

SECTION 08800 -- GLAZING

Part 1 – GENERAL

1.1 SUMMARY

A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

1. Glass
2. Glazing materials

B. Related Items

1. Windows: Section 08
2. Doors: Section 08
3. Glazed Curtainwall: Section 08
4. Storefront: Section 08
5. Skylights: Section 08

1.2 DEFINITIONS

A. Manufacturer: A firm that produces primary glass or fabricated glass as defined in referenced glazing publications

B. Interspace: Space between lites of any insulating glass unit that contains dehydrated air or a specified gas.

C. Deterioration of Insulating Glass: Failure of the hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

D. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination material obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standards.

1.3 DESIGN REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal

movements, wind and impact loads without failure, including loss or glass breakage due to defective manufacture, fabrication, and installation, deterioration of glazing materials and other defects in construction.

B. Glass Design: Provide glass lites in the thickness and strengths (annealed or tempered) to meet or exceed the following criteria based on analysis of project loads and in-service conditions.

1. Minimum glass thickness of lites composed of annealed or tempered glass are selected so the worst-case probability of failure does not exceed the following:

- a. Specified Design Wind Loads: As indicated on the Structural Drawings
- b. Specified Design Snow Loads: As indicated on the Structural Drawings, but not less than snow loads applicable to Project, required by ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 7, "Snow Loads.
- c. Minimum Glass Thickness for Exterior Lites: Not less than 6mm

C. Thermal and Optical Performance Properties (glazing systems only): Provide glass with performance properties specified from manufacturer, as determined according to procedures indicated below:

1. Center-of-glass U-values: NFRC 100 methodology using LBL-35298 WINDOW 5.2 computer program, expressed as BTU/sq ft x h x deg F (W/sq. m x K).
2. Center-of-glass solar heat gain coefficient: NFRC 200 methodology using LBL-35298 WINDOW 5.2 computer program
3. Solar Optical Properties: NFRC 300.

1.4 SUBMITTALS

- A. Submit a minimum size of 6-inch square samples of each type of glass indicated.
- B. Glazing contractor to obtain compatibility and adhesion test reports from sealant manufacturer indicating that glazing materials were tested for compatibility and adhesion with glazing sealants and other glazing materials.

1.5 QUALITY ASSURANCE

A. Comply with published recommendations of glass product manufacturers and organizations below, except where more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this section or in referenced standards.

1. GANA Publications

- a. GANA Glazing Manual
- b. Tempering Division – Engineering Standards Manual

c. Laminating Division – Laminated Glass Design Guide

2. LSGA (Laminators Safety Glass Association) Publications

B. Safety glass products are to comply with ANSI Z97.1 -2004 and testing requirements of 16 CFR Part 1201 for Category II materials.

1. Subject to compliance with requirements, provide safety glass permanently marked with a Safety Glazing certification label, unless otherwise requested by customer.

3form Inc.
16 CFR 1201 II
ANSI Z97.1-2004
UA

1.6 DELIVERY, STORAGE AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun or other causes.
- B. All 3form Pressed and Poured Glass should be handled and installed by an experienced glazier.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by the glazing material manufacturers and when glazing channel substrates are wet from rain, frost condensation, or other causes.
 1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F (4.4 deg C)

1.8 WARRANTY

Provide a written 1-year warranty from ship date for 3form Pressed glass, Poured glass, and Insulated Glass Units. Warranty covers deterioration due to normal conditions of use and not to handling, installing, and cleaning practices contrary to the glass manufacturer's published instructions.

Part 2 – PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

- A. Available Products: Subject to compliance and requirements, products that

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may be incorporated into the scope include the products indicated in the glass schedule at the end of part 3.

2.2 GLASS PRODUCTS

A. Flat Glass

1. ASTM C 1036, Type 1, Class 1 (clear) or Class 2 (tinted), and Quality q3.1. ASTM C 1048 Heat Treated Flat Glass
 - a. Kind heat-strengthened (HS)
 - b. Kind fully tempered (FT)
 1. Heat treated flat glass to be by horizontal (roller hearth) process with inherent rollerwave distortion parallel to the bottom edge of the glass as installed.

B. Laminated Glass

1. ASTM C1172 -- Laminated Architectural Flat Glass
2. Laminated Process: Autoclave with heat plus pressure
3. Tie Layer Material
4. Decorative interlayer

C. Insulating Glass

1. ASTM E773 Seal Durability of Sealed Insulating Glass Units
2. ASTM E774 Sealed Insulating Glass Units
3. Sealed insulating glass units to be double sealed with a primary seal of black (or gray) polyisobutylene and a secondary seal of black polysulphide. Silicone, if required for structural glazing, must be requested.
4. Lites shall be separated by an aluminum spacer.

