Crystal Structures

BUILDING WITH

LIGHT

Discover the versatility & sustainability of **POLYCARBONATE**

Introduction

The word “polycarbonate” might make you think of industrial-looking buildings with poorly distributed light diffusion. But recent technologies have revolutionized this type of glazing, resulting in a desirable and customizable option for architectural projects.

Polycarbonate is a strong, lightweight plastic material that has many uses in architecture and construction. It is known for its durability and transparency and is often used as a substitute for glass in building projects. Some of the key advantages of using polycarbonate in construction include its resistance to impact, UV radiation blocking, and extreme temperatures, as well as its ease of shaping and installation.

In recent years, advances in technology have made it possible to produce polycarbonate with improved properties, such as increased fire resistance and improved insulation. These developments have made polycarbonate an increasingly popular material for use in a wide range of construction projects, from windows and skylights to walls and even large airplane hangar doors. Read on to learn about the types of polycarbonate and innovative uses.

Contents

Polycarbonate vs Fiberglass

In the world of architectural and construction industries, the selection of materials for glazing applications can significantly impact the success and performance of a project. Two popular contenders, polycarbonate and fiberglass, vie for attention, but when it comes to glazing, one material emerges as the clear winner: polycarbonate. While the two products can look similar at a glance, the differences are many.

In this article, we will delve into the advantages of polycarbonate over fiberglass, exploring its superior transparency, strength, durability, thermal insulation, UV stability, and ease of installation. Architects and construction professionals, take note: polycarbonate is the clear choice for glazing applications.

Transparency and Clarity

Architects thrive on creating spaces that invite natural light and visual transparency. Polycarbonate shines in this area, offering exceptional clarity that rivals glass. Its high transparency allows for an abundance of natural light transmission, resulting in visually appealing and inviting environments. On the other hand, fiberglass may fall short in terms of transparency, with its semi-translucent or opaque appearance, limiting the penetration of light and compromising visibility.

When it comes to meeting LEED requirements polycarbonate's high transparency and light transmission capabilities make it an ideal material for ample natural light to penetrate deep into interior spaces. Incorporating polycarbonate glazing not only enhances visual aesthetics but also contributes to occupant well-being, productivity, and the fulfillment of LEED requirements related to daylighting and views.

Strength and Durability

Safety and longevity are paramount considerations in glazing applications. Polycarbonate takes the lead with its exceptional strength and impact resistance. Its ability to withstand high impacts without shattering or breaking ensures a secure and safe environment for building occupants. Architects can rest assured that polycarbonate will endure accidental collisions and provide robust security measures. Conversely, fiberglass, while sturdy, may

Polycarbonate Performance Ratings

Most polycarbonate products that are of the same style, weight, and thickness have very similar performance ratings regardless of the manufacturer. We can supply the exact ratings from manufacturers if necessary. The options and combinations are about endless.

not offer the same level of impact resistance as polycarbonate, potentially posing limitations in high-risk environments.

Thermal Insulation

When it comes to energy efficiency, polycarbonate generally outperforms fiberglass in architectural and construction applications. Polycarbonate's superior thermal insulation properties, lower U-value, ability to control solar heat gain, and potential for efficient air tightness make it a preferred choice for energy-conscious designs. By selecting polycarbonate glazing, architects can contribute to energy savings, reduce environmental impact, and improve overall energy efficiency in buildings.

UV Stability

Polycarbonate offers superior UV stability compared to many other materials, it resists yellowing, haziness, and degradation when exposed to sunlight over time. While all plastics can eventually show signs of weathering, polycarbonate stands out for maintaining visual clarity and structural integrity longer than most. When designing structures that will experience direct sun exposure, polycarbonate is an intelligent choice to maintain aesthetic appeal. Ask us about the expected UV resistance over the intended lifespan with specific products.

Ease of Installation

Project timelines and costs are significant considerations in construction. Polycarbonate offers a compelling advantage with its lightweight composition, facilitating easy handling and installation. Its reduced weight minimizes structural requirements and labor-intensive processes, leading to time and cost savings. Conversely, fiberglass, while relatively lightweight, may still pose challenges during installation, particularly for larger projects, where its additional weight may demand extra structural support.

