

GLAZING SOLUTIONS



Unbreakable standards and beauty

Solar Innovations® offers a wide variety of glass options to meet the many different needs of both residential and commercial applications. With thousands of different glazing options on the market, it can often be difficult to determine the correct choice. Tinted and LowE glass are ideal for reducing solar heat gain, which is a must when a room will be used by people. However, when growing plants is a room's main function, clear glass is the most beneficial. Dynamic, self-tinting glass will adjust automatically according to the sun and can assist with achieving LEED status. Solar uses safe, sturdy tempered glass for all of our doors and windows and laminated glass in our skylights and roof applications. Argon or krypton gases can be added to any window system for increased insulation. EZ clean glazing can also be applied which will reduce your window's maintenance requirements. For all of our windows, we offer several decorative glass options for further customization.

Tempered glass is strengthened through heat and is less prone to breaking than traditional glass so it is used in Solar's doors, windows, and walls. When tempered glass does break, it shatters into small squares and collapses, making it safer than other choices that will break into sharp, jagged pieces. Laminated glass is used in ceiling or other potential impact applications. Upon impact, laminated will break into a spiral, but it will not fall out of the frame; laminated glass also removes 99% of all harmful UV rays.

OPTIONS

- TINTED GLASS:

- Glare Control Glass - LoE 340
- All Climate Glass - LoE 272
- Ultimate Performance Glass - LoE 366
- Comfort Controlling Glass - LoE 180
- Enhanced Performance Glass - LoE i89

- EZ CLEAN

- SOLERA

- VIEW DYNAMIC GLASS

- THERMOCHROMATIC GLAZING

- DECORATIVE GLASS:

- Acid Etch
- Leaded Glass
- Blinds Between Glass
- Art Glass
- Wire Glass
- EnsoGlass
- Ceramic Frit Spandrel
- V- Groove Glazing Options

GLAZING SOLUTIONS - LoE³-366

CLIMATE CONTROLLED GLASS

Cardinal LoE³-366® glass is the ultimate performance glass. It just might make all other low-e glass obsolete. LoE³-366 delivers the ideal balance of solar control and high visibility, while also providing the highest levels of year-round comfort and energy savings. It's also the one glass you can use to be compliant in every ENERGY STAR zone – in a double-pane window. Couple it with LoE-i89®, and you're compliant in the North. Its low SHGC makes it compliant throughout the rest of the states, making it the perfect glass for every location.

When the temperature soars, ordinary window glass just can't handle the heat. And tinted glass spoils the view. Cardinal LoE³-366, however, has been specially formulated to reject solar heat without disrupting the view. It keeps more heat out and lets more light in, keeping your home stays cool and comfortable all summer long. Our patented LoE³-366 coating provides the ultimate performance of all our LoE products.

What's more, LoE³-366 provides exceptional fading protection as well. It blocks 95% of the sun's damaging ultraviolet rays (a leading cause of fading). With this level of protection in place, your furniture, carpets, curtains and wall coverings stay beautiful for years to come.

Cardinal LoE³-366 does the job in the winter months as well. During cold weather, the insulating effect of your windows and doors has a direct impact on the feel of your room. The better insulated the window glass, the warmer your room will be. The same is true for a room with a glass skylight or a structure that is entirely comprised of glass. Curtain Walls and Storefronts will greatly benefit from LoE 366's ability to prevent solar fading of furniture and other products.

GLASS PERFORMANCE

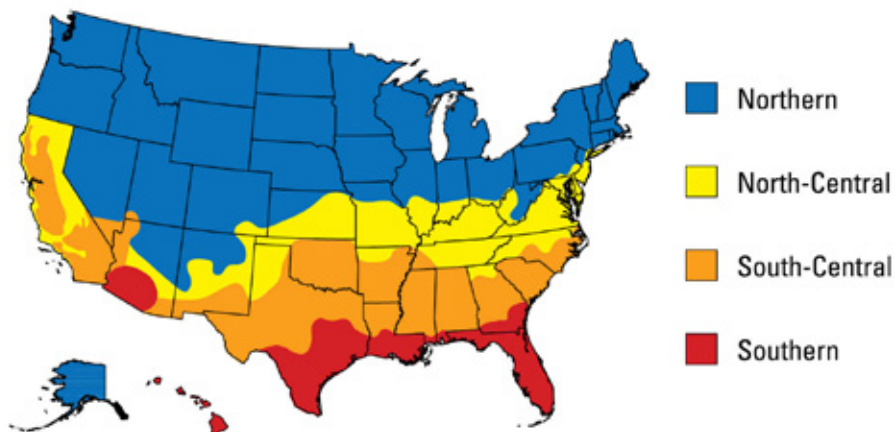
PRODUCT	VISIBLE LIGHT TRANSMITTANCE %	SOLAR HEAT GAIN COEFFICIENT	WINTER U-FACTOR (AIR/ARGON)	UV	FADING TRANSMISSION
Single Pane, clear Tint	90%	0.86	1.04/ - -	0.71	0.84
Double pane, clear	82%	0.78	0.48/ 0.45	0.58	0.75
Ordinary low-e	76%	0.72	0.34/0.30	0.50	0.68
LoE ³ -366	65%	0.27	0.29/0.24	0.27	0.43

