



An AIA Industries Company

DÄLYTE

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290 E 56th Avenue

Denver, CO 80216

Phone: (303) 296-9696

www.dalyteusa.com

SECTION 08 45 13

Structured Polycarbonate Panel Assemblies

EcoWall™ System with Polycarbonate Tongue and Groove Glazing

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Translucent daylighting system.
 - 1. Design, engineer, manufacture, and installation of single panel thick insulated translucent window/wall. An assembly of one polycarbonate glazing panel in one daylighting panel assembly, incorporated into a complete aluminum Adjust-a-Frame® system with removable glazing stops for maintenance and thermal strut thermal break system that has been tested and warranted by the manufacturer as a single source system.
 - 2. Double panel extruded polycarbonate or fiberglass sandwich panel systems do not meet these requirements and are not acceptable.

1.2 RELATED SECTIONS

- A. Section 08 84 00 – Translucent Plastic Glazing.

1.3 REFERENCES

- A. ASTM E 84 – Surface Burning Characteristics of Building Materials.
- B. ASTM D 635 – Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
- C. ASTM D 1929 – Ignition Temperature of Plastics.
- D. ASTM D 2843 – Density of Smoke.



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A.2 DESIGN REQUIREMENTS

- A. Air Infiltration: Not to exceed 0.15 cfm/sq. ft. of glazing area when tested at a pressure of 6.24 psf (0.03 kPa) in accordance with ASTM E-283.
- B. Water Penetration: None when tested vertically at a pressure of 12 psf (0.043125 kPa) in accordance with ASTM E-331 and ASTM E-547.
- C. Structural Performance: The system shall be capable of supporting the design loading for this project as listed below:
 - i. Positive Wind Load: _____ psf
 - ii. Negative Wind Load: _____ psf
 - iii. Tested by a certified independent testing laboratory, in accordance with ASTM E-330 to a maximum of +/-60 psf. The deflection of all framing members oriented normal to the glazing plane shall not exceed L/100.

A.2 SUBMITTALS

- A. Comply with Section _____ - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including materials, components and fabrication, finish, and installation instructions.
- C. Shop Drawings: Submit manufacturer's shop drawings, including plans, elevations, sections, and details, indicating dimensions, tolerances, profiles, anchorage, connections, fasteners, hardware, provisions for expansion and contraction, drainage, flashing, finish, and attachments to supports of glazing, framing, and options.
- D. Samples: Submit manufacturer's samples for each glazing type, framing system, finish, and color specified.
- E. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- F. Manufacturer's Project References: Submit list of completed projects including project name and location, name of architect, and type of daylighting manufactured.
- G. Warranty: Submit manufacturer's standard warranty.
- H. Testing Reports: Submit manufacturer's test reports.
 - 1. Fire tests (ASTM E-84, D-635, D-1929 & D-2843)
 - 2. Air infiltration test (ASTM E-283)
 - 3. Water penetration test (ASTM E-331)
 - 4. Structural test (ASTM E-330)



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1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Continuously engaged in translucent insulated daylighting manufacturing with a minimum of 10 years successful experience.
2. Able to demonstrate successful performance on comparable projects.
3. Responsible for all components, including structural design.

B. Installer's Qualifications:

1. Authorized by manufacturer to install translucent glazing products.
2. Trained by manufacturer's standard training methods and policies.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, and location of installation.

B. Storage:

1. Store materials in a clean, dry area indoors in accordance with manufacturer's instructions.
2. Keep temporary protective coverings in place.
3. Do not expose panels to direct sunlight for extended periods.

