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This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Project Resource Manual* (PRM) including *MasterFormat™*, *SectionFormat™* and *PageFormat™*. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets [ ]; delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies glazing films for use on interior glass and the interior surfaces of exterior glass for privacy and/or decoration. These products are manufactured by 3M. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat™* for other section numbers and titles.

**SECTION 08 87 00**  
**GLAZING SURFACE FILMS**

**PART 1 GENERAL**

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Section 01 42 19 - Reference Standards may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section.

**1.01 REFERENCES**

- A. ASTM International (ASTM):
  1. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
  2. ASTM E308 Standard recommended Practice for Spectrophotometry and Description of Color in CIE 1931 System.
  3. ASTM E903 Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.

**1.02 SYSTEM DESCRIPTION**

- A. Performance Requirements:
  1. Fire Performance: Surface burning characteristics when applied to 6 mm (1/4 inch, nominal) clear glass and tested in accordance with ASTM E84:
    - a. Flamespread: 25, maximum.
    - b. Smoke Developed: 450, maximum.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor, either before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Section [01 33 00 - Submittals Procedures].

**1.03 SUBMITTALS**

- A. General: Submit listed submittals in accordance with Conditions of Contract and Section [01 33 00 - Submittal Procedures]

[\_\_\_\_\_].

- B. Product Data: Submit product data, including manufacturer's SPEC-DATA® sheet, for specified products.
- C. Samples: Submit [8 1/2 inch x 11 inch (216 x 279 mm) samples of specified film(s) applied to 6 mm (1/4 inch, nominal) clear glass.
- D. Quality Control Submittals:
  - 1. Certificates: Manufacturer's certification that the installer is acceptable.
  - 2. Manufacturer's Instructions: Manufacturer's installation instructions.
- E. Closeout Submittals:
  - 1. Warranty: Manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for this section. Coordinate article below with Division 01 Quality Assurance Section.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Acceptable to the manufacturer.
- B. Regulatory Requirements: In accordance with Section [01 41 00 - Regulatory Requirements] [\_\_\_\_\_].

1.05 DELIVERY, STORAGE AND HANDLING

- A. General: Comply with Section [01 61 00 - Common Product Requirements] [\_\_\_\_\_].
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

Specifier Note: Coordinate article below with Conditions of the Contract and with Section 01 78 36 - Warranties.

1.06 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit in accordance with Section [01 78 36 - Warranties] [\_\_\_\_\_] for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
  - 1. Warranty Period: 5 years commencing on Date of Substantial Completion.

**PART 2 PRODUCTS**

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions, as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.01 GLAZING SURFACE FILMS

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

- A. Manufacturer: 3M.
  - 1. Contact: 3M™ Building Commercial Services Division-Window Film, Michael Hassenauer, 3M Center, Building 0223-02-S-24, Saint Paul, MN 55144-1000; Telephone: (888) 364-3577, (651) 737-1053, Fax: (651) 736-0611; E-mail: [windowfilm@mmm.com](mailto:windowfilm@mmm.com); website: [www.3m.com/windowfilm](http://www.3m.com/windowfilm).

Specifier Note: Retain film(s) below to conform to project requirements; if more than one is retained, create designators and coordinate with the drawings.

- B. Combination Patterned Film:

1. Fasara - Aerina Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 49%, maximum.
  - c. Visible Light Rejected, ASTM E903: 12%, minimum.
  - d. Solar Heat Reduction: 10%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.86, minimum.
2. Fasara - Illumina Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 49%, maximum.
  - c. Visible Light Rejected, ASTM E903: 19%, minimum.
  - d. Solar Heat Reduction: 14%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.62, minimum.
- C. Dot Patterned Film:
  1. Fasara - Aura 9 Decorative/Privacy Films:
    - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
    - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 83%, maximum.
    - c. Visible Light Rejected, ASTM E903: 8%, minimum.
    - d. Solar Heat Reduction: 7%, minimum.
    - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.94, minimum.
  2. Fasara - Cielo Decorative/Privacy Films:
    - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
    - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 45%, maximum.
    - c. Visible Light Rejected, ASTM E903: 19%, minimum.
    - d. Solar Heat Reduction: 15%, minimum.
    - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.69, minimum.
  3. Fasara - Luna 6 Decorative/Privacy Films:
    - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
    - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 44%, maximum.
    - c. Visible Light Rejected, ASTM E903: 21%, minimum.
    - d. Solar Heat Reduction: 15%, minimum.
    - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.67, minimum.
  4. Fasara - Luna 9 Decorative/Privacy Films:
    - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
    - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 39%, maximum.
    - c. Visible Light Rejected, ASTM E903: 23%, minimum.
    - d. Solar Heat Reduction: 16%, minimum.
    - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.63, minimum.
  5. Fasara - Luna Cell Decorative/Privacy Films:
    - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
    - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 31%, maximum.
    - c. Visible Light Rejected, ASTM E903: 24%, minimum.