ENERGY STAR FROM SEA TO SEA



ENERGY STAR® for Windows, Doors, and Skylights CLIMATE ZONE MAP

LoE³-366 is the one low-E product that can qualify in all 4 climate zones: Northern, North-Central, South-Central, and Southern. In the north, superior insulating value helps keep homes warm and cozy regardless of the cold. And when temperatures are on the rise throughout the country, LoE³-366 provides clear solar control for everywhere else.



GLAZING SOLUTIONS - LoE 340



GLARE CONTROL GLASS

The solar performance of LoE³-340 glass is unprecedented in a double-pane unit with no room darkening tint required. With its SHGC of just 0.18, it greatly reduces oppressive solar heat gain, and wherever glare is a problem, LoE³-340 controls that as well. Then when cold weather rolls around, its low U-Factor reduces indoor heat loss resulting in year round comfort.

When it comes to reducing solar heat gain from the blazing sun, LoE³-340 simply has no equal and no tint offers as many advantages. First, there's the cost savings of no tint. Then you avoid the disadvantages of tinting: the potential for thermal stress breakage and the potential need to heat treat the glass. Tinted glass has several other glaring deficiencies. Regular tinted glass works by absorbing sunlight, so the glass becomes hot in the sun. The color of the glass also changes with its thickness. LoE³-340's appearance and performance remain the same regardless of glass thickness. It also has a very high LSG (light to solar gain ratio) of 2.17. So even though solar gain is being controlled, plenty of visible light is still allowed inside.

LoE³-340 is more than a solar control glass; its advanced design provides a very low U-Factor of 0.25. This results in more comfort and energy savings in cold weather. One of the best ways to compare comfort is to use the Mean Radiant Temperature (MRT). MRT can be thought of as a "feels like" temperature; the closer the MRT is to the thermostat setting, the better the comfort will be.

GLASS PERFORMANCE

IG TYPE AND COATING	VISIBLE LIGHT	SOLAR	WINTER U-FACTOR		UV LIGHT	FADE
	TRANSMITTANCE	HEAT GAIN COEFFICIENT	AIR FILL	ARGON FILL	TRANSMISSION	TRANSMISSION
Single Pane, Gray Tint 1/4"	45%	0.6	1.03	--	0.25	0.41
2 Pane, Gray Tint 3/16" over 3/16"	45%	0.51	0.48	0.46	0.23	0.41
2 Pane, Gray Tint/ LoE-180[#3] 3/16" over 3/16"	44%	0.42	0.31	0.27	0.12	0.35
LoE ³ -340/Clear 1/4"	38%	0.18	0.3	0.25	0.02	0.27

Solar Heat Gain Coefficient - (SHGC). The amount of solar radiation that enters a building as heat. The lower the number, the better the glazing is at preventing solar gain.

Fading Transmission - The portion of energy transmitted in a spectral region from 300 to 700 nanometers. This region includes all of the ultraviolet energy and most of the visible spectrum, and will give the best representation of relative fading rates. The lower the number, the better the glass is for reducing fading potential of carpets and interior furnishings.

U-Factor - This represents the heat flow rate through a window expressed in BTU/hr/ft²/°F, using winter weather conditions of 0°F outside and 70°F inside. The smaller the number, the better the window system is at reducing heat loss.

GLAZING SOLUTIONS - LoE 272

ALL CLIMATE GLASS

LoE 272 glass delivers year-round comfort, whether it's -20°F or 110°F in the shade. In winter, LoE 272 reflects heat back into the room. In summer, it rejects the sun's heat and damaging UV rays. Regardless of where your project is located, choosing glazing that provides you with the highest level of comfort and energy savings year-round is extremely important. LoE 272 is the most common glazing used by Solar Innovations® Architectural Glazing Systems.

During cold weather, the insulating effect of your windows and doors has a direct impact on how your rooms feel. Typically, 75% of the exposed surface of a window is glass, and the temperature of the room-side of the glass directly affects the air temperature in the room. The better insulated the glass, the warmer your room will be. In fact, the Efficient Windows Collaborative (www.efficientwindows.org) suggests that when glass surface temperature falls below 52°F, there is a risk of thermal discomfort. This can be avoided with 272 glass.

When it's hot outside, the sun may make your space uncomfortable. Windows with a high solar heat gain contribute to more than 50% of air-conditioning costs.