Recyclability and Life Cycle Assessment

Polycarbonate is a recyclable material, and its life cycle can be assessed to evaluate its environmental impact. Meeting LEED requirements often involves considering the life cycle of materials, including their manufacturing, use, and disposal. Polycarbonate's recyclability and ability to be repurposed or recycled at the end of

its useful life contribute to a more sustainable building approach and align with LEED goals of waste reduction and resource conservation.

While the size of the project does impact the material selection between polycarbonate and fiberglass, it is important to consider other factors such as project requirements, environmental conditions, aesthetic preferences, and budgetary constraints. Architects and construction professionals are responsible for selecting materials that align with their project's unique requirements. When it comes to glazing applications, polycarbonate emerges as the superior choice over fiberglass. Its exceptional transparency, strength, durability, thermal insulation, UV stability, and ease of installation make it an ideal option for architects seeking both functionality and aesthetics.

When it comes to glazing applications, polycarbonate emerges as the superior choice over fiberglass

Our Brands

Thermalite Plus
Thermal Sky 275
SkyView 40
Crystal Gard
Crystal Vue
SkyQuest

Our Products

Canopy & Walkway Covers

Monolithic Standing Seam Canopy
Multi-Wall Standing Seam Canopy
Monolithic Sheets without structure
Monolithic Sheets with structural framing
Multi-Wall Sheets with structural framing
Radiused
Aluminum Sub-Structures

Translucent Walls & Roofs

Insulated system with internal grid
Dual-glaze system, no exposed aluminum
Cost-effective, energy efficient system
Removable translucent skylights

Dare to compare our polycarbonate glazing solutions to fiberglass.

Thermalite Plus

ThermaLite Plus is a translucent wall system for the primary purpose of creating a cost-effective method to build an energy-efficient, structural wall that allows translucent (diffused) light to enter a designated space. Typically used in large open buildings that are traditionally dark and difficult to illuminate. Commercial building applications include manufacturing and maintenance facilities, warehouses, schools, gymnasiums, and large hallways; often in clerestory configurations

Features & Benefits

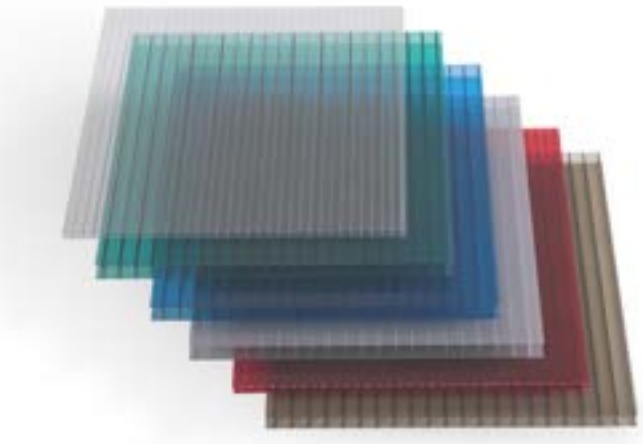
- » Dual-glazed system for superior insulation
- » Two layers of 10 mm polycarbonate
- » Panels supported by internal structural aluminum receiving channel
- » LEED credits available
- » Fast Installation
- » Thermally broken frame system
- » Lightweight
- » High-performance UV coating
- » Standard color options: clear/clear, clear/white, white/clear, white/white, bronze/clear & bronze/bronze
- » Colors blue, gray, and green are also available
- » Can be used in vertical wall applications
- » Panels are virtually unbreakable and are recommended in high crime or heavy hail areas.

No visible frame on the outside

Frame system is thermally broken

Great for vertical wall applications

Two layers of 10 mm polycarbonate, 4” wide system



Variety of colors to complement your project.

Our premier insulated system with an internal grid.
Energy-saving, 2.75" thick structural sandwich panel system.

