



**SECTION 08 87 00**  
**ARCHITECTURAL WINDOW FILMS**  
**3M™ DICHROIC GLASS FINISH DF-PA**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Interior Window Film
- B. Decorative Window Film

**1.2 RELATED SECTIONS**

Note: Delete any section below not relevant to this project; add others as required.

- A. Section 08 40 00 – Entrances, Storefronts, and Curtain Walls: Windows to receive architectural window film
- B. Section 08 50 00 – Windows: Windows to receive architectural window film
- C. Section 08 60 00 – Roof Windows and Skylights: Glass Skylights to receive architectural window film
- D. Section 08 80 00 – Glazing: Windows to receive architectural window film
- E. Section 08 90 00 - Glazed Curtain Walls: Curtain Walls to receive architectural window film

**1.3 REFERENCES**

- A. ASTM International (ASTM)
  - 1. ASTM E 903 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.
  - 2. ASTM E 308 - Standard Recommended Practice for Spectrophotometry and Description of Color in CIE 1931 System.

**1.4 SUBMITTALS**

- A. Manufacturer's Product Data for specified products.
- B. Submit shop drawings showing layout, profiles, and product components, including dimensions, anchorage, and accessories.
- C. Samples: 4 inch by 4 inch Samples of specified color and pattern for verification.
- D. Submit operation and maintenance data for installed products, including precautions against harmful cleaning materials and methods.
- E. Mock ups: as required.

**1.5 QUALITY ASSURANCE**

- A. Obtain all products in this section from a single Manufacturer with a minimum of 10 years' experience.
- B. Installer: Installation shall be performed by a trained and qualified installer, specialized and experienced in work required for this project. A list of experienced installation integrators is available at [3M.com/AMD](http://3M.com/AMD) or 3M Commercial Solutions Division at 1-888-650-3497.

**1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store products protected from weather, temperature, and other harmful conditions as recommended by supplier.
- C. Product must remain in original plastic bag and boxes and have storage conditions as follows:
  - 1. 40 °F – 90 °F (4 °C – 32 °C)

2. Out of direct sunlight
3. Clean dry area
4. Original container
5. Do not stack boxes over six (6) units high. Excessive weight can damage the film
6. Products are not recommended for interior applications where condensation consistently occurs
7. Handle products in accordance with manufacturer's instructions.
8. Shelf life: 2 years

### 1.7 PROJECT/SITE CONDITIONS

- A. Confirm appropriate substrate is suitable for mounting of glass finish components prior to start of installation.
- B. Apply materials when environmental conditions are within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits. Application temperature range from 60 °F – 100 °F (16 °C – 38 °C)
- C. Environmental Limitations: Do not install until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

### 1.8 WARRANTY

- A. Manufacturer's Warranty: Submit manufacturer's standard warranty document by authorized manufacturer.
- B. Standard Product Warranty: Refer to the applicable 3M Technical Data Sheet for product warranty.

### 1.9 EXTRA MATERIALS

- A. Furnish 2 percent extra material at time of installation. Deliver in protective packaging for storage and label contents appropriately.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

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| <ol style="list-style-type: none"> <li>A. 3M Company – Commercial Solutions Division [CSD]<br/><br/>3M Center, Building 0220-12-E-04<br/>St. Paul, MN 55144-1000, USA<br/>1-888-650-3497</li> </ol> | <p>Authorized Dealer:<br/>Sunray Window Films, LLC.<br/>2174 Lost Nation Road<br/>Willoughby, Ohio 44094<br/>800-295-8468 - sales@sunrayfilms.com</p> |
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### 2.2 MATERIAL STANDARD:

- A. Design based upon 3M™ DICHROIC DF-PA Film

### 2.3 MATERIAL PROPERTIES

- A. General: Glass finish field applied application to glass material as visual opaque or decorative graphic.
- B. Film: Multi-layer polymeric
- C. Protective Layer: Hardcoated Polyester
- D. Base Film- *Blaze*
  1. Transmissive Color: Cyan/Blue/Magenta
  2. Reflective Color: Red/Gold
- E. Base Film- *Chill*
  1. Transmissive Color: Blue/Magenta/Yellow
  2. Reflective Color: Gold/Blue
- F. Adhesive: Acrylic, Pressure Sensitive, Permanent
- G. Liner: Silicone-coated Polyester

- H. Thickness (Film and Adhesive without Liner):
  - 1. Blaze: 5.2 mils (132 microns)
  - 2. Chill: 5.0 mils (127 microns)
- I. Fire Performance: Surface burning characteristics when tested in accordance with ASTM E84: Class A
  - 1. Flame Spread: 25 maximum.
  - 2. Smoke Developed: 450 maximum.

## 2.4 OPTICAL PERFORMANCE

- A. Blaze Decorative Glazing Film applied to 3mm thick clear glass (ASTM E 903, ASTM E 308):
  - 1. Ultraviolet Transmittance: 2.6 percent.
  - 2. Visible Light Transmittance: 77 percent.
  - 3. Visible Light Reflectance - Interior: 22 percent.
  - 4. Solar Heat Transmittance: 57 percent.
  - 5. Solar Heat Reflectance: 25 percent.
  - 6. Shading Coefficient at 90 Degrees (Normal Incidence): 0.70.
  - 7. Spectral Data (Left Band Edges): 590nm
  - 8. Spectral Data (Right Band Edges): 795nm
- B. Chill Decorative Glazing Film applied to 3mm thick clear glass (ASTM E 903, ASTM E 308):
  - 1. Ultraviolet Transmittance: 2.4 percent.
  - 2. Visible Light Transmittance: 17 percent.
  - 3. Visible Light Reflectance - Interior: 78 percent.
  - 4. Solar Heat Transmittance: 62 percent.
  - 5. Solar Heat Reflectance: 21 percent.
  - 6. Shading Coefficient at 90 Degrees (Normal Incidence): 0.77.
  - 7. Spectral Data (Left Band Edges): 500nm
  - 8. Spectral Data (Right Band Edges): 615nm

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrate(s) for compliance. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Refer to the applicable 3M Technical Data Sheet to determine compatibility of finish to substrate.
- C. Do not proceed with installation until unsatisfactory conditions have been corrected.
- D. Responsibility for state of surfaces prior to installation to be pre-determined by installation specialist.
- E. Scheduling of installation by Owner or its representative implies that substrate and conditions are prepared and ready for product installation per the recommendations of the installation specialist.
- F. Proceeding with installation implies installer's acceptance of substrate and conditions.

### 3.2 SURFACE PREPARATION

- A. Comply with all manufacturer's instructions for surface preparation.
- B. Thoroughly clean substrate of substances that could impair the overlay's bond, including mold, mildew, oil, grease.
- C. Re-clean surfaces with appropriate surface prep solvent and remove any haze or surface contamination.

### 3.3 APPLICATION

- A. Application must be performed by qualified installer.
- B. Do not proceed with installation until all finishing work has been completed in and around the work area.

- C. Verify pattern prior to material acquisition.
- D. Comply with manufacturer's installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- E. Install substrates with no gaps or overlaps. Form smooth, wrinkle-free, bubble-free surface for finished installation.
- F. Remove air bubbles, wrinkles, blisters and other defects. Use approved procedures to prevent the formation of air bubbles, wrinkles, blisters and other defects.
- G. Refer to the applicable 3M Installation Guide for additional details.

#### **3.4 CLEANING AND PROTECTION**

- A. Use cleaning methods recommended by architectural surfacing manufacturer for applicable environment.
- B. Protect completed glass finish during remainder of construction period.
- C. Consult with authorized installation specialist for project specifics.

**END OF SECTION**

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