- d. Solar Heat Reduction: 17%, minimum.
- e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.59, minimum.
- 6. Fasara - Luna Pico Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 32%, maximum.
  - c. Visible Light Rejected, ASTM E903: 24%, minimum.
  - d. Solar Heat Reduction: 17%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.60, minimum.
- 7. Fasara - Vista Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 69%, maximum.
  - c. Visible Light Rejected, ASTM E903: 16%, minimum.
  - d. Solar Heat Reduction: 13%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.80, minimum.
- D. Line Patterned Film:
  - 1. Fasara - Arpa Decorative/Privacy Films:
    - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
    - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 46%, maximum.
    - c. Visible Light Rejected, ASTM E903: 22%, minimum.
    - d. Solar Heat Reduction: 17%, minimum.
    - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.66, minimum.
  - 2. Fasara - Fine Decorative/Privacy Films:
    - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
    - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 46%, maximum.
    - c. Visible Light Rejected, ASTM E903: 25%, minimum.
    - d. Solar Heat Reduction: 19%, minimum.
    - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.62, minimum.
  - 3. Fasara - Lattice Decorative/Privacy Films:
    - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
    - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 34%, maximum.
    - c. Visible Light Rejected, ASTM E903: 26%, minimum.
    - d. Solar Heat Reduction: 19%, minimum.
    - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.60, minimum.
  - 4. Fasara - Leise Decorative/Privacy Films:
    - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
    - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 74%, maximum.
    - c. Visible Light Rejected, ASTM E903: 8%, minimum.
    - d. Solar Heat Reduction: 7%, minimum.
    - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.94, minimum.
  - 5. Fasara - Paracell Decorative/Privacy Films:
    - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.

- b. Visible Light Transmitted, ASTM E903 and ASTM E308: 48%, maximum.
  - c. Visible Light Rejected, ASTM E903: 19%, minimum.
  - d. Solar Heat Reduction: 15%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.69, minimum.
6. Fasara - Pixela Decorative/Privacy Films:
- a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 57%, maximum.
  - c. Visible Light Rejected, ASTM E903: 17%, minimum.
  - d. Solar Heat Reduction: 14%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.75, minimum.
7. Fasara - Shutie Decorative/Privacy Films:
- a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 52%, maximum.
  - c. Visible Light Rejected, ASTM E903: 21%, minimum.
  - d. Solar Heat Reduction: 17%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.69, minimum.
8. Fasara - Slat Decorative/Privacy Films:
- a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 34%, maximum.
  - c. Visible Light Rejected, ASTM E903: 26%, minimum.
  - d. Solar Heat Reduction: 19%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.60, minimum.
- E. Single Patterned Film:
1. Fasara - Altair Decorative/Privacy Films:
- a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 52%, maximum.
  - c. Visible Light Rejected, ASTM E903: 16%, minimum.
  - d. Solar Heat Reduction: 12%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.73, minimum.
2. Fasara - Chamonix Decorative/Privacy Films:
- a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 47%, maximum.
  - c. Visible Light Rejected, ASTM E903: 29%, minimum.
  - d. Solar Heat Reduction: 20%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.67, minimum.
3. Fasara - Fine Crystal Decorative/Privacy Films:
- a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 83%, maximum.
  - c. Visible Light Rejected, ASTM E903: 8%, minimum.
  - d. Solar Heat Reduction: 7%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.93, minimum.

4. Fasara - Lausanne Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 82%, maximum.
  - c. Visible Light Rejected, ASTM E903: 9%, minimum.
  - d. Solar Heat Reduction: 8%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.90, minimum.
5. Fasara - Luce Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 31%, maximum.
  - c. Visible Light Rejected, ASTM E903: 25%, minimum.
  - d. Solar Heat Reduction: 17%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.59, minimum.
6. Fasara - Mat Crystal Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 88%, maximum.
  - c. Visible Light Rejected, ASTM E903: 7%, minimum.
  - d. Solar Heat Reduction: 6%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.92, minimum.
7. Fasara - Mat Crystal i Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 83%, maximum.
  - c. Visible Light Rejected, ASTM E903: 8%, minimum.
  - d. Solar Heat Reduction: 8%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.91, minimum.
8. Fasara - Milano Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 59%, maximum.
  - c. Visible Light Rejected, ASTM E903: 17%, minimum.
  - d. Solar Heat Reduction: 21%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.75, minimum.
9. Fasara - Opaque White Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 6%, maximum.
  - c. Visible Light Rejected, ASTM E903: 52%, minimum.
  - d. Solar Heat Reduction: 41%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.29, minimum.
10. Fasara - Oslo Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 77%, maximum.
  - c. Visible Light Rejected, ASTM E903: 9%, minimum.
  - d. Solar Heat Reduction: 8%, minimum.