2.3 MISCELLANEOUS GLAZING MATERIALS

- A. Select glazing sealants, tapes, gaskets and other glazing materials of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units, glazing channel substrates, and lamination inserts, under conditions of installation and service, as demonstrated by testing and field experience.

Part 3 – EXECUTION

3.1 EXAMINATION

- A. Verify prepared openings for glazing are correctly sized and within tolerance. It is highly recommended to take field measurements of the installation before ordering 3form Pressed or Poured glass to size.
- B. Verify that a functioning weep system is present.

- C. Verify that the minimum required face and edge clearances are being followed.
- D. Do not proceed with glazing until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING

- A. Install products using the recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials except where more stringent requirements are indicated, including those in "GANA Glazing Manual".
- B. Protect glass from edge damage during the handling and installation.
- C. Protect glass from contact with contaminating substances resulting from construction operations.
- D. Remove and replace glass that is broken, chipped, cracked or damaged in any way.

3.4 CLEANING

- A. Clean excess sealant or compound from glass and framing members immediately after application, using solvents or cleaners recommended by manufacturers.

Glass Schedule

(Words that appear in parentheses are considered variables and require your input.)

3form® Insulating Glass Units

GLASS REQUIREMENTS

- A. Exterior Glass—(Thickness) (Color) (Heat Treatment) ASTM C 1036 Type 1, Class 1 (Clear) or Class 2 (Tinted, Heat- absorbing, and Light-reducing) (remove ASTM C1036 if exterior ply is a laminated glass), Quality q3; ASTM C 1048 Condition A, Kind HS or FT (remove if annealed glass); ASTM C1172, Kind LA (if both plies annealed), LHS (if both plies heat strengthened), LT (if both plies are tempered), LD (contains decorative interlayer) (remove ASTM C 1172 if the exterior glass is monolithic)
- B. Interior Glass—(Thickness) (Clear) (Heat Treatment) ASTM C 1036 Type 1, Class 1 (Clear) or Class 2 (Tinted, Heat- absorbing, and Light-reducing) (remove ASTM C1036 if interior ply is a laminated glass), Quality q3; ASTM C 1048

Condition A, Kind HS or FT (remove if annealed glass); ASTM C1172, Kind LA (if both plies annealed), LHS (if both plies heat strengthened), LT (if both plies are tempered), LD (contains decorative interlayer) (remove ASTM C 1172 if the interior glass is monolithic)

Note: LA = Laminated annealed
LHS = Laminated heat strengthened
LT = Laminated tempered
LD = Laminated with decorative interlayer
FT = Fully tempered
HS = Heat strengthened

UNIT MAKEUP

A. (Overall Thickness) insulating glass unit as manufactured by 3form®.

Layup:

- 1 (Thickness) (Interlayer/Color) (Monolithic or Pressed) (Type of Glass) Glass
- 2 (Thickness) airspace
- 3 (Thickness) (Interlayer/Color) (Monolithic or Pressed) (Type of Glass) Glass

UNIT REQUIREMENTS (omit this section or parts of this section if not applicable, otherwise data requested from 3form)

Visible light transmission of ____ %
Exterior reflection of ____ %
Winter nighttime U-Value of ____ BTU/(hr*ft²*°F)
Summer daytime U-Value of ____ BTU/(hr*ft²*°F)
Shading coefficient of ____

3form® Pressed Glass and Poured Glass Units

GLASS REQUIREMENTS

- A. Two-ply laminate, both plies (Heat Treatment) ASTM C 1172, Kind LA (if both plies annealed), LHS (if both plies heat strengthened), LT (if both plies are tempered), LD (contains decorative interlayer)

Note: LA = Laminated annealed
LHS = Laminated heat strengthened
LT = Laminated tempered
LD = Laminated with decorative interlayer
FT = Fully tempered
HS = Heat strengthened

UNIT MAKEUP

A. (Overall Thickness) Pressed or Poured glass unit as manufactured by 3form®.

Layup:

- 1 (Thickness) (Type of Glass) (Heat Treatment*) Glass
- 2 Tie layer
- 3 (Decorative Interlayer) (Name/Color)
- 4 Tie layer
- 5 (Thickness) (Type of Glass) (Heat Treatment*) Glass

<* Tempered glass is only available for 3formPressed Glass, not 3form Poured Glass.>

UNIT REQUIREMENTS (omit this section or parts of this section if not applicable, otherwise data requested from 3form)

Visible light transmission of ____%

Exterior reflection of ____%

Winter nighttime U-Value of ____ BTU/(hr*ft²*°F)

Summer daytime U-Value of ____ BTU/(hr*ft²*°F)

Shading coefficient of ____

END OF SECTION 08800

This document is offered to assist in specifying 3form[®]'s Pressed, Poured, and Insulated Glass Products. 3form[®] does not assume any responsibility for the adequacy of the specification for a particular application. The design professional must confirm applicable code and design.