.

## Surface and Work Area Preparation (continued)

### Measure and Cut the Panels

Product panels may be cut to size by hand. Any nicks or burrs on the edge of the ruler used to mark and cut the finish could scratch it. Apply masking tape to the side of the ruler that contacts the finish to help prevent damage. Use a very sharp cutting blade to ensure clean, smooth edges. Make sure the finish is trimmed so it does not touch any caulking or window gaskets that may be used on the edge of the application surface. Contact with caulking or window gaskets may cause the finish to lift at the edges.

### Check the Application Surface for Coatings

Many application surfaces have wax or other invisible coatings on them that interfere with adhesion. Use the following procedure to identify and eliminate such coatings. Be sure your customer understands and agrees with this procedure.

1. Place drops of water on several areas of the application surface. Water beads indicate that the glass or plastic has a coating that must be removed for good Product adhesion.
2. For glass application surfaces, scrape the surface with a razor to remove wax coatings.
3. Saturate a lint-free paper towel with 70% Isopropyl alcohol (IPA) and wipe clean the application surface. Wipe the application surface clean with a lint-free paper towel before the IPA evaporates.
4. Check again for water beading. If there is beading, repeat steps 2 and 3, then check again.  
If there is no beading, proceed with application surface preparation.

### Clean the Application Surface

**NOTE:** Apply FASARA™ Glass Finishes to glass only.

1. Place drop cloths and/or plastic sheeting to protect the application area below the application surface.
2. Spray the application solution on the application surface.
3. Scrape glass to remove dirt and other contaminants on the surface of the glass.
4. Thoroughly rinse the application surface using the sprayer, then squeegee the entire application surface, wiping the squeegee after each stroke.
5. Dry the application surface edge and frame thoroughly.
6. Apply the Product per the installation procedure immediately after cleaning the application surface. Any dirt or contaminants which settle on the application surface after cleaning will inhibit adhesion and may be visible after application.

## Installation Procedure

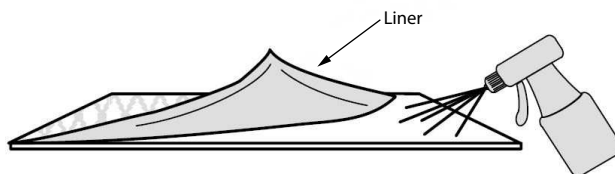
Recommended application temperature: 60°F - 100°F (16°C - 38°C)

These are the general Product application steps. An experienced Product applicator's techniques may vary.

**NOTE:** Always handle the finish with care. It is relatively thin and can fold upon itself easily.

### Remove the Liner and Wet the Adhesive

1. Generously spray the application surface with the application solution.
2. Lay the FRONT SIDE of the Product against the application surface so the liner is facing you.
3. Peel the liner off the film. Be sure you pull the liner away from the Product, not the Product from the liner, to avoid stretching the Product.
4. Generously spray the exposed adhesive with the application solution.
5. Place the wetted adhesive side of the film against the top of the application surface and align it as preferred in the final location.
6. Squeegee the film to the application surface, starting at the top and middle, using horizontal strokes out to the edges. Continue down the middle use overlapping strokes to the bottom edge of the film.
7. When applying multiple panels, butt the seams together, factory edge to factory edge. An overlap joint is not recommended, as this technique may cause adhesion problems or a discolored appearance.



**Figure 2.** Peel back some liner and spray the adhesive.

**NOTE:** When butting panels together, ensure that the panels are from the same lot. Different lots of the same material can have slight color variations that will be noticeable at seams.

**NOTE:** The surfaces of some FASARA patterns are not smooth. A small amount of application solution remains on the surface of the finish after squeegeeing, potentially causing an uneven visual appearance until it dries.

### Using Finishes from Different Product Categories

If combining finishes, for example to compliment a gradation pattern using a different finish of the same color, check the color between the panels before installation. Although different Product categories may have the same color, the differences in the product construction and lot may be apparent when used side by side.

### Apply Product

1. Recheck the alignment, spray the surface of the Product with application solution to reduce friction.
2. Apply the Product using a hand applicator.
3. Starting at the top in the center of the finish, use firm and consistent pressure, making overlapping strokes from center to edges with the applicator. The goal is to push the water out to the edges so the adhesive makes good contact with the application surface.
4. For the rest of the panel, move the applicator down to overlap the previous strokes by about 50%, and stroke from center to edge, center to edge again, until the panel is fully applied.
5. Wipe the edges of the Product with a clean, lint-free towel to remove any drips.

### Residual Water Phenomenon

Even when installed properly, some application solution may remain between the glass and the Product. This causes small water bubbles or clouding that disappears as the water evaporates. This can take up to several days, depending on environmental conditions.

- Do NOT touch the Product during this time.

## Cleaning and Maintenance

- Protect the finish from abuse.

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

## Cleaning Applied Product

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:

**NOTE:** Never use alcohol, or other organic solvents when cleaning FASARA™ Custom Finishes. This can easily damage custom finishes.

- 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.

**NOTE:** Additional caution is recommended when cleaning spliced areas. Always clean in the direction of the splice.

## Removal

The Product can be removed with low heat or the use of 3M™ Adhesive Remover Citrus Base and a scraper.

## Transportation and Storage

- 40° to 90°F (4° to 32°C)
- Away from direct sunlight
- Clean dry area
- Original container

## 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](http://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: Risk of Glass Breakage Due to Thermal Expansion

Glass surfaces exposed to sunlight will absorb heat. A glass surface covered by a film with high opacity or dark-colored ink, including films with small areas of high opacity or dark-colored ink, will absorb more heat. Heat absorption can create thermal stress that results in glass breakage, or thermal cracking. This can cause personal injury and property damage. 3M specifically does not recommend using a film with 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.

For more information or to order samples, please visit [3M.com/FASARA](http://3M.com/FASARA).

## Warranty

Please refer to the applicable product's technical data sheet for warranty information.

## Change History

### Rev F (23-JUN-2015):

- Removed Warranty section and replaced with a general reference to the technical data sheets for applicable product warranties.
- Added revision and doc type to footers.

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