



WINDOW FILMS • PHOTOVOLTAICS • CUSTOM COATINGS

## SECTION 08871

### SOLAR CONTROL FILM

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Solar control film applied to existing glass.

##### 1.2 REFERENCES

- A. American Society for Testing Materials (ASTM)
- B. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
- C. Association of Industrial Metallizers, Coaters and Laminators (AIMCAL)
- D. American National Standards Institute (ANSI)
- E. International Standards Organization (ISO)
- F. International Window Film Association (IWFA)

##### 1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Manufacturer's data sheets on each product to be used, including:
  - 1. Physical properties and independent testing agency reports showing compliance with specified tests.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods.
- C. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

##### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Solar film manufacturer shall be the standard product of a manufacturer regularly engaged in the manufacture and distribution of such products in satisfactory use for a minimum of 5 years. Manufacturing facility shall have an ISO 9001-2000 standard registration.
- B. Installer Qualifications: Documented experience in the application of self adhesive window films with at least 10 applications of similar size and complexity, and approved by the solar film manufacturer.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Apply film to one window designated by Architect.



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2. Do not proceed with remaining work until workmanship and color, is approved by Architect.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products indoors in manufacturer's unopened packaging until ready for installation.

#### 1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

#### 1.7 WARRANTY

- A. See Section 01780 - Closeout Submittals for additional warranty requirements.
- B. Provide film manufacturer's limited warranty against failure of film, including change of color, peeling, bubbling, rippling, cracking, delamination and demetalization; include cost of material and labor for removal and reinstallation. Duration of warranty shall be as follows:
  1. Ten Year Limited Warranty for the following products:
    - a. Solar Bronze 20

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Solar Gard, 4540 Viewridge Ave; San Diego, CA 92123. Toll Free: (877) 273-4364. Tel: (858) 576-0200. Fax: (858) 571-3605. Email: [info@solargard.com](mailto:info@solargard.com). Web: [www.solargard.com/us](http://www.solargard.com/us).
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

#### 2.2 SOLAR CONTROL FILM

- A. Film shall be manufactured from polyethylene terephthalate (polyester) and combined with sputtered metal coatings to achieve the desired performance and aesthetic characteristics. The finished film shall be self adhesive and include a coating to reduce the effects of scratching and abrasions that occur in normal daily activity and also include absorbers and inhibitors for the purpose of reducing ultra violet rays.
- B. Solar Gard Solar Bronze 20 solar control film shall have the following properties when applied to 1/4 inch (6 mm) clear float glass.
  1. Film Performance Results, Nominal
    - a. Solar Transmittance 11 percent
    - b. Solar Absorptance 47 percent
    - c. Solar Reflectance 42 percent
    - d. Visible Light Transmittance 21 percent
    - e. Visible Light Reflectance (Exterior) 36 percent
    - f. Visible Light Reflectance (Interior) 36 percent
    - g. Emissivity .66
    - h. U-Factor (Winter) 1.00



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- i. Shading Coefficient .27
  - j. Solar Heat Gain Coefficient .23
  - k. Ultraviolet Light Blocked (300-380 nanometers) > 99 percent
  - l. Total Solar Energy Rejected 77 percent
  - 2. Physical and Thermal Properties, Nominal
    - a. Film Thickness: 2.0 mil (50 micron)
    - b. Tensile Strength 30,000 lbs/sq in (2,110 kg/cm sq)
    - c. Combustion Rate Negligible
    - d. Melting Point 260-265 degrees C
- C. Solar Gard Solar Bronze 20 solar control film shall have the following properties when applied to 1/8 inch (3 mm) clear float glass.
- 1. Film Performance Results, Nominal
    - a. Solar Transmittance 12 percent
    - b. Solar Absorptance 38 percent
    - c. Solar Reflectance 50 percent
    - d. Visible Light Transmittance 22 percent
    - e. Visible Light Reflectance (Exterior) 37 percent
    - f. Visible Light Reflectance (Interior) 36 percent
    - g. Emissivity .66
    - h. U-Factor (Winter) .94
    - i. Shading Coefficient .26
    - j. Solar Heat Gain Coefficient .22
    - k. Ultraviolet Light Blocked (300-380 nanometers) > 99 percent
    - l. Total Solar Energy Rejected 78 percent
  - 2. Physical and Thermal Properties, Nominal
    - a. Film Thickness: 2.0 mil (50 micron)
    - b. Tensile Strength 30,000 lbs/sq in (2,110 kg/cm sq)
    - c. Combustion Rate Negligible
    - d. Melting Point 260-265 degrees C

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions. Installation must be accomplished by a recognized professional installer of film for energy control purposes. Completed work must meet IWFA visual acceptance standard.



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- B. Install without bubbles, ripples, drips, dirt, cuts, tears or gaps between film and frame.
- C. Clean newly installed film and window frames after installation.
- D. Clean up cleaning solutions, run-off cleaning water and adhesive mounting solution.

#### 3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Where installed film could be damaged by subsequent construction provide tape warning strips or barricades to prevent contact.

END OF SECTION