



## SECTION 08 87 00

### ARCHITECTURAL ELECTRONIC SWITCHABLE WINDOW FILM

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Electrified Glazing – Smart - Film – Blinds (SFB), Models SFB-A-X and SFB- L-X where X is a code which denotes the color. A equals Adhesive and L equals laminated.

##### 1.2 RELATED SECTIONS

- A. Section 08 54 13 - Fiberglass Windows.
- B. Section 08 60 00 - Roof Windows and Skylights.
- C. Section 08 83 13 - Mirrored Glass Glazing.
- D. Section 08 44 23 - Structural Sealant Glazed Curtain Wall.
- E. Section 16 00 00 - Electrical

##### 1.3 REFERENCES

- A. ASHRAE - American Society for Heating, Refrigeration, and Air Conditioning Engineers; Handbook of Fundamentals.
- B. ASTM International (ASTM):
  - 1. ASTM E 84 - Standard Method of Test for Surface Burning Characteristics of Building Materials.
  - 2. ASTM E 308 - Standard Recommended Practice for Spectrophotometry and Description of Color in CIE 1931 System.
  - 3. ASTM E 903 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.

##### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods and electrical wiring.



C. Selection Samples: For each product specified, two complete sets of color samples representing manufacturer's full range of available colors.

D. Verification Samples: For each finish product specified, two samples representing actual product and color.

#### 1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of FIVE (5) years' experience.

B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of Three (3) years demonstrated experience in installing products of the same type and scope as specified.

1. Provide documentation that the installer is authorized by the Manufacturer (SFB) to perform work specified in this section.

2. Provide a commercial building reference list of   2   properties where the installer has applied electronic smart window film. This list will include the following information:

- a. Name of building.
- b. The name and telephone number of a management contact.
- c. Type of glass.
- d. Type of smart film, how it is controlled and from which mfg.
- e. Amount of smart film installed, pcs and total sqft.
- f. Date of completion.

3. Provide a Glass Stress Analysis of the existing glass and proposed glass/film combination as recommended by the film manufacturer or verify no issues exist.

C. Mock-Up: Provide a mock-up for evaluation

1. Locations and Finish areas designated by Architect and shown on the drawings.
2. Do not proceed with remaining work until workmanship, product and installation are approved by architect or working sample approved.
3. Refinish mock-up area as required to produce acceptable work.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation for no more than 7-10 days or unpack and lay flat till ready to install.



B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

#### 1.7 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, Must Be Clean, Dirt and Dust Free.

#### 1.8 WARRANTY

A. At project closeout, provide to Owner or Owners Representative an executed current copy of the manufacturer's standard limited FIVE 5-Year warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

A. Acceptable Manufacturer: Architectural and Design Solutions, LLC

Dbas: Smart-Film- Blinds (SFB), which is located at: 5410 – B Klee Mill Road, Sykesville, MD 21784 (844) 430-0281 or (443) 430-2984 [info@smartfilmb blinds.com](mailto:info@smartfilmb blinds.com) or [www.SFBfilms.com](http://www.SFBfilms.com)

B. Substitutions: Not permitted.

#### 2.2 ELECTRONIC APPLIED PDLC SMART-FILM-BLINDS – 92% VLT Super Clear

A. Dry Application Self-Adhesive Electrified PDLC Smart-Film:

1. Visible Light Transmission; ON >92%, OFF <5%
2. Sunlight Transmittance; ON: 92%, OFF: 10%
3. Visual Angle; ON: 160° Haze Factor 1-2%
4. Heat Resistance; IR Block 84% UV Block 99%
5. Operating Voltage; ON: 48-60 Volts A/C = Clear (option for reverse operation)
6. Power Consumption Maximum Width; ON: 1W per sqft
7. Transformers UL 48-60VAC @ 100W with 2A Fuse
8. Resistance Uniformity;  $\leq \pm 5\%$
9. Thickness; 4mm – 7mm Flat / .012mm Curved (Ultra-Thin) Wet or Dry
10. Hard-coat Hardness;  $\geq 30H$
11. Max Size; Self-adhesive: 70" Wide x 240" Ht (Single Piece)
12. Life Span; >100,000hrs and or 3 million+ switches = 10 years



13. Sound Control; 37db
14. Temperature Operating Range; -13°F to 150°F
- B. Laminated Smart-Film-Blinds Electrified Glazing Smart-Glass:
  1. Visible Light Transmission; ON >92%, OFF<5%
  2. Sunlight Transmittance; ON: 92%, OFF: 5%
  3. Visual Angle; ON: 160° Haze Factor 3-5%
  4. Heat Resistance; IR Block 84% UV Block 99%
  5. Operating Voltage; ON: 48-60VAC @ 100W
  6. Power Consumption Maximum Width; ON: 1W per sqft
  7. Transformer; UL 48-60VAC at 100W with 2A Fuse
  8. Resistance Uniformity;  $\leq \pm 5\%$
  9. Thickness; Glass Thickness Varies from 1/4" – 1"
  10. Hard-coat Hardness;  $\geq 30H$
  11. Max Size; Self-adhesive 70" Wide: Laminated: 84" Wide x 192"Ht (Single Piece)
  12. Life Span; >50,000hrs and or 3 million switches
  13. Sound Control; 37db
  14. Temperature Operating Range; -13°F to 150°F

## 2.3 National Electrical Code (NEC) Compliance

- A. Provide Male / Female AC Power Disconnect at the glass (required for commercial installations)
- B. PVC Electrical Busbar Wire Covers (UL fire rated for commercial use)
- C. All materials used for fabrication and assembly are by manufacturers and suppliers that provide UL, ETL, CE or UR materials with certifications that meet NEC and ANSI / ISO9001 Standards or equal.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared. Glass must be 100% clean, dry, dirt and dust free with the environment calm and HVAC turned off.
- B. If substrate preparation is the responsibility of another installer, notify Architect, GC, or Client of unsatisfactory preparation before proceeding.



### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation. Site must be 100% free from dirt and dust!
- 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 (DRY ADHESIVE PRESSURE SENSITIVE, NO WATER!)

- A. Install in accordance with manufacturer's instructions.
- B. All 120V electrical wiring must be done by a licensed electrician.
- C. Peel off protective clear layer after fully installed, sealed and wired.

### 3.4 CLEANING AND PROTECTION

- A. Remove left over material and debris from work area. Use necessary means to protect film before, during, and after installation.
- B. Wipe with lint free rag. Do not attempt to use any cleaning solution liquid to clean film, DO NOT USE PAPERTOWEL, it will scratch the film, permanently. Spray 99% isopropyl alcohol on a lint free cloth and wipe any leftover residue or debris a dry cloth did not remove. Never spray anything directly onto the smart film surface, always spray the cloth and repeat till clean. The alcohol will evaporate and dry on its own.

END OF SECTION