The sun's heat is composed of visible light and infrared energy. LoE 272 is produced with a patented coating technology that allows the daylight to pass through the glass but reflects solar heat.

Controlling solar gain not only saves energy during the air-conditioning season, it also improves the comfort of glazed structures during the spring and fall when the cooling system isn't normally in use.

The LoE 272 coating is virtually invisible to the eye yet blocks 84% of the sun's harmful ultraviolet rays. The coating's maximum rewards will be seen in a temperate climate, however LoE 272 is flexible and can be used in any location for any application.

GLASS PERFORMANCE

PRODUCT	VISIBLE LIGHT TRANSMITTANCE %	SOLAR HEAT GAIN COEFFICIENT	WINTER U-FACTOR (AIR/ARGON)	UV	FADING TRANSMISSION
Single Pane, clear Tint	89%	0.83	1.03/ - -	0.64	0.81
Double pane, clear	81%	0.74	0.48/ 0.45	0.51	0.72
Ordinary low-e	75%	0.72	0.35/0.31	0.44	0.63
LoE 272	71%	0.40	0.30/0.26	0.15	0.53

Solar Heat Gain Coefficient - (SHGC). The amount of solar radiation that enters a building as heat. The lower the number, the better the glazing is at preventing solar gain.

Fading Transmission - The portion of energy transmitted in a spectral region from 300 to 700 nanometers. This region includes all of the ultraviolet energy and most of the visible spectrum, and will give the best representation of relative fading rates. The lower the number, the better the glass is for reducing fading potential of carpets and interior furnishings.

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GLAZING SOLUTIONS - LoE 366 & LoE 180



ULTIMATE PERFORMANCE GLASS

LoE 366 provides high levels of year-round comfort and energy savings. Featuring an unprecedented 3 layers of silver, this glazing works best for customers willing to exchange a percentage of visible light for additional solar heat gain.

For years, LoE has been setting the standard for energy-efficient glass with a patented, state-of-the-art sputter coating process that is unmatched. LoE 366 adds a third layer of silver coating. The result: a clear coating that blocks the heat in the summer while insulating in winter. Because more visible light is allowed to enter, an additional amount of glare may occur.

During cold weather, the insulating effect of your windows and doors have a direct impact on how your room feels. The better insulated the window glass, the warmer your room will be. The same is true for a room with a glass skylight or a structure that is entirely comprised of glass. Curtain Walls and Storefronts will greatly benefit from LoE 366's ability to prevent solar fading of furniture and other products.

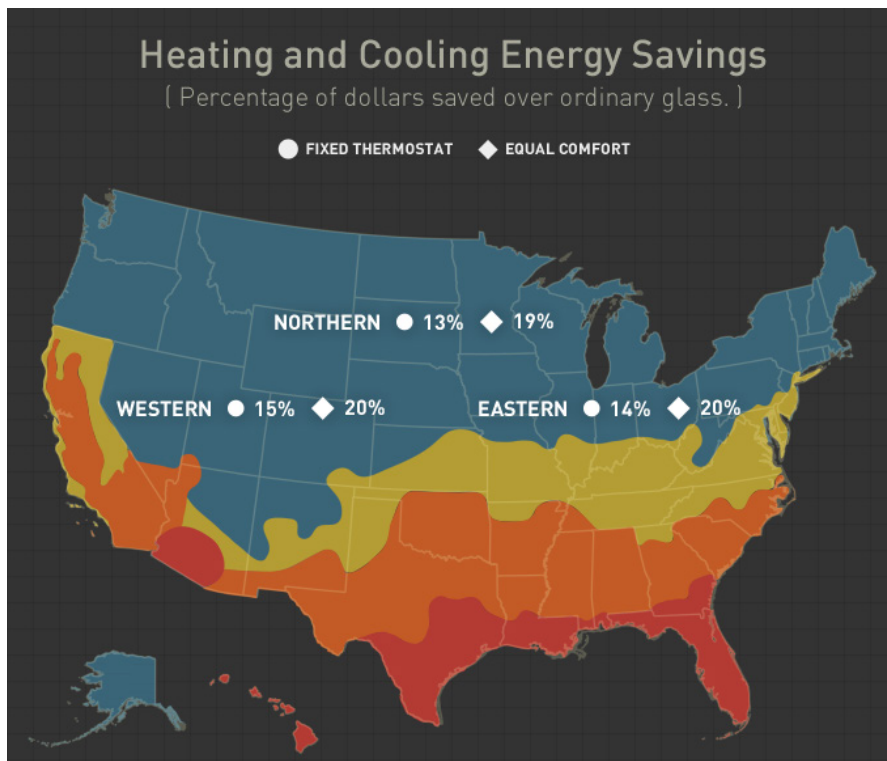
COMFORT CONTROLLING GLASS

When the weather turns frigid, LoE-180 glass is the perfect cold remedy. It keeps homes warmer and more comfortable by blocking heat loss to the outside and letting the sun's heat stream in. LoE 180 is an obvious choice for projects that are attempting to generate solar heat gain from their glazing.

