





# LOW-E

## WHAT IS LOW-E?

Low-E glass has a secondary, very thin metallic dual layer coating. This allows the sun's heat and light to pass through the insulating glass, but, at the same time, actually works to reflect radiant heat back toward its source. Since Low-E coating reflects radiant heat waves, it helps keep your home warmer in the winter by trapping radiant heat and cooler in the summer by blocking it from your home. Low-E<sup>SC</sup> is optimized for warmer climates by applying two heavier layers, through a patented process, resulting in blocking 73% of the sun's radiant heat from entering your home while providing superior insulation in cooler weather to save you energy year-round.

Our Interior Surface Low-E is engineered to have the characteristic window manufacturers and homeowners need most — lower U-Factor— and is applied to the surface of the glass you can touch inside your home, providing increased comfort and improved energy savings. One major benefit is a decrease in U-Factor of approximately 0.04, improving the energy efficiency so that many of our doors and windows meet new energy codes and ENERGY STAR® zone requirements. The neutral color with low haze and ultra-smooth surface of our Interior Surface Low-E provides a clearer view of the outdoors and can be cleaned with common household glass cleaners. No special instructions. Our Interior Surface Low-E is durable and scratch-resistant.



### NATURAL LIGHT WITHOUT THE GLARE

Ply Gem's Low-E glass has many advantages such as minimal visible darkening. Our glass minimizes interior glare, reducing eyestrain and making it easier to watch television or look at a computer screen when bright sunlight fills a room.



## SHIELD AGAINST SUMMER HEAT.

In summer, do your windows seem like giant heat lamps? A typical double-paned clear-glass window allows approximately 75% of the sun's heat into your home. Ply Gem products with Low-E and Low-E<sup>SC</sup> glass provide superior solar control. They transmit much less heat, with minimal visible light reduction. You get the light but a lot less heat.



## PROTECTION FROM WINTER CHILL.

On cold winter evenings, do you avoid sitting near your windows? The cold inside surface of an inefficient window pulls heat away from your body, so you can feel chilly in a sweater with the thermostat set at 70 degrees. With Ply Gem Low-E glass the interior glass stays warmer, so you can enjoy your seat by the window – even when the temperature outside dips well below freezing.

# MORE THAN JUST DOLLAR SAVINGS.



Ply Gem Low-E (low emissivity) glass does more than just lower energy bills. It delivers comfort, creates less condensation and protects valuables from sun damage far better than conventional clear glass. Plus, it meets specific solar and energy control needs for different climates and geographic regions nationwide.

Low-E<sup>SC</sup> (solar cooling) glass, designed specifically for homes in hot climates and for homes with expansive windows that capture lots of sun, heat and glare, allows natural light to brighten your home while keeping much of the sun's heat outside.

## **PYROLYTIC COATINGS AND MAGNETRON SPUTTER VACUUM DEPOSITION (MSVD) LOW-E.**

The major difference between pyrolytic coatings and Magnetron Sputter Vacuum Deposition (MSVD) glass which we use is the process by which the glass is manufactured and its overall thermal performance.

Pyrolytic coatings use a chemical vapