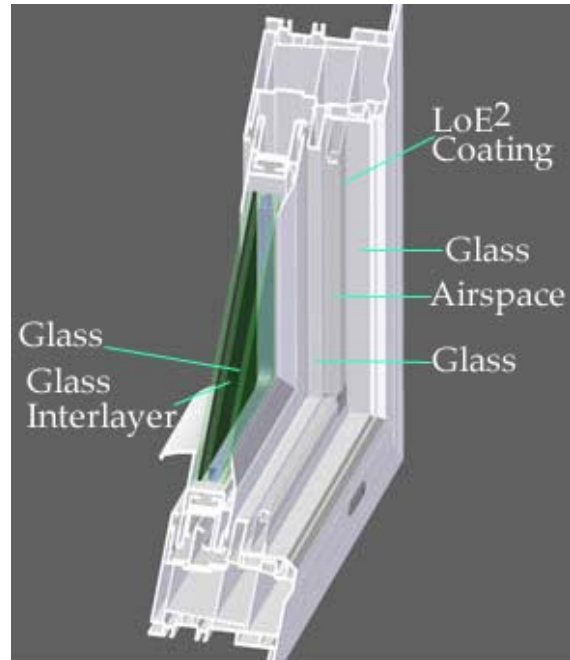


Types of Glass

Impact:



Here's what Custom Window Systems says about their impact windows:

WIND-PACT PLUS Large Missile Impact Windows

- Provide a greater level of safety and security
- Dampen unwanted outside sounds
- Reduce danger of flying or falling glass • Reduce ultraviolet light transmission
- Resist forced entry
- 67.5 DP - Single Hung, 60 DP - Hor Slider, 67.5 DP - Casement, and 60 DP - Sliding Doors
- Tested to Miami-Dade County, Florida, and ASTM specifications for impact
- Available with energy efficient LoE2 glass

If the building envelope is breached through a broken window, wind may enter the building causing an increase in pressure that could lift the roof and push the walls outward. Laminated glass helps to preserve the building envelope, keeping wind and other elements outside. For the advantages of laminated glass with a reduced solar heat gain, Cardinal offers LoE2 Coatings. Though virtually invisible to the eye, Cardinal's patented LoE2 coating reduces solar gains, thus reducing air conditioning costs. Neutral in color, the microscopically thin LoE2 coating in laminated glass has high visible light transmission and low outdoor and indoor reflectivity. Custom Window Systems incorporates into all of our WIND-PACT PLUS vinyl large missile impact windows and doors, the most recognized residential glass in the industry – Cardinal Glass. Every day, architects and designers discover that Cardinal Sea-Storm laminated glass provides safe, secure and quite comfortable solutions to all kinds of design problems. It is produced by bonding a combination of plastic vinyl layers and polyester film between two panels of glass into a single sheet. This glass was designed to pass the stringent Dade County protocol for windows used in high wind-speed coastal areas. Cardinal Sea-Storm laminated glass looks like ordinary glass, but protects like a shield against accidental impact, forced entry, sun damage and unwanted noise.

Extensive testing shows that upon impact, the broken glass fragments tend to adhere to the durable, bonded plastic vinyl “interlayer”, reducing the risk of injury. For beautiful glass, that stands up to just about anything, choose WIND-PACT PLUS with Cardinal Sea-Storm laminated insulated glass. Superior Construction WIND-PACT PLUS windows are available in white and adobe. They feature specially designed heavy duty extruded vinyl frames with multiple chambers, as well as insulated laminated glass for superior strength and energy efficiency. All windows feature block and tackle balancers for smooth operation, with removable sash and removable screen for ease of cleaning. Windows over 30” wide feature double locks. All Vinyl Frame windows meet or exceed the Florida Codes and feature substantially high design pressures.

Custom Window Systems' ongoing dedication to design innovation, along with their standard of uncompromising quality, has led the company to develop custom dies, tooling and production techniques. The latest in computer technology is utilized to assure the strict tolerances and attention to detail that have made the company an industry leader. The highest quality of PVC, glass, nuts and bolts, as well as every bit of hardware, both visible and unseen by the consumer, complements carefully tested designs that are proven durable and user-friendly.

**“Florida made for the Florida trade”
Since 1986**

[View a video of the testing here](#)

Low-E and Other Options When Choosing Glass:

Low-E Glass has a thin layer of oxidized metal on one side of it. This makes a glass that is a useful insulator. Heat and light are allowed into a room or building, but the thin sheen on the inner side will not allow it back out. The glass is still transparent both ways. The metal oxide can either be applied as soon as the sheet of glass leaves the tin bath or afterwards with magnetically-enhanced cathode sputtering. The name “Low-E” stands for Low Emission and refers to the low levels of heat and light emitted from your home after entering through the Low-E glass.

There are many varieties of Low-E depending upon your climate or needs.

All Climate, All Season: This type of glass maximizes the temperature you set either by heating or air-conditioning (or both) in your home. It allows light in but insulates from excessive heat entering or heat escaping.