Thermal Sky 275

- In decorative grid patterns, the standard grid pattern is 1′ x 2′
- For use in walls or roof systems only, minimal slope: 2″ to 12″ or 10 degrees
- Will not fiber bloom, no required maintenance
- 10-year standard manufacturer’s warranty
- Self-supporting up to 8′ under most loads
- LEED credits are available with this product. Contact us for further information.
- Fast Installation
- Lightweight, thermally enhanced frame system
- UV resistant coatings
- Standard color options: clear/clear, clear/opal, opal/clear, opal/opal
- Optional colors: bronze, gray, green, blue
- Can be installed into most of our structural frame systems

SkyView 40

Our most economical translucent wall system, this multi-wall polycarbonate system uses a 40mm interlocking tongue and groove wall panel.

- Panels in widths of 19 11/16″
- Lengths and heights customized to fit job site requirements
- Single layer 40mm polycarbonate tongue and groove assembly
- Thermally enhanced aluminum perimeter frame
- Colors: clear, opal, green, bronze, and blue
- UV resistant coating
- Installs quickly
- Lightweight
- 10-year manufacturer’s warranty
- Zero burn rate
- Fire reaction meets ASTM-D635 code

Our multi-wall, standing seam system

Crystal Gard

» Multi-wall, polycarbonate with vertical seams to eliminate leaks

» Clear polycarbonate caps and edge trim give your canopy a finished and neat appearance

» 20mm thick panel provides extra protection Heavy-duty hurricane clips used on all projects

» Panels are easy to install and easy to design around

» UV-resistant coatings on both sides to extend product life

Optional upgrades

» Custom-painted aluminum caps

» Solar reflective coatings reduce heat build-up and reflectivity

» All aluminum sub-structures available

» Available in 10mm and 12mm thicknesses

» Panel width: 24”

» Panel lengths, custom cut. Max is 40’

» Lengths up to 40’ long reduce joints

The minimum bending radius is 98.5”

Available in several colors to support your building design

» Clear,
» Opal/white,
» Blue,
» Green,
» Bronze,
» Gray

Crystal Vue

Our monolithic standing seam system

- Solid, monolithic polycarbonate panels appear to be glass
- System allows for thermal expansion and contraction
- System uses an aluminum base and cap to capture the standing seam, virtually leakproof
- No silicone sealants or caulking necessary
- Engineered to withstand high loads
- Easy, fast, and safe installation with minimal ongoing maintenance
- Beautiful European style and appearance
- Aluminum finish is clear anodized to enhance the appearance and extend life.
- UV-resistant coatings on both sides to extend panel life.

Panel widths:

- 4mm equal to 23.34″
- 6mm equal to 31.91″
- Lengths up to 40′ long

The minimum bending radius is 160″

Standard colors available: clear, opal, white, bronze, and gray

Additional colors available with extended lead times:

- White diffuser
- Solar ice
- Solar control
- Smart green
- Smart blue
- Blush blue

