



SECTION 08841

LEXAN™ THERMOCLEAR™

POLYCARBONATE SHEET GLAZING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Multiwall polycarbonate plastic glazing.
- B. Accessories for installation of plastic glazing.
- C. Skylight Glazing.

1.2 RELATED SECTIONS

- A. Section 08800 - Glazing.
- B. Section 08620 - Unit Skylights.

1.3 REFERENCES

- A. ASHRAE – American Society of Heating, Refrigerating & Air-Conditioning Engineers.
- B. 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.
- C. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
- D. ASTM D 1044 - Standard Test Method for Resistance of Transparent Plastic to Surface Abrasion.
- E. ASTM D 2843 - Standard Test Method for Density of Smoke from the Burning and Decomposition of Plastics.
- F. ASTM E-84 – Standard Test method of Surface Burning Characteristics of Building Materials.
- G. ASTM G53 – Practice for Operating Light and Water Exposure Apparatus.
- H. DIN 52210 - Testing of Airborne and Impact Sound Insulation.

- I. ISO-9002 - International Standards Organization.
- J. KRI-TNO - Dutch Testing Institute Standard Hail Resistance Simulation Test.
- K. QUV 313B - Accelerated Weathering Test of Non-Metallic Materials.

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).

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 4 inches (102 mm) square, representing actual color and finish of products to be installed.
- E. Quality Control Submittals:
 - 1. Design Data: Analysis by polycarbonate sheet manufacturer verifying compliance of polycarbonate sheet glazing; include details of glazing edge engagement, and allowance for anticipated thermal movements.
 - 2. Provide Computer Aided Sheet Engineering (CASE) report based on project information available prior to bidding.
 - 3. Manufacturer Qualifications: Documentation of specified manufacturer qualifications.
 - 4. Manufacturer's Instructions: Printed installation instructions for polycarbonate sheet glazing; include storage, requirements, recommended glazing techniques, and installation accessories.
 - 5. Specimen warranty documents.
 - 6. Operation and maintenance data: Printed instructions on recommended cleaning and maintenance materials and methods.
 - 7. Warranty documents specified in WARRANTY Article of PART 1 of this section.
- F. 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.
- G. Regulatory Requirements: Glazing materials to comply with the following building code:
 - 1. ICC Evaluation Report: ES32 86.
 - 2. International Building Code (IBC), 2006 Edition.
 - 3. International Residential Code (IRC), 2006 Edition.

- H. Mock-Ups: Supply materials for mock-ups required in affected sections.
- I. LEED: Provide recycled content documentation for MR Credit 4 – Recycled Content

1.6 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.

1.7 WARRANTY

- A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.
 - 1. Duration: Three (3) year warranty against defects in Thermoclear Easy Clean materials.
 - 2. Duration: Five (5) year warranty against defects in Lexan 9030 and 9030FR materials.
 - 3. Duration: Ten (10) year warranty against defects in materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: AmeriLux International LLC.

1212 Enterprise Dr, DePere, WI 54115; Tel: (920) 336-9300; Fax: (920) 336-9301;
www.ameriluxinternational.com E-Mail:tech.service@ameriluxinternational.com

For Preferred Systems Integrators and Installers contact AmeriLux International.
- B. No Substitutions

2.2 SCOPE / APPLICATIONS

- A. Provide polycarbonate glazing panels for use in glazed curtain wall assemblies.
- B. Provide polycarbonate glazing panels for use in signage applications.
- C. Provide polycarbonate glazing panels for use in unit skylight applications.
- D. Provide polycarbonate glazing panels for use in field fabricated skylight applications.
- E. Provide polycarbonate glazing panels for use in protective railing applications.

2.3 LEXAN THERMOCLEAR MULTIWALL POLYCARBONATE PANEL

- A. 6mm Twin Wall Lexan Thermoclear - Clear
 - 1. Thickness/Structure: 6mm Twin Wall
 - a. Thermal Transmission (U-Value): .62 as determined by calculations based on test data, in accordance with ASHRAE procedures