The farther north the job site, the better LoE 180 will perform on its own. It can be used in any climate when paired with additional glazings.

LoE 180 is an excellent choice for greenhouses that feature cooling accessories. Without these accessories, the greenhouse may overheat and plants may suffer. With a glass U-Factor of just 0.26 and an SHGC of 0.69, LoE - 180 is the ideal product for passive solar applications. It extends a warm welcome home while achieving the highest ER values.

Although windows provide beautiful views and wonderful natural light, they can also account for up to 50% of the heating and cooling energy consumed in a home. In the winter, LoE - 180 helps your home stay warm and cozy by blocking heat loss to the cold weather outside. Summer solar gain is about 10% less than ordinary double pane clear glass and the low U-Factor blocks heat gain from the hot weather outside. In short, it can save energy year around.



GLAZING SOLUTIONS - LoE i89



ENHANCED PERFORMANCE GLASS

LoE-i89 is a new energy-saving 4th surface coated glass. It offers more light transmittance and less reflectance than LoE-i81. It's now available in annealed, making it less expensive, yet it still delivers a center of glass U-factor of just 0.20 when coupled with LoE³ or LoE² glass and argon fill in a double-pane unit.. There's no need to go to triple-pane windows to meet the various energy-saving guidelines. No need to invest in redesigning your windows and altering your manufacturing processes either.

LoE-i89 is sputtered onto the indoor lite, the #4 surface, thus reflecting escaping heat back into the room and lowering U-factors. Coupled with our LoE² or LoE³ glass and argon fill, this double-pane unit delivers performance much better than clear triple-pane – a center of glass U-factor of just 0.20 compared to 0.37 with clear triple-pane. With a center of glass U-factor of only 0.20 (0.23 without argon) and SHGC of just 0.25, an insulating glass unit with LoE³-366 and LoE-i89 meets the most stringent energy standards – without going to a triple-pane unit.

The glass surface is smooth and scratch resistant, making it easier to remove label residue and clean, and there is no haze to mar the view. Rather than absorbing internal heat, LoE-i89 reflects it back into the room, making your living space feel warmer and more comfortable.

GLASS PERFORMANCE

Double Pane with LoE-i89

PRODUCT	VISIBLE LIGHT TRANSMITTANCE	SOLAR HEAT GAIN COEFFICIENT	U-FACTOR (AIR-ARGON)	FADE UV	FADE ISO
LoE-180, LoE-i89	76%	0.60	0.24-0.21	0.25	0.59
LoE ² -272, LoE-i89	69%	0.4	0.24-0.21	0.15	0.52
LoE ² -270, LoE-i89	67%	0.35	0.24-0.20	0.13	0.50
LoE ³ -366, LoE-i89	0.62	0.27	0.23-0.20	0.04	0.40

Triple Pane with LoE-i89

LoE-180, LoE-180	68%	0.53	0.19-0.15	0.13	0.49
LoE ² -272, LoE-180	62%	0.36	0.19-0.15	0.08	0.43
LoE ² -270, LoE-180	60%	0.37	0.19-0.15	0.07	0.42
LoE ³ -366, LoE-180	56%	0.24	0.19-0.15	0.02	0.35

GLAZING SOLUTIONS - EZ CLEAN



A NEW ERA IN EASIER-TO-CLEAN GLASS

EZ Clean glass is used on structures to reduce the amount of work necessary to clean the glass. Uncoated glass has tiny pores which clog from bird droppings, leaves, dust, and eventually need to be cleaned. EZ Clean glass has a special coating which fills the pores of the glass. The coating makes it easier for materials that land on the glass to be washed away by rain or hosing, leaving fewer streaks than an uncoated surface.

A variety of different technologies go into manufacturing EZ Clean glass, but the key technology – the one that helps windows stay cleaner longer – is the super-thin coating. Using a patented double-sputtering process, an invisible, durable, and permanent coating of titanium dioxide and silicon dioxide is applied to the glass.

1. IT STARTS WITH ULTRA-SMOOTH GLASS

Silicon dioxide makes EZ Clean glass exceptionally smooth. In fact, it's much smoother than ordinary glass. So water disperses evenly, "sheets off" the glass, and evaporates quickly, greatly reducing water spotting.

2. TITANIUM DIOXIDE AND RAIN FINISH THE JOB

Titanium dioxide reacts chemically with the sun's UV rays, causing organic materials that are on the glass to decompose. It works even on cloudy days, as 80 percent of UV radiation gets through cloud cover. Then when it rains, the decomposed dirt is rinsed away, leaving the glass almost spotless. Result? Homeowners can spend less time washing windows and more time enjoying the view.