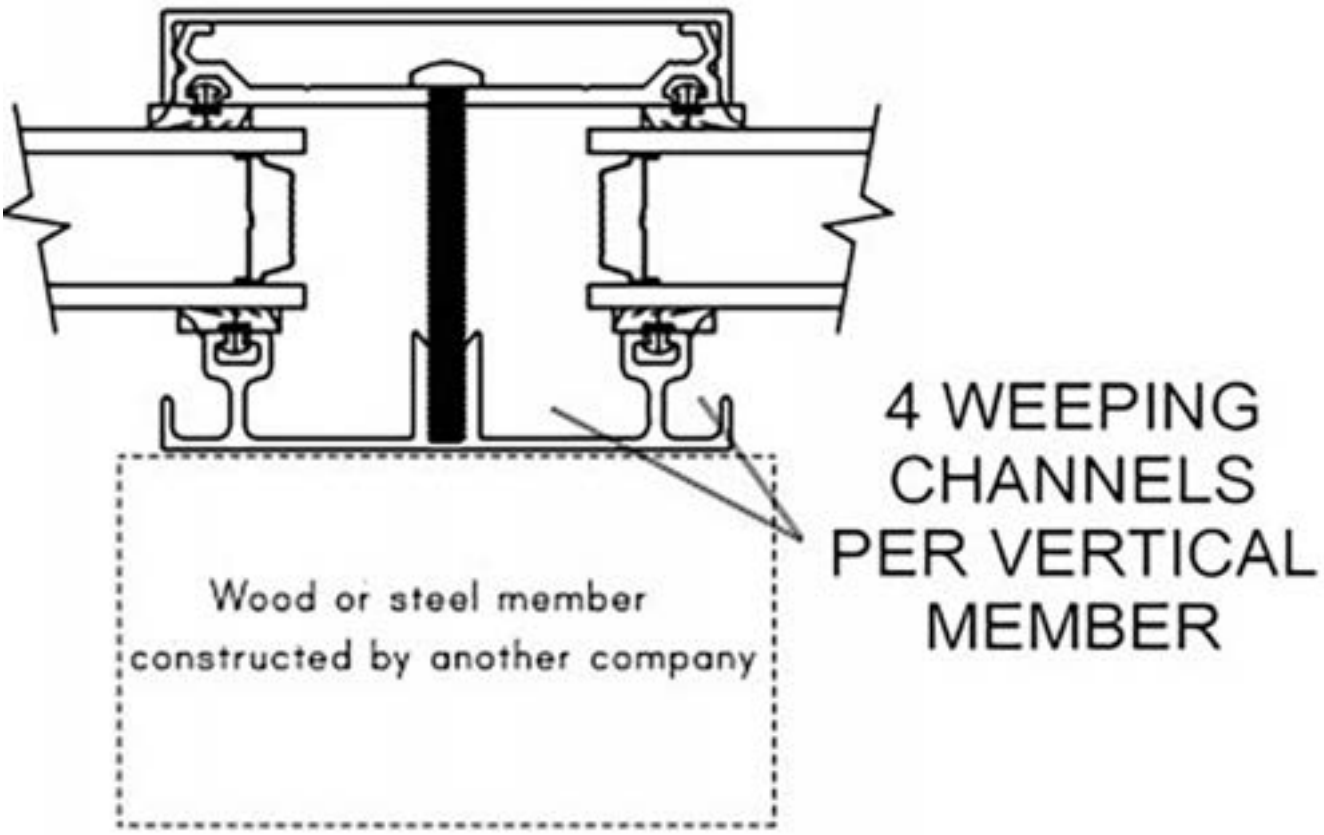
SkyQuest

A non-structural glazing system consisting of a base, pressure cap, cover, and related hardware. An attractive and secure system that attaches to your aluminum, steel, or wood structural members.

Specially designed for glazing over a structural skeleton of steel, aluminum, or wood. Great for glass or polycarbonate projects. The wide 300 system is designed to handle the high expansion and contraction ratios of polycarbonate.

SkyQuest systems are ideal for custom sunrooms, solariums, conservatories, skylights, etc. If your old skylight is structurally sound, consider using SkyQuest and just replace the glazing and exterior pressure caps. SkyQuest is a great way to upgrade your skylight glazing and eliminate leaks.

- » Easy to fabricate and install
- » All aluminum, will not rot or rust
- » Concealed fasteners
- » Up to 6' wide bays for polycarbonate
- » EPDM gaskets
- » Stainless steel screws
- » Exterior components are Kynar painted with a 10-year standard warranty
- » Available in bronze and white paint (custom colors are also available)
- » Available in dark bronze and clear anodized
- » Standard 8', 12', and 16' lengths make SkyQuest cost-effective
- » Can accommodate up to 25mm thickness



CONTACT

US

(316) 838-0033
CrystalStructuresGlazing.com

3333 N Mead
Wichita, KS 67219

Crystal Structures is the commercial division of Sunshine Rooms, Inc.

*Crystal Gard, Crystal Vue, Skyview 40, Thermalite Plus and Thermal Sky are the Sunshine Rooms, Inc. brand names of systems that are manufactured and installed using products sourced from Galina and Palram.

CRYSTAL STRUCTURES

The Clear Choice