

SECTION 08842

POLYCARBONATE SHEET GLAZING (XL10)

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Plastic Glazing.
- B. Accessories for installation of plastic glazing.

1.2 RELATED SECTIONS

- A. Section 08800 - Glazing.

1.3 REFERENCES

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.
- B. ANSI Z97.1 - American National Standard for Glazing Materials Used in Buildings.
- C. ASTM C 1045 - Standard Practice for Calculating Thermal Transmission Properties from Steady-State Heat Flux Measurements.
- D. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
- E. ASTM D 648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load.
- F. ASTM D 696 - Standard Test Method for Coefficient of Linear Thermal Expansion.
- G. ASTM D 790/ASTM D 790M - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- H. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
- I. ASTM D 1929 - Standard Test Method for Ignition Properties of Plastics.
- J. ASTM D 2843 - Standard Test Method for Density of Smoke from the Burning and Decomposition of Plastics.

- K. ASTM D 4065 - Standard Practice for Determining and Reporting Dynamic Mechanical Properties of Plastics.
- L. ASTM G 53 - Standard Practice for Operating Light and Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Non-Metallic Materials.
- M. ISO 9002 - Quality System - Model for Quality Assurance in Production, Installation, and Servicing.

#### 1.4 SYSTEM DESCRIPTION

- A. Design requirements for installed plastic glazing systems:
  - 1. Wind Resistance:
    - a. Positive pressure: \_\_\_ psf (\_\_\_ kPa).
    - b. Negative pressure: \_\_\_ psf (\_\_\_ kPa).
  - 2. Wind Uplift: \_\_\_ psf (\_\_\_ kPa).
  - 3. Air infiltration: \_\_\_\_\_ cubic feet per minute (cu m/hr).
  - 4. Water infiltration: \_\_\_\_\_ cubic feet per minute (\_\_\_ cu m/hr).
- B. Performance Requirements for Polycarbonate Sheet Glazing:
  - 1. Comply with requirements of 16 CFR 1201 and ANSI Z97.1.
  - 2. Weather resistance, when tested in accordance with ASTM G 53 for 3500 hours with QUV Weather Tester with 313B lamps:
    - a. Light transmission when tested in accordance with ASTM D 1003: Change not to exceed 2 percent.
    - b. Yellowness index (0-3500): Change not to exceed 4 percent.
    - c. Percent haze when tested in accordance with ASTM D 1003: Change not to exceed 10 percent.
    - d. Coating integrity intact after testing period.
  - 3. Coefficient of expansion, when tested in accordance with ASTM D 696: 0.0000375 per degree F (0.0000675 per degree C).
  - 4. Modulus of elasticity, when tested in accordance with ASTM D 4065: 340,000 pounds per square inch (2,344 MPa).
  - 5. Flexural strength, when tested in accordance with ASTM D 790: 13,500 pounds per square inch (93 MPa).
  - 6. Flammability Class: BOCA Class C1, UBC Class CC1, SBC Class CC1, Dade County Florida approved.

7. Deflection temperature, when tested in accordance with ASTM D 648: 270 degrees F (132 degrees C) under 274 pounds per square inch (1.99 MPa) load.
8. Flammability, when tested in accordance with ASTM D 635: Extent of burning 1 inch (25 mm) or less.
9. Ignition temperature, when tested in accordance with ASTM D 1929: 650 degrees F (343 degrees C) or greater.
10. Smoke density, when tested in accordance with ASTM D 2843: 75, maximum.
11. Allowable continuous service temperature: 250 degrees F (121 degrees C).

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's descriptive literature for each glazing type specified, including documentation of code compliance; include descriptive literature for recommended installation accessories.
- C. Selection Samples: Two sets of color chips representing manufacturer's full range of available colors.
- D. Verification Samples: Two samples, minimum size 6 inches square, representing actual color and finish of products to be installed.
- E. Quality Control Submittals:
  1. Design Data: System analysis by manufacturer verifying compliance of plastic glazing assemblies to specified design requirements; include details of glazing edge engagement, and allowance for anticipated thermal movements.
  2. Manufacturer Qualifications: Documentation of specified manufacturer qualifications.
  3. Manufacturer's Instructions: Printed installation instructions for plastic glazing; include recommended glazing techniques and installation accessories.
- F. Operation and maintenance data: Printed instructions on recommended cleaning and maintenance materials and methods.
- G. Warranty documents: Issued and executed by manufacturer.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
  - 1. Minimum ten (10) years experience producing plastic glazing products.
  - 2. Minimum five (5) completed projects on which manufacturer has supplied plastic glazing, similar in type and scope to this project; each completed project to be minimum five (5) years old.
  - 3. ISO 9002 registered.
  