- b. Sound Transmission: STC 17 per DIN 52210
 - c. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 0/85
 - d. Solar Heat Gain Coefficient: .82
 - e. Light transmission: 82% Change not to exceed 6% percent.
 - f. Yellowing intensity: Change not to exceed a delta of 10.
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.
- B. 6mm Twin Wall Lexan Thermoclear - Bronze
- a. Thermal Transmission (U-Value): 0.62 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.58
 - c. Light transmission: 50% Change not to exceed 6% percent.
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 0/85
 - f. Sound Transmission: STC 17 per DIN 52210
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.
- C. 6mm Twin Wall Lexan Thermoclear - Opal
- a. Thermal Transmission (U-Value): 0.62 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.69
 - c. Light transmission: 40% Change not to exceed 6% percent.
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 0/85
 - f. Sound Transmission: STC 17 per DIN 52210
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.
- D. 8mm Twin Wall Lexan Thermoclear - Clear
- a. Thermal Transmission (U-Value): 0.57 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.82
 - c. Light transmission: 81% Change not to exceed 6% percent.
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 10/450
 - f. Sound Transmission: STC 18 per DIN 52210
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.

- E. 8mm Twin Wall Lexan Thermoclear - Bronze
 - a. Thermal Transmission (U-Value): 0.57 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.59
 - c. Light transmission: 50% Change not to exceed 6% percent.
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 10/450
 - f. Sound Transmission: STC 18 per DIN 52210
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.

- F. 8mm Twin Wall Lexan Thermoclear - Opal
 - a. Thermal Transmission (U-Value): 0.57 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.68
 - c. Light transmission: 40% Change not to exceed 6% percent.
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 10/450
 - f. Sound Transmission: STC 18 per DIN 52210
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.

- G. 10mm Twin Wall Lexan Thermoclear - Clear
 - a. Thermal Transmission (U-Value): 0.52 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.80
 - c. Light transmission: 80% Change not to exceed 6% percent.
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 0/15
 - f. Sound Transmission: STC 19 per DIN 52210
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.

- H. 10mm Twin Wall Lexan Thermoclear - Bronze
 - a. Thermal Transmission (U-Value): 0.52 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.55
 - c. Light transmission: 50% Change not to exceed 6% percent.
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 0/15
 - f. Sound Transmission: STC 19 per DIN 52210
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:

- h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.
- I. 10mm Twin Wall Lexan Thermoclear - Opal
- a. Thermal Transmission (U-Value): 0.52 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.68
 - c. Light transmission: 40% Change not to exceed 6% percent
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 0/15
 - f. Sound Transmission: STC 19 per DIN 52210
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.
- J. 16mm Triple Wall Lexan Thermoclear - Clear
- a. Thermal Transmission (U-Value): 0.4 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.78
 - c. Light transmission: 74% Change not to exceed 6% percent.
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 5/30
 - f. Sound Transmission: STC 21 per DIN 52210
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.
- K. 16mm Triple Wall Lexan Thermoclear - Bronze
- a. Thermal Transmission (U-Value): 0.4 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.53
 - c. Light transmission: 30% Change not to exceed 6% percent.
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 5/30
 - f. Sound Transmission: STC 21 per DIN 52210
 - g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
 - h. Impact Resistant >69ft/sec per KRI-TNO.
 - i. Coating integrity: Intact after testing period.
- L. 16mm Triple Wall Lexan Thermoclear - Opal
- a. Thermal Transmission (U-Value): 0.4 as determined by calculations based on test data, in accordance with ASHRAE procedures
 - b. Solar Heat Gain Coefficient: 0.57
 - c. Light transmission: 40% Change not to exceed 6% percent.
 - d. Yellowing intensity: Change not to exceed a delta of 10.
 - e. Fire rating: Class A per ASTM E-84. Class CCI per ASTM D-635. Maximum Flame Spread/Smoke Development: 5/30

- f. Sound Transmission: STC 21 per DIN 52210
- g. Weather resistance, when tested for 1500 hours in accordance with ASTM G 53 and QUV 313B:
- h. Impact Resistant >69ft/sec per KRI-TNO.
- i. Coating integrity: Intact after testing period.

2.4 ACCESSORIES

- A. Supply tapes, trim profiles and installation accessories specified in polycarbonate sheet manufacturer's instructions, or approved by polycarbonate sheet manufacturer, for indicated installation conditions.
- B. See System Integrator's specification for additional frame profiles and systems accessories. For preferred Systems Integrators contact AmeriLux International.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:
 - 1. Openings are in accordance with approved shop drawings required in Section
 - 2. <MF SQ 08800 and polycarbonate sheet manufacturer's instructions, and are plumb and level to required tolerances#08 83 13 - Mirrored Glass Glazing>.
 - 3. 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.

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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, and 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