3. FINALLY, LoE ADDS COMFORT AND EFFICIENCY

Easy. That's what homeowners and builders think. Clean windows, thanks to EZ Clean. What's more, you get all the performance benefits of LoE glass -- a cooler home in the summer, a warmer one in winter.

EZ Clean is applied to LoE glass, combining the ultimate in low maintenance with the best in energy-conservation, and allowing homes to stay warmer in winter and cooler in summer. EZ Clean LoE conserves energy year-round too, generating savings for homeowners.

GLASS PERFORMANCE

PRODUCT	VISIBLE LIGHT TRANSMITTANCE %	SOLAR HEAT GAIN COEFFICIENT	WINTER U-FACTOR (AIR/ARGON)	UV	FADING TRANSMISSION
Double pane, clear	81%	0.74	0.48	0.51	0.72
Ordinary low-e	75%	0.57	0.35/0.31	0.44	0.63
LoE 366 EZ Clean	64%	0.27	0.30/0.25	0.05	0.42
LoE 272 EZ Clean	71%	0.4	0.30/0.26	0.15	0.53

GLAZING SOLUTIONS - SOLERA



LIGHT & HEATING CONTROLLING GLASS

Solera controls the amount of light and heat which enters an interior. The costs spent on cooling a room will be reduced when compared to spaces using clear glass. Energy efficiency is greatly improved with Solera. The glass units can be filled with nanogel to achieve even better insulation values. The thermal comfort of the occupants will also be increased.

Unlike polycarbonate, Solera is a glass product with an estimated lifespan of 60-100 years. There is a UV barrier within the glass which will not render material brittle or allow it to fade over the years. The glass has a white appearance and there are several available thicknesses, all featuring the white color.

The benefit of Solera is that it greatly reduces glare, while allowing diffused light into the space. Rooms with clear glass will suffer from bright spots and shadows, all of which are eliminated with Solera. Instead, the space will have an even distribution of soft light, which reaches deep into an area.

If your project is working towards LEED certification, Solera can be of assistance. Several of the Indoor Environmental Quality points, including 2.1, 2.2, and 2.3. Additional points can be gained in the Energy and Atmosphere categories. Most importantly of all, every part of Solera glass can be recycled.

Solera glass can be used in numerous applications and is suited for both residential and commercial projects. Skylights are the most obvious choice, but curtain walls and glass structures such as sunrooms, pool enclosures, and conservatories work well with Solera glass as well. Fixed windows, such as transoms, clerestory windows, or individual units will accept Solera glass and help create a more comfortable environment.



GLAZING SOLUTIONS - VIEW™ DYNAMIC GLASS



ELECTROCHROMIC TECHNOLOGY

Now available at Solar Innovations® - View™ Dynamic Glass, based on electrochromic technology, is a truly innovative architectural glazing solution. This highly energy efficient glass switches between clear and tinted states on demand, providing glare, heat control, and unobstructed views. View™ Dynamic Glass enables designers to use more glass to provide natural daylight and connection to the environment without sacrificing energy efficiency.

Dynamic Glass has the potential to reduce HVAC system size requirements and ongoing energy consumption by dramatically reducing the amount of heat that enters a building so that it does not have to be conditioned away after the fact. In its tinted state, Dynamic Glass blocks solar heat, reducing the need for cooling while simultaneously controlling glare without obstructing the view. In its clear state, View™ Dynamic Glass transmits more solar heat than typical Low-E glass, reducing the need for heating.

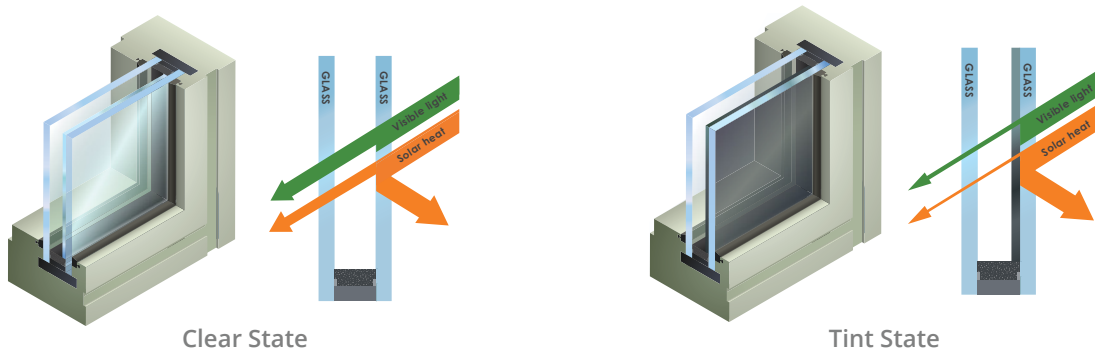
Projects seeking LEED certification can benefit from the use of View™ Dynamic Glass. Possible credits include Sustainable Sites (Credit 8 for light pollution reduction), Indoor Environment Quality (Credits 6.1, 6.2, 7.1, 8.1, and 8.2 for daylighting, thermal comfort and lighting), Energy and Atmosphere, and Innovation in Design.

