

# Product Data Sheet

## Polycarbonate Panel System – Crystal Structures

CSI Section: 08 45 00– Translucent Roof / Wall Assemblies

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### 1. Product Name & Description

**Product Name:** Crystal Structures Polycarbonate Panel System

**Description:**

The Polycarbonate Panel System is a high-performance daylighting and wall/roof solution designed to provide natural light while maintaining durability, thermal efficiency, and impact resistance. These panels are engineered for architectural applications requiring lightweight, strong, and thermally efficient glazing.

Applications include exterior walls, skylights, canopies, atriums, and translucent façades. Panels may be multiwall, solid, or laminated, depending on thermal, structural, or visual requirements.

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### 2. Manufacturer

**Manufacturer:** Crystal Structures

**Address:** 3333 N Mead, Wichita, KS 67219

**Phone:** (316) 838-0033

**Website:** <https://www.crystalstructuresglazing.com>

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### 3. Applicable Standards & Testing

- **ASTM E283** – Air Leakage
  - **ASTM E330** – Structural Load Resistance
  - **ASTM E331 / E547** – Water Penetration Resistance
  - **ASTM D635 / D1929** – Flammability / Ignition
  - **UL 94** – Plastic Flammability
  - **FM 4473 / UL 2218** – Hail and Impact Resistance
  - **NFRC 100 / 200 / 500** – Thermal and Condensation Ratings
  - **AAMA 1503 / 2604 / 2605** – Thermal and Finish Performance
  - **UL 790 / ASTM E108** – Roof Assembly Fire Rating
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## 4. System Components

### Panels

- **Material:** Multiwall or solid polycarbonate panels with UV-resistant coatings.
- **Thickness:** 10–40 mm depending on thermal and structural requirements.
- **Width:** Standard 4'–6'; custom widths available.
- **Length:** Continuous panels up to 20'; modular systems for longer runs.
- **Colors:** Clear, opal, bronze, or custom.
- **Thermal & Optical Performance:**
  - U-Factor: 0.22–0.35
  - CRF:  $\geq 60$
  - Visible Light Transmittance: 0.45–0.70

### Framing / Support System

- **Material:** 6063-T5/T6 extruded aluminum alloy with thermal breaks.
- **Finish Options:**
  - Anodized: Clear, Bronze, Black (AAMA 611)
  - Painted: 70% PVDF (Kynar®/Hylar®) (AAMA 2605)
  - Custom colors available
- **Glazing Retention:** Pressure-plate and snap-cap system with EPDM gaskets and silicone sealant.

### Drainage & Flashing

- Integrated internal gutter and weep system for water management.
- Flashing compatible with TPO, PVC, EPDM, BUR, and metal roofing or wall assemblies.
- Optional stainless steel or copper flashings for specialty or historic applications.

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## 5. Performance Criteria

Property	Typical Value / Description
Air Infiltration	$\leq 0.06$ cfm/ft <sup>2</sup> @ 1.57 psf (ASTM E283)
Water Resistance	No leakage @ 15 psf (ASTM E331/E547)
Structural Deflection	L/175 max (ASTM E330)
Fire Rating	Class B standard; Class A optional (UL 790)
Impact Resistance	FM 4473 / UL 2218 optional
Thermal Performance	U-Factor 0.22–0.35; CRF $\geq 60$

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## 6. Design & Fabrication

- Custom-engineered panels for project-specific spans, loads, and geometry.
  - Factory-fabricated modules ensure precision fit, thermal continuity, and clean sightlines.
  - Panels can be installed in vertical, horizontal, or sloped configurations.
  - Optional operable vents, shading tracks, or maintenance access integration.
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## 7. Installation

- Install per manufacturer's instructions and approved shop drawings.
  - Verify substrate and structural supports prior to installation.
  - Anchor panels per engineer-of-record specifications.
  - Flash and seal continuously per NRCA guidelines.
  - Field-testing recommended per ASTM E1105 for critical applications.
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## 8. Maintenance & Warranty

- Annual inspection of seals, gaskets, and framing recommended.
  - Clean with mild, non-abrasive cleaners.
  - **Warranty:**
    - 10 years – Structural frame and finish
    - 20 years – Panel integrity
    - Extended warranties available
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## 9. System Variants / Product Lines

- **Thermal Sky 275:** Multiwall polycarbonate panel with superior insulation. (Roof & Walls)
  - **Thermalite Plus:** Enhanced thermal performance panel. 4" thickness with 2ea. 10MM polycarbonate panels & air gap (Wall only)
  - **Sky View 40:** 40 mm polycarbonate panels for walkways, canopies, and atriums. Captured in aluminum frame (Wall only)
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## 10. Typical Applications

- Curtain walls, skylights, clerestories, and façade panels
- Canopies, covered walkways, atriums, and atrium roofs
- Greenhouses, commercial, industrial, and educational facilities

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## **11. Submittals & Engineering**

- Product data and detailed drawings
  - Engineering calculations for spans, loads, and thermal performance
  - Finish and panel samples
  - Licensed structural engineer seal where required
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## **12. Ordering Information**

Provide:

- Project name & location
- Panel dimensions and configuration
- Glazing type & finish
- Framing options & thermal requirements
- Curb / interface details
- Desired geometry