

SECTION 08841

POLYCARBONATE SHEET GLAZING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Polycarbonate Sheet 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 D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
- D. ASTM D 648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load.
- E. ASTM D 696 - Standard Test Method for Coefficient of Linear Thermal Expansion.
- F. ASTM D 790/ASTM D 790M - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- G. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
- H. ASTM D 1044 - Standard Test Method for Resistance of Transparent Plastic to Surface Abrasion.
- 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 D 5420 - Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of A Striker Impacted by A Falling Weight (Gardner Impact).
- M. ASTM G 53 - Standard Practice for Operating Light and Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Non-Metallic Materials.
- N. QUV 313B - Accelerated Weathering Test of Non-Metallic Materials.
- O. ISO-9002 - International Standards Organization.

1.4 SYSTEM DESCRIPTION

- A. Design requirements for installed plastic glazing systems:
 - 1. Windload resistance:
 - a. Positive pressure: ___ pounds per square foot (___ MPa).
 - b. Negative pressure: ___ pounds per square foot (___ MPa).
 - 2. Uplift resistance: ___ pounds per square foot (___ MPa).
 - 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: Conforming to requirements of 16 CFR 1201, ANSI Z97.1, and the following:
 - 1. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - a. Light transmission: Change not to exceed 2 percent.
 - b. Yellowing intensity: Change not to exceed a delta of 2.
 - c. Percent haze: Change not to exceed 3 percent.
 - d. Coating integrity: Intact after testing period.
 - 2. Abrasion resistance after 500 hours QUV weathering, when tested for 100 cycles with 500-gram CS10F wheel in accordance with ASTM D 1044: Change in haze 5.0 percent maximum.

3. Coefficient of expansion, when tested in accordance with ASTM D 696: .0000375 inch per inch per degree F (0.0000675 ratio per degree C).
4. Modulus of elasticity, when tested in accordance with ASTM D 4065: 340,000 pounds per square inch (2343.96 MPa).
5. Flexural strength, when tested in accordance with ASTM D 790: 13,500 pounds per square inch (93.06 MPa).
6. Impact resistance, when tested in accordance with ASTM D 5420 (Drop Dart): 200 foot-pounds (271.16 N m) for 1/4-inch (6 mm) thick material.
7. Deflection temperature, when tested in accordance with ASTM D 648: 270 degrees F (132.2 degrees C) under 274 pounds per square inch (1.88 MPa) load.
8. Fire resistance rating: CC1, as determined by governing building code.
9. Self-ignition temperature, when tested in accordance with ASTM D 1929: Minimum 1000 degrees F (537.7 degrees C).
10. Smoke density, when tested in accordance with ASTM D 2843: Maximum 75.
11. Maximum allowable continuous service temperature: 180 degrees F (82.2 degrees C).

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Polycarbonate sheet 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 polycarbonate sheet manufacturer's full range of available colors.
- D. Verification Samples: Two samples, minimum size 6 inches (152 mm) square, representing actual color and finish of products to be installed.
- E. Quality Control Submittals:
 1. Design Data: System analysis by polycarbonate sheet manufacturer verifying compliance of polycarbonate sheet 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 polycarbonate sheet glazing; include storage, requirements, recommended glazing techniques, and installation accessories.
4. Specimen warranty documents.

F. Closeout Submittals:

1. Operation and maintenance data: Printed instructions on recommended cleaning and maintenance materials and methods.
2. Warranty documents specified in WARRANTY Article of PART 1 of this section.

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. Registered in accordance with ISO-9002 quality standards.

B. Regulatory Requirements: Glazing materials to comply with the following building code:

1. BOCA.
2. ICBO.
3. SBCCI.
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 polycarbonate sheet manufacturer's protective film intact.
- D. Maintain storage area in accordance with polycarbonate sheet 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. Plastic Glazing:
 - 1. Acceptable product: LEXAN(R) MR10 translucent polycarbonate sheet with UV-resistant and abrasion resistant hardcoat surface treatment both sides.
 - 2. Sheet thickness: 0.____ inch (____ mm) nominal; thickness tolerance plus or minus 5 percent.
 - 3. Color: _____.
 - 4. Light transmission: __ percent in accordance with ASTM D 1003.
 - 5. Thermal transmission: 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