- e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.89, minimum.
- 11. Fasara - Rikyu Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 47%, maximum.
  - c. Visible Light Rejected, ASTM E903: 18%, minimum.
  - d. Solar Heat Reduction: 13%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.69, minimum.
- 12. Fasara - Sagano Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 53%, maximum.
  - c. Visible Light Rejected, ASTM E903: 52%, minimum.
  - d. Solar Heat Reduction: 12%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.75, minimum.
- 13. Fasara - San Marino Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 28%, maximum.
  - c. Visible Light Rejected, ASTM E903: 27%, minimum.
  - d. Solar Heat Reduction: 42%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.55, minimum.
- 14. Fasara - Vega Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 49%, maximum.
  - c. Visible Light Rejected, ASTM E903: 16%, minimum.
  - d. Solar Heat Reduction: 12%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.71, minimum.
- 15. Fasara - Yamato Decorative/Privacy Films:
  - a. Ultraviolet Rejected, ASTM E903: 99%, minimum.
  - b. Visible Light Transmitted, ASTM E903 and ASTM E308: 52%, maximum.
  - c. Visible Light Rejected, ASTM E903: 15%, minimum.
  - d. Solar Heat Reduction: 11%, minimum.
  - e. Shading Coefficient at 90 Degrees Normal Incidence, ASTM E903: 0.75, minimum.

**2.02 PRODUCT SUBSTITUTIONS**

- A. Substitutions: Substitutions in accordance with Section [01 25 13 - Product Substitution Procedures] [No substitutions permitted] [\_\_\_\_\_].

**PART 3 EXECUTION**

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

**3.01 MANUFACTURER'S INSTRUCTIONS**

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

**3.02 EXAMINATION**

- A. Site Verification of Conditions: Verify that conditions of substrates previously installed under other sections are acceptable for product installation in accordance with manufacturer's instructions.

**3.03 PREPARATION**

- A. Use protective tarps and drop cloths to cover interior finishes near window.
- B. Turn off or cover heating and air conditioning ventilation ducts.
- C. Clean window and window framing thoroughly with cleaning solution consisting of 90% water and 10% ammonia.
- D. Blade inside surface of window glass with industrial razors to ensure removal of foreign contaminants.
  - 1. Tape and seal cracked and deteriorating window sealant.
- E. Place towel or other absorbent material on window sill or sash in order to absorb moisture accumulation generated by film application.
- F. Thoroughly rinse glass from top to bottom with spray from pressure tank.
- G. Squeegee entire glass surface.
- H. Dry glass edges and window frames using a lint-free towel.

**3.04 INSTALLATION**

- A. Cut film edges neatly and square at a uniform distance of 1/8 inch - 1/16 inch (3 - 1.5 mm) of window sealant. Use new blade tips after 3 to 4 cuts.
- B. Spray a slip solution composed of one capful of Johnson Baby Shampoo or Joy Dishwashing Liquid to 1 gallon of water on window glass and adhesive to facilitate proper positioning of film.
- C. Apply film to glass and lightly spray film with slip solution.
- D. Squeegee to remove water.
- E. Spray slip solution to film and squeegee a second time.
- F. Bump film edge with a lint-free towel wrapped around the edge of a 5-way tool.
- G. Wipe frame edge dry.
- H. Inspect installation to ensure proper application.
- I. Upon completion of film application, allow 30 days for moisture from film installation to dry thoroughly, and to allow film to dry flat with no moisture dimples when viewed under normal viewing conditions.

**3.05 CLEANING**

- A. Proceed in accordance with Section [01 74 23 - Final Cleaning] [\_\_\_\_\_].
- B. Wash film using common window cleaning solutions, including ammonia solutions, 30 days after application. In order to avoid scratching film, do not use abrasive-type cleaning agents and bristle brushes. Use synthetic sponges or soft cloths.
- C. Upon completion and verification of installation, remove surplus materials, rubbish, tools and equipment.

**END OF SECTION**