View™ Dynamic Glass can function autonomously or be controlled on demand, enabling a user to tint or clear the glass to fit their needs. If automated, a control system will automatically tint or clear the glass, adapting to environmental conditions.

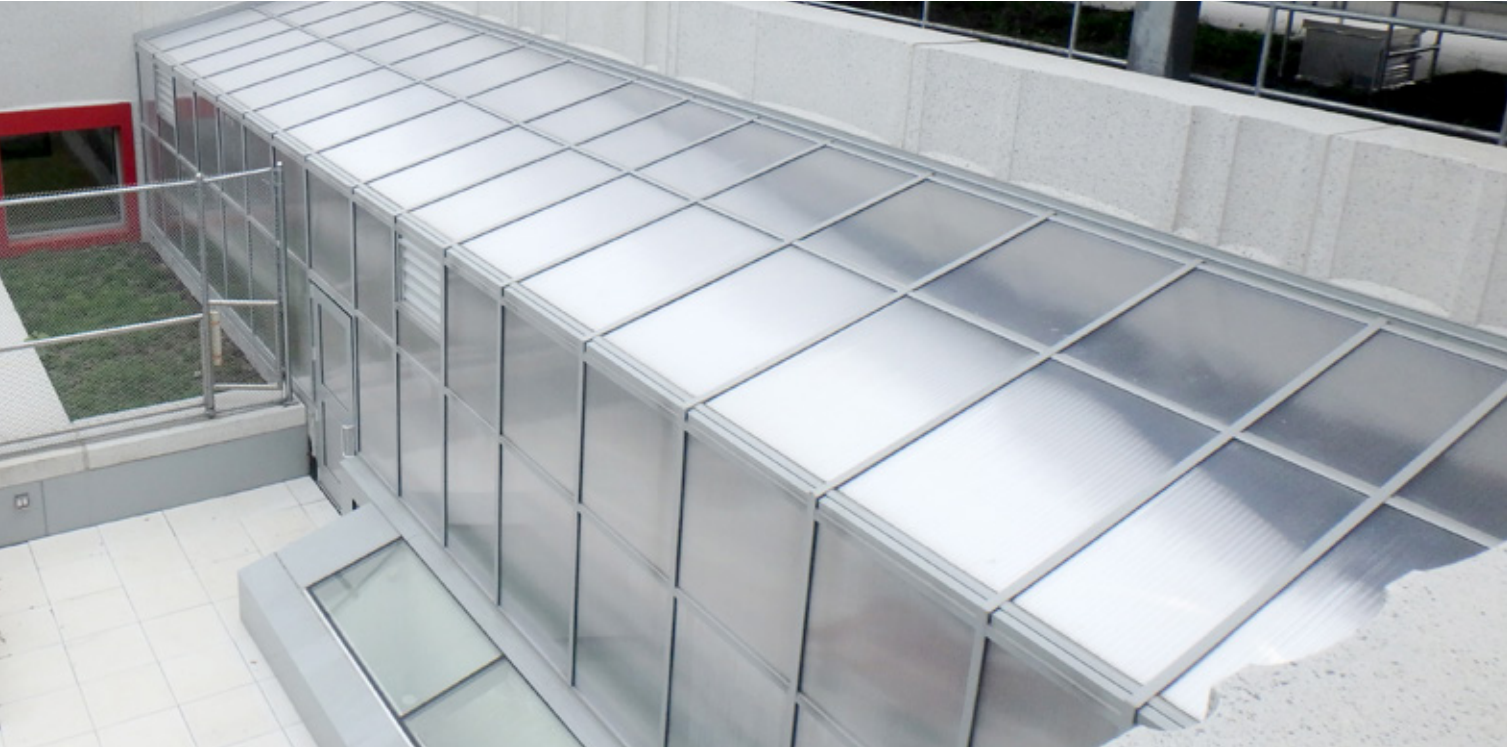
The glass can maintain four distinct tint levels, corresponding to 4%, 20%, 40%, and 60% visible light transmittance (Tvis) respectively. A user can set the glass tint to any desired level. Even in its fully tinted state of 4% Tvis, an occupant can clearly see through the glass, maintaining a connection to the outside world while blocking out heat and managing glare.

Different zones can also be created with the glass technology, meaning that groups of the windows can be independently controlled. For example, one group of windows can be set to 4% Tvis while an adjacent group can be set to 20% Tvis. In curtain walls and conservatories, a transom can be set to the 20% Tvis to allow light into the space for improved day lighting, while glass at eye level can be darker to reduce glare.

