**SECTION 08 80 00**

**1-3/4” TRANSLUCENT INSULATED GLAZING PANELS**

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Specifier: Consult Kalwall for assistance at **info@kalwall.com** or 1-800-258-9777.

Some specification choices are very involved and require consultation in order for the Kalwall to meet the performance desired by the Owner and Architect.

1. GENERAL
	* + 1. SUMMARY
				1. Section includes the translucent insulated glazing panels as shown and specified. Work includes providing and installing:

Flattranslucent insulated glazing panels

* + - * 1. Related Sections:

Insert sections in subparagraph below that contain requirements the Contractor might expect to find in this section but are specified in other sections.

**<Insert Related Sections>**

* + - 1. SUBMITTALS
				1. Submit shop drawings. Includes material descriptions, and elevations and details where applicable.
				2. When requested, submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below.

Sandwich panels: 7” x 12” units

* + - * 1. Submit product reports from a qualified independent testing agency indicating each type and class of panel complies with the project performance requirements, based on comprehensive testing of current products. Previously completed reports will be acceptable if for current manufacturer and indicative of products used on this project.

Delete product reports below that are not applicable.

Reports required (if applicable) are:

Flame Spread and Smoke Developed (UL 723) – Submit UL Card

Burn Extent (ASTM D 635)

Color Difference (ASTM D 2244)

Impact Strength (UL 972)

Bond Tensile Strength (ASTM C 297 after aging by ASTM D 1037)

Bond Shear Strength (ASTM D 1002)

Insulation U-Factor (NFRC 100)

NFRC Visible Light Transmittance (NFRC 202 or Estimated per ASTM 972)

Solar Heat Gain Coefficient (NFRC or Estimated**)**

* + - 1. CLOSEOUT SUBMITTALS
				1. Provide field maintenance manual.
			2. QUALITY ASSURANCE
				1. Manufacturer’s Qualifications:

Panels shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten consecutive years and which can show evidence of materials being satisfactorily used on at least six projects of similar size, scope, and location. At least three of the projects shall have been in successful use for ten years or longer.

* + - * 1. Installer’s Qualifications: Installation shall be performed by experienced glazing installers and shall be of the highest quality.
			1. PERFORMANCE REQUIREMENTS
				1. The manufacturer shall be responsible for the configuration and fabrication of the complete glazing panel.

Insert structural loads, as determined by project’s structural engineer in subparagraphs below.

Insert all loads in PSF, not wind speed. Indicate whether the provided wind load is Ultimate or ASD.

Structural Loads. Provide panel capable of handling the following loads:

Positive Wind Load (PSF): <**Insert Number**> **PSF [Ultimate] or [ASD]**

Negative Wind Load (PSF): <**Insert Number**> **PSF [Ultimate] or [ASD]**

* + - * 1. Lateral Deflection Limits:

Based on project conditions or requirements of authorities having jurisdiction, more stringent deflection criteria than those specified in options in subparagraphs below may be required. Building codes include different deflection criteria depending on whether panel systems are classified as components and cladding or as part of the main wind-force-resisting system.

Glazing panels shall be supported on all four sides. Center of panel deflection at design wind pressure shall be no more than 1”.

* + - * 1. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

Temperature Change (Range): 110 deg F (43 deg C), ambient; 150 deg F (66 deg C), material surfaces.

* + - 1. DELIVERY, STORAGE AND HANDLING
				1. Deliver panels in manufacturer’s standard protective packaging.
				2. Store panels on the long edge; several inches above the ground, blocked and under cover in accordance with manufacturer’s storage and handling instructions.
			2. WARRANTY

Extended Warranties may be available depending on project design, scope, location, and exposure at additional cost. Please consult Kalwall since not all Extended Warranties will apply to all panels, designs, or applications.

Options for Extended Warranties are:

1. Material and Workmanship: Up to 5 year.
2. Panel Warranties:
	1. Up to 10 year Limited Warranty covering separation of faces from grid core affecting structural strength, noticeable surface fiber exposure of the exterior panel face, and/or abnormal color change of the exterior face sheet.
	2. Up to 20 year Limited Warranty against external exposure of the reinforcing glass fibers.
		* + 1. Provide manufacturer's written warranty agreeing to repair or replace panels which fail in material or workmanship within ten years from the date of delivery, pro-rata after five years. Failure of material or workmanship shall include the following: abnormal color change, fiberbloom, and delamination of surface coating.
3. PRODUCTS
	* + 1. MANUFACTURER
				1. The basis for this specification is for products manufactured by Kalwall Corporation. Other manufacturers may bid this project subject to compliance with the performance requirements of this specification and submission of evidence thereof. Listing other manufacturers’ names in this specification does not constitute approval of their products or relieve them of compliance with all the performance requirements contained herein.
				2. Kalwall Corporation, Tel: (800) 258-9777 – Fax: (603) 627-7905 – Email: info@kalwall.com
			2. PANEL COMPONENTS
				1. Face Sheets:

Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.

Thermoplastic (e.g., polycarbonate, acrylic) faces are not acceptable.

Face sheets shall not deform, deflect, or drip when subjected to fire or flame.

Interior face sheets:

See [**Fiberglass Reinforced Polymer faces - Kalwall**](https://www.kalwall.com/technology/panel-technology/fiberglass-reinforced-polymerfrpskins/)

For Paragraph a, standard S-171 interior face sheet has a flame spread rating of 50, which meets the requirements for an IBC Class B Interior Finish needed in most building spaces.

Optional Type 25 interior face sheet has a flame spread rating of 25 that meets the requirements for an IBC Class A Interior Finish, which may be required in unsprinklered, occupied spaces or exitways (see IBC Chapter 8).