1.8 WARRANTY

A. Warranty Period: Five years on weatherization starting on date of DÄLYTE installation completion.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Basis of Design: DÄLYTE, 290 East 56th Ave, Denver CO 80216.
Phone (303) 296-9696. Web: www.dalyteusa.com

1. All manufacturers acceptable for use on this project must be approved prior to bid. Manufacturers must submit evidence of compliance with all performance criteria specified including test reports. Any exceptions taken from this specification must be noted on the approval request. If approval is given, product performance will be as specified. Should non-compliance be subsequently discovered, the previously given approval will be invalidated and use of the product on the project will be disallowed. Requests for approval, with all appropriate submittal data and samples must be received no less than 15 days prior to bid date. A list of all approved manufacturers and products will be issued by addendum. No other manufacturers will be acceptable. No verbal approval will be given. Fiberglass Sandwich Panel Systems and Double Panels Polycarbonate Glazing Systems are unacceptable.

2.2 SYSTEM

A. Product: EcoWall™ System, Adjust-a-Frame® glazed with polycarbonate structured sheet. Glass fiber reinforced thermoset resin (fiberglass) faces are not acceptable.



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2.3 GLAZING

- A. Sheet Thicknesses: 40mm
- B. Profile: tongue and groove (various wall configurations available, please contact DÄLYTE).
 - 1. Color: manufacturer's standard - Clear and Opal (other colors available)
 - 2. Polycarbonate Sheet - General: Comply with ANSI Z 97.1 and with properties as follows:
 - A. Tensile strength, yield: 8,500-10,200 psi (58.6-70 Mpa), in accordance with ASTM i. D638.
 - B. Tensile strength, ultimate: 7,830-10,400 psi (54-72 Mpa), in accordance with ASTM D 638.
 - C. Tensile modulus: 232-348 ksi (1.6-2.4 GPa), in accordance with ASTM D 638.
 - D. Flexural yield strength: 10,900-16,000 psi (75-110 Mpa), in accordance with ASTM D 790.
 - E. Flexural modulus: 261-600 ksi (1.8-4.134 GPa), in accordance with ASTM D 790.
 - F. Izod impact strength (0.125 inch notched): .937-18.3 ft lb/in/in (0.5-9.77 J/cm) of notch, in accordance with ASTM D 256.
 - G. Self-ignition temperature: 986 degrees F (530 degrees C), in accordance with ASTM D 1929.
 - H. Horizontal Burn Rate for Light Transmitting Plastic is CC-1 with extent of burn 1 inch (25.4 mm) or less per ASTM D635. (Gallina® Sheets of 1/4 inch (6 mm), 5/16 inch (8 mm), 3/8 inch (10 mm) and 5/8 inch (16 mm) thicknesses are classified CC-1.)
 - I. Smoke density rating of less than 450 when tested in accordance with ASTM E 662
 - 3. Modular panel translucent polycarbonate sheet: Provide tongue and groove, insulated polycarbonate sheet in sizes indicated on the Drawings and as follows:
 - a. ArcoPlus 547 40mm seven wall U.V. protected sheet
 - b. Sheet widths: 19.7 inches.
 - c. Accessories
 - i. Glazing Accessories: As recommended by manufacturer of plastic glazing sheet for wet or dry glazing installations.
 - ii. Aluminum Channel: Provided approved aluminum channel mounting.
 - iii. Mounting: Provide approved mounting clips.
 - iv. Fastening Screws: Provide self-tapping, corrosion resistant, screws as appropriate for the installation.
 - v. Sealant Tape: Aluminum Tape, Anti DUST Tape or equal.
 - vi. Gaskets: Provide gaskets suitable for closing the ends of sheet.

2.4 STRUCTURAL FRAMING SYSTEM

- A. Framing System: EcoWall™ System.
 - 1. Alloy: 6063 T6.
- B. Thermal Barrier Construction:
 - 1. Framing Member Thermal Barriers:
 - A. Thermal Barriers shall be Insulbar® manufactured by Ensinger Building Products 1 Main Street Grenloch, New Jersey 08032



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- B. Thermal Barrier shall be Polyamide 66 with multi-axial glass fiber alignment of not less than 25% per volume.
- C. Polyamide shall not have a thermal conductivity greater than 0.30 W/m•K (0.17 BTU/hr-ft-°F)
- D. Fenestration framing components shall be mechanically knurled then crimped in place to obtain a minimum composite shear value of 800Lbs per 4" section or 3.5 kN per 100 mm or as specified by a qualified Engineer.
- E. Provide manufacturer's crimped in-place thermal barrier construction that has been in use for not less than three years.
- F. Thermal barriers must be located in such a way as to safely and adequately support the glass and maintain glass retention under all designated design loads.
- G. Poured in place Polyurethane Thermal Barriers will not be accepted.