- B. Regulatory Requirements: Glazing materials to comply with the following building code:
  - 1. BOCA Class C1.
  - 2. ICBO Class CC1.
  - 3. SBCCI Class CC1.
  - 4. Dade County FL.
  
- C. Mock-Ups: Supply materials for mock-ups required in affected sections.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not slide, drag, or drop polycarbonate sheet materials.
  
- B. Do not store polycarbonate sheet materials in areas subject to direct UV exposure.
  
- C. Store products of this section with manufacturer's protective film intact.
  
- D. Maintain storage area in accordance with plastic glazing manufacturer's instructions until installation of products.

#### 1.8 WARRANTY

- A. Manufacturer's Warranty: Ten (10) year warranty against defects in materials, including breakage, discoloration, loss of light transmission, and coating delamination.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: GE Plastics Structured Products; One Plastics Avenue, Pittsfield, MA 01201. ASD. Tel: (800) 752-7674, extension 8234; Fax: (413) 448-5478.
- B. Requests for substitution will be considered in accordance with provisions of Section 01600.
- C. Substitutions: Not permitted.

## 2.2 MATERIALS

- A. Polycarbonate Sheet Glazing: LEXAN(R) XL10 translucent thermoformable polycarbonate sheet with UV-resistant surface treatment.
  - 1. Sheet thickness: \_\_\_ inch (\_\_\_ mm) nominal, plus or minus 5 percent.
  - 2. Color: \_\_\_\_\_.
  - 3. Light transmission: \_\_\_ percent.
  - 4. Shading coefficient: \_\_\_\_\_.
  - 5. Insulating value (U-value): \_\_\_\_\_ (\_\_\_ metric equivalent), as determined by calculations based on test data, in accordance with ASHRAE procedures.
- B. Accessories: Supply joint sealers and installation accessories specified in polycarbonate sheet manufacturer's instructions, or approved by polycarbonate sheet manufacturer, for indicated installation conditions.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions:
  - 1. Openings are in accordance with approved shop drawings required in Section 08800 and polycarbonate sheet manufacturer's instructions, and are plumb and level to required tolerances.
  - 2. Glazing channels or recesses are sized for correct glazing edge engagement.

### 3.2 PREPARATION

- A. Clean glazing channels or recesses free of obstructions, soil, debris, and other materials.

- B. Seal porous glazing channels or recesses with primer-sealer compatible with substrate and polycarbonate sheet materials.
- C. Cut polycarbonate sheet materials to exact sizes required, with clean edges free of notches; clean contact edges with solvent compatible with polycarbonate sheet materials, as specified or approved by polycarbonate sheet manufacturer.

### 3.3 INSTALLATION

- A. Install plastic glazing in accordance with polycarbonate sheet manufacturer's instructions.
- B. Do not use glazing accessories not specified or approved by polycarbonate sheet manufacturer.

### 3.4 CLEANING

- A. Immediately after completing construction activities relating to installation of polycarbonate sheet materials, remove remainder of strippable masking from surfaces of polycarbonate sheet glazing; do not expose masking to sunlight for an extended period of time.
- B. Immediately after removing masking, clean glazing in accordance with polycarbonate sheet manufacturer's instructions:
  - 1. Rinse surface with lukewarm water.
  - 2. Wash surface with mild soap and lukewarm water.
  - 3. Use soft cloth or sponge gently to loosen dirt and grime; scrubbing glazing surfaces, or using squeegee on glazing surfaces, is not permitted.
  - 4. Repeat rinse as above, then wipe surface dry with soft cloth until surfaces are spotless and dry.

### 3.5 PROTECTION OF INSTALLED PRODUCTS

- A. Immediately after cleaning, cover polycarbonate sheet glazing surfaces with polyethylene sheeting, or other covering material approved by polycarbonate sheet manufacturer; secure covering in place by taping to framing members - do not tape covering to polycarbonate sheet materials.

- B. Protect installed glazing from damage to function or finish by subsequent construction activities.
- C. Repair minor damage to finishes in accordance with polycarbonate sheet manufacturer's recommendations.
- D. Replace glazing having damage to function, and glazing having damage to finishes which cannot be repaired to Architect's acceptance.

END OF SECTION