Flame spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than **[50] [25]** and smoke developed no greater than 450 when tested in accordance with UL 723.

Burn extent by ASTM D 635 shall be no greater than 1”.

Exterior face sheets:

Color stability – For standard exterior SW face sheets: select 5 years exposure.

 For Type A exterior face sheet: select 3 years.

Color stability: Full thickness of the exterior face sheet shall not change color more than 3 CIE Units DELTA E by ASTM D 2244 after **[3] [5]** years outdoor South Florida weathering at 5° facing south as measured on a white sample, with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.

Projects requiring standard impact resistance: Retain Paragraphs b and d (delete c).

For Paragraph b, the impact strength of the standard .070” thick SW exterior face sheet is 70 ft. lbs. The optional Hi-Impact face sheet is 230 ft. lbs. which may be required in vandal prone exposures among others. Hi-Impact face sheet is available in white only.

Strength: Exterior face sheet shall be uniform in strength, impenetrable by handheld pencil and repel an impact minimum of **[70 ft. lbs.)] [230 ft. lbs.)]** without fracture or tear when impacted by a 3-1/4” diameter, 5 lb. free-falling ball per UL 972.

Erosion Protection: Integral, embedded-glass erosion barrier.

Appearance:

**CAUTION:** Face sheet colors affect solar properties. Refer to [**Light Transmission/SHGC**](https://www.kalwall.com/technology/performance/visible-light-transmission/) chart.

Exterior face sheets: Enter thickness and color.

Standard exterior face sheet is .070” thick and is available in standard White or Crystal.

Optional .070” thick Kal-tints are available in Cumulus, Cirrus, Nimbus, and Stratus.

Optional Hi-Impact is .052” thick in White only.

Interior face sheet: Enter thickness and color.

Standard interior face sheet is .045” thick and is available in White or Crystal, for either flame spread.

Optional Hi-Impact is .052” thick in White only.

Exterior face sheet: Smooth, <**Insert Thickness**> thick and <**Insert Color**> in color.

Interior face sheet: Smooth, <**Insert Thickness**> thick and <**Insert Color**> in color.

Face sheets shall not vary more than ± 10% in thickness and be uniform in color.

* + - * 1. Grid Core:

The grid core for panels shall be Thermally Broken Composite of aluminum and fiberglass for maximum thermal efficiency. See [Structural Grid Cores - Kalwall](https://www.kalwall.com/technology/panel-technology/structural-grid-cores/).

Thermally Broken CompositeI-beam grid core shall be of alloy and temper recommended by manufacturer with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 1/2”.

I-beam Thermal break: Minimum 5/8” thermoset fiberglass composite. Poured and de-bridged thermal break is not acceptable.

* + - * 1. Laminate Adhesive:

Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council “Acceptance Criteria for Sandwich Panel Adhesives".

Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two exposures to six cycles each of the aging conditions prescribed by ASTM D 1037.

Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure to four separate conditions:

50% Relative Humidity at 68° F: 540 PSI

182° F: 100 PSI

Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI

Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI

* + - 1. PANEL CONSTRUCTION
				1. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.

Note 2. Select grid core insulation. Consult representative.

Note 3. Panel U-factors specified are for just the panel itself.

Notes 3-6. Panel U-factor, Visible Light Transmittance, and Solar heat gain coefficient are closely linked and must be specified accordingly. Visible Light Transmittance (VLT) values by NFRC 202 are available for Crystal/Crystal, Crystal/White, White/Crystal, and White/White face sheet combinations as well as all ‘Cloud Series’ Kaltints exterior options. Select 5a or 5b in accordance with face sheet color selection and insert light transmittance value. Delete product report under section 1.2 E, Line k, for NFRC 202 if one of these face sheet combinations is not selected. Refer to [**Thermal Performance / VLT / SHGC chart**](https://www.kalwall.com/technology/performance/thermal-performance/).

Note 6. Insert Grid nominal size (as viewed) and pattern. Standard grids 12 x 24 shoji, 24 x 12 shoji, 8 x 20 shoji, 20 x 8 shoji, or 12” x 12” square pattern called Tuckerman. Other sizes and patterns are available including Ladder and VertiKal. See [**Structural Grid Cores - Kalwall**](https://www.kalwall.com/technology/panel-technology/structural-grid-cores/).

Thickness: 1-3/4 inches

Grid Core Insulation: Fill panel cores with **[ fiberglass batt ]**

Panel U-factor by NFRC certified laboratory:

1-3/4” thermally broken grid **[ 0.28 ] [ 0.16 ] [ 0.14 ]**

Visible Light Transmittance (VLT): **[Select VLT criteria below]**

Visible LT (NFRC 202) by NFRC certified laboratory: <**Insert Value**> %. **[For Crystal/Crystal, Crystal/White, White/Crystal, or White/White face sheet combinations only]**

 **OR**

Visible LT: <**Insert Value**> %. **[For all other face sheet combinations]**

Solar heat gain coefficient <**Insert Value**>

Grid pattern as viewed: Nominal size <**Insert Grid Size**> ; pattern <**Insert Pattern**>

PART 3 – EXECUTION

3.1 EXAMINATION

A. Installer shall examine substrates, supporting structure, and installation conditions.

B. Do not proceed with panel installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install the panels in accordance with the manufacturer's fabrication drawings.

3.3 FIELD QUALITY CONTROL **Delete this section if not applicable.**

A. Repair or replace work that does not pass quality control inspection.

3.4 CLEANING

A. Clean the panel, interior and exterior, immediately after installation.

B. Refer to manufacturer's written recommendations.

END OF SECTION 088000