C. Provide additional aluminum structure where and if required.

2.5 MATERIALS

A. Glazing Panels:

1. Panels: Polycarbonate structured sheets.
2. UV Stabilization: Coextruded into panels, not coated.
3. Resist Yellowing: Maximum 10 delta for a minimum of 10 years.
4. Sheet Appearance: Uniform in color.
5. Expansion and Contraction: Design and install components with provisions for expansion and contraction due to a 120 degree F temperature variation.
6. Gaskets and Dry Seals: EPDM.
7. Produced: USA certificate of origin required. Panels produced outside of USA will not be allowed.

B. Joint Sealant:

1. Factory-Applied Sealant: Gunnable, non-hardening, elastomeric sealant. ASTM C 920, Type S, Class 12, Grade NS. Fed Spec TT-S-1657, Type 1.n.
2. Field-Applied Sealant: Approved by translucent insulated daylighting manufacturer. As specified elsewhere in specifications.

C. Field Fasteners:

1. Comply with translucent insulated daylighting manufacturer's instructions for fastener types, quantities, and usage.
2. Cadmium-plated or better. Prevent oxidation or electrolytic interaction with framing.
3. Aluminum-to-Aluminum Connections: Self-drilling screws, No. 10 and No. 12, of sufficient length for full-thread engagement, as determined by manufacturer.



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2. COLOR AND FINISH

- A. Panel Color:
 - 1. Manufacturer's standard: Clear and Opal
Architect to Specify. Other colors available
- B. Aluminum Finish:
 - 1. Manufacturer's standard: Class I Clear Anodized per AA-M10C22A31 or
Class I Dark Bronze Anodized per AA-M10C22A42/A44]
 - 2. Architect to Specify. Powder Coat and other finishes available

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive translucent insulated daylighting. Notify Architect of conditions that would adversely affect installation or subsequent utilization of daylighting. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Ensure supports to receive translucent insulated daylighting are clean, flat, level, plumb and square, accurately aligned, and correctly located.

3.3 INSTALLATION

- A. Install translucent insulated daylighting in accordance with manufacturer's instructions at locations indicated on the drawings.
- B. Install daylighting level, plumb, square, accurately aligned, correctly located, and without warp.
- C. Anchor daylighting securely in place to supports. Use attachment methods permitting adjustment for construction tolerances, irregularities, alignment, and expansion and contraction.
- D. Install daylighting including flashing, fasteners, hardware, gaskets, joint sealants, and glazing materials required for a complete, weather tight installation.
- E. Sheet Metal Flashing: Install sheet metal flashing as specified Elsewhere in specifications.
- F. Joint Sealants: Install joint sealants as specified Elsewhere in specifications.
- G. Repair minor damages to metal finish or glazing in accordance with manufacturer's instructions and as approved by Architect. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.



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3.4 CLEANING

- A. Clean translucent insulated daylighting in accordance with manufacturer's instructions.
- B. Clean inside and outside of daylighting immediately after installation and after joint sealants have cured.
- C. Remove temporary protective coverings at time of installation (interior) and immediately after each panel is installed (exterior).
- D. Remove excess joint sealant in accordance with sealant manufacturer's instructions.
- E. Do not use harsh cleaning materials or methods that would damage metal finish or glazing.

3.5 PROTECTION

- A. Protect installed translucent insulated daylighting from damage during construction.
- B. Remove and replace damaged daylighting components as determined by Architect.

END OF SECTION