View™ Dynamic Glass units have been independently tested to the ASTM E2141-06 standard by the National Renewable Energy Laboratory (NREL). The results of the test showed Dynamic Glass has a life expectancy of over forty years.



POLYCARBONATE WITH LUMIRA® AEROGEL



ENERGY SAVING GLASS SOLUTION

Aerogel is among the lightest and most effective insulating materials in the world. Lumira® aerogel is a solid consisting largely of air (>90%) contained in a structure with pore sizes that are smaller than the space required for air molecules to travel through. This severely inhibits heat transfer through the material, enabling world-class performance. Lumira® aerogel is used to fill polycarbonate for many architectural systems and applications. After it is added to the polycarbonate, the thermal transfer of heat and cold is greatly reduced, minimizing energy costs on installations.

Not only can Lumira aerogel save energy and reduce CO2 emissions, it is also reusable when the building is decommissioned. Lumira® aerogel is safe for human and ecological systems, and is manufactured with little to no impact on the environment. Sustainable purchasing, optimum energy efficiency, occupant comfort, and low emissions, along with daylight and views, are possible points Lumira® can assist with for LEED certification.

Lumira® aerogel can be used to achieve specific levels when acoustical ratings are required. The beads block and absorb sound. The result is strong sound control by reducing outside noise transfer. Interior spaces and rooms become quieter and user comfort levels increase with the assistance of Lumira aerogel.

The inclusion of Lumira® in daylighting systems virtually eliminates the historical trade-off of insulation vs. natural light by providing 3 to 6 times the thermal performance of traditional, insulated fenestration products, while maintaining optimal light transmission.

GLASS PERFORMANCE

PRODUCT	VISIBLE LIGHT TRANSMITTANCE %	SOLAR HEAT GAIN COEFFICIENT	WINTER U-FACTOR (AIR/ARGON)	U VALUE	R-VALUE
40 mm Clear Lumira®	38%	0.42	0.10	0.42	12

THERMOCHROMIC TECHNOLOGY



SELF TINTING WINDOW TECHNOLOGY

What is Thermochromic Glazing?

Thermochromic glazing is a self-tinting window technology that darkens gradually and dynamically when heated by direct sunlight. Pleotint offers an environmentally interactive glass interlayer, Suntuitive, that lightens and darkens by itself with absolutely no mechanical intervention or electrical wires, according to changing levels of ambient temperature and sunlight. Suntuitive is the most advanced, yet simplest, dynamic window technology available.

Why Suntuitive?

Suntuitive preserves your window's view by reducing the need for shades, blinds, exterior overhangs and other light-blocking devices. Suntuitive self-tinting windows help manage your building's changing needs for passive solar heat gain, solar control and natural daylight transmittance. Building occupants enjoy more consistent, comfortable temperatures, reduced interior glare, more natural lighting and clear views of the outdoors every day of the year.

Optimizing Design

Suntuitive helps occupants use all of the space in their building, including the precious window real estate without worrying about jeopardizing occupant comfort and performance. Suntuitive windows draw all of their operational energy directly from the sun. The process is entirely self-sustaining and the windows do not require wiring or manual intervention.

THERMOCHROMIC TECHNOLOGY

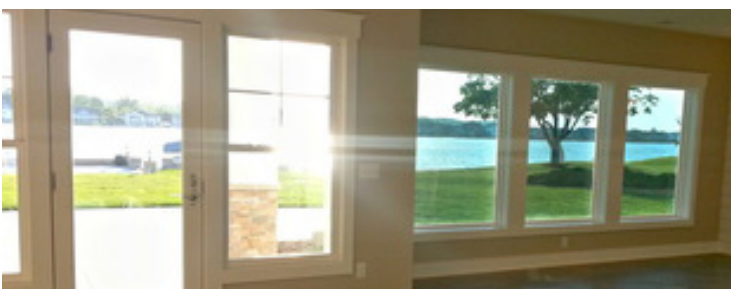


THERMOCHROMIC OFFERS

OCCUPANT COMFORT	VERSATILITY	COST SAVINGS	ADDITIONAL FEATURES
Always a View	Tints from Direct Sunlight	Powered by the Sun	Impact Resistance
Outdoor Connection	Aesthetic Flexibility	Reduces HVAC Needs	Patented
Natural Lighting	Variety of Glass Available	Saves Energy	Reduces Sound
Minimize Heat Gain	Works Day & Night	Blocks Damaging UV	LEED Contributions

UNMATCHED SECURITY AND PROTECTION

- Suntuitive self-tinting windows consist of laminated glass that is insulated with a piece of LowE glass. With this laminated design, Suntuitive windows significantly enhance building security and reduce outside noise.
- Suntuitive shield occupants and furnishing from damaging UV and reduces absorbed heat and light which contribute to fading.
- 20+ year lifetime with third party testing
- Impact & security tested



Suntuitive Glass used in the windows on the right.