Solar Control: Solar Control glass is engineered for the maximum insulation from the sun’s rays and maintenance of cool air from air conditioning. It isn’t tinted at all at resembles normal glass.

Glare Control: This type of glass does have a small amount of tint. What it does is absorb the light from the sun, muting its sharp rays and only allowing a soft glow to permeate your home. The glass will be warmer to the touch than normal glass, but not to a dangerous degree.

Winter Climate Glass: Winter Climate Glass offers the best protection from cold air. It allows for the most penetration of warmth and sunlight while offering a seal that won’t let as much warmth from heat escape. (not needed in Florida)

Types of Low-E Glass: (click to learn more)

[LoE²-240 Glass](#)

[LoE²-270 Glass](#)

[LoE²-272 Glass](#)

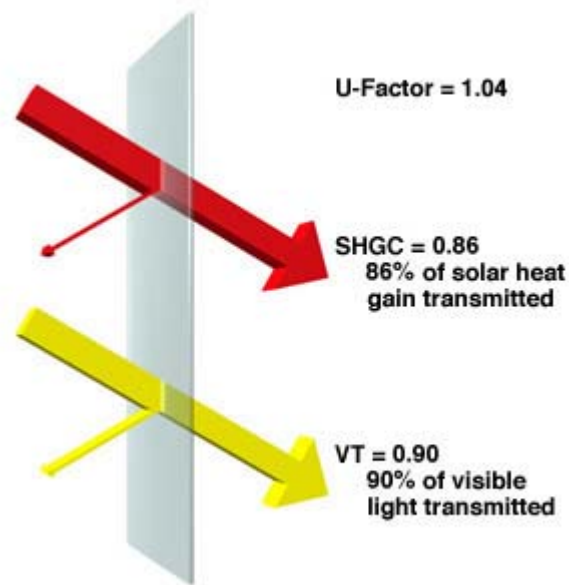
[LoE³-366 Glass](#)

Clear Glass:

Single-Glazed with Clear Glass

This figure illustrates the performance of a typical single-glazed unit with clear glass.

Relative to all other glazing options, single-glazed with clear glass allows the highest transfer of energy (i.e. heat loss or heat gain depending on local climate conditions) while permitting the highest daylight transmission.



Center of Glass Properties

Note: These values are for the center of glass only. They should only be used to compare the effect of different glazing types, not to compare total window products. Frame choice can drastically affect performance.

Tempered glass

Tempered glass is glass that has been processed by controlled thermal or chemical treatments to increase its strength compared with normal glass. Tempered glass is made by processes which create balanced internal stresses which give the glass strength. It will usually shatter into small fragments instead of sharp shards when broken, making it less likely to cause severe injury and deep lacerations. As a result of its safety and strength, tempered glass is used in a variety of demanding applications, including passenger vehicle windows, glass doors and tables, as a component of bulletproof glass, for diving masks, and various types of plates and cookware. Recommended for bathroom applications with obscure glass.

Laminated Glass

Laminated glass is produced by permanently bonding two pieces of glass together with a tough plastic interlayer (polyvinyl butyral) under heat and pressure. Once bonded together, the sandwich behaves as a single piece. The interlayer is invisible when

viewed through the glass and with glass on either side, the finished lite is indistinguishable from plain glass when installed. Most often, laminated glass is produced from annealed glass, but heat strengthened or tempered can be used when special performance needs are present. The benefit of laminated glass is that if broken, glass fragments adhere to the plastic interlayer rather than falling free and potentially causing injury. Laminated annealed glass can be cut or drilled. Laminated glass is required in sloped glazing applications that exceed any of the following conditions: The area of each pane (single glass) or unit (insulating glass) exceeds 16 square feet. The highest point of the glass is greater than 12 feet above any walking surface or other accessible area. The nominal thickness of each pane exceeds 3/16 inch.

Laminated glass is highly effective in reducing noise thus improving Sound Transmission Ratings. The best design incorporates laminated glass in an insulated unit. The damping characteristics of the plastic interlayer combine with the attenuating characteristics of the air space of the IG unit to maximize sound reduction. Example: Two lites of 1/4" laminated glass in an IG unit with a 1/2" air space provide an STC rating of 42. This compares with two pieces of monolithic 1/4" glass in an IG unit with a 1/2" airspace the STC rating would be 35. Laminated glass eliminates 99.9% of ultraviolet rays, making it highly effective in protecting furnishings, displays, merchandise, etc. Standard laminated glass is 7/32" with a .030 (approx. 1/32") polyvinyl butyral layer.

Used in hurricane & impact windows and commonly with insulated glass.

Acrylic

*Not recommended for climate controlled environments & usually more costly than glass.

Obscure

Standard Obscure pattern. This glass makes it hard to see in and out. Ideal when privacy is preferred. Commonly used in bathroom applications.

Rain

A type of obscure with a rain pattern.

Bronze

A brown 'smoked' tint. Designed to reduce solar heat gain.

Gray

A gray 'smoked' glass designed to reduce solar heat gain.