SMART AND SUSTAINABLE

Energy Savings:

- Suntuitive can lower costs associated with air conditioning, artificial lighting, and heating. The greatest savings come during time of peak energy consumption.

Green Features:

- Powered by heat from direct sunlight, no manual, mechanical, wires, or controls.
- Durable and maintenance free
- Suntuitive is a GreenSpec® listed product, putting it in the 10% of green building products that can contribute toward LEED certification

Maximized Comfort:

- Clear view of the outdoors
- Allows for increased use of daylighting
- More consistently comfortable temperatures
- Reduced glare

GLAZING SOLUTIONS - DECORATIVE GLASS

Decorative glass is a perfect way to add aesthetic or privacy to your glass and can be used for the entire project or just for a small section.

ACID ETCH



Acid etching is a process where a texture is added to glass. The texture is 3-dimensional that you can feel with your hand. There are five available patterns: English Reed, Pattern 62, Rain, Satin Etch and Single Chip. Other patterns are available upon request.

LEADED GLASS



Leaded glass is the addition of a leaded grid onto the glass. Antique window gridwork was done with leaded grids. This is a replication of the antique grids. Various configurations are available for the grids

BLINDS BETWEEN GLASS



This is a special glass combination where blinds are placed in the air space of an insulated glass unit. The blinds can tilt and be pulled up/down. There are several colors available for the blinds. Strong glares and heat transmittance is reduced with blinds between glass

ART GLASS



Art glass is a term used to coin any special order glass. The glass can be hand blown or machine made. It can be glass made to mimic antique seeded glass. Other art glass is colorful and full of swirls. Another type of art glass is where an actual photograph is imprinted onto glass. This is useful for logos and written words.

WIRE GLASS



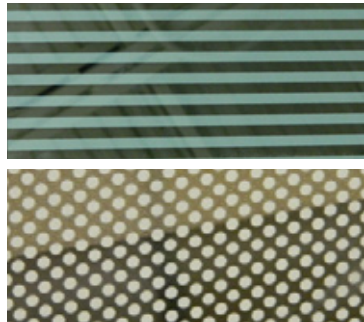
Wire glass is a specialty glass that is reinforced with wire mesh. The wire adds support to the unit. If the glass breaks, the wire holds the glass in place. Wire glass is often used with skylights and glass roofs.

ENSOGLASS



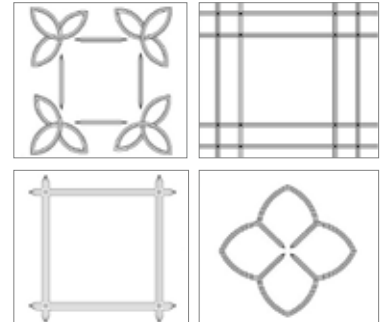
EnsoGlass is a decorative glazing product suitable for interior and exterior applications. The glazing is a composite of glass and resin created to be extremely durable and over 100 times stronger than regular glass. Organic materials are fully encapsulated in the material with options such as flowers, grass, bamboo, papyrus, and leaves. Using this product in your framework will act as custom artwork, provide privacy (depending upon pattern selected), and is suitable for both residential and commercial.

CERAMIC FRIT SPANDREL



Ceramic Frit Spandrel is a coating placed on glass which eliminates vision. The spandrel coating is sprayed onto the glass creating a solid color. Typically used on commercial buildings. Spandrel can also be designed into a residential application to hide HVAC equipment and areas where privacy is required, such as a restroom. Various Spandrel colors are available.

V- GROOVE GLAZING



V-groove glazing is often featured in Transoms.

GLAZING SOLUTIONS



GLASS PERFORMANCE COMPARISON

PRODUCT	VISIBLE LIGHT TRANSMITTANCE	SOLAR HEAT GAIN COEFFICIENT	U-FACTOR (AIR-ARGON)	FADE UV	FADE ISO
LoE-180, .060PVB	75%	0.6	0.32-0.26	0	0.48
LoE-180, .090SGP	75%	0.6	0.32-0.26	0	0.49
LoE-272, .060PVB	68%	0.4	0.25-0.31	0	0.44
LoE-272, .090SGP	68%	0.4	0.25-0.31	0	0.45
LoE-270, .060PVB	66%	0.36	0.25-0.31	0	0.43
LoE-270, .090SGP	66%	0.36	0.25-0.31	0	0.43
LoE-366, .060PVB	61%	0.27	0.3-0.24	0	0.37
LoE-366, .090SGP	61%	0.27	0.3-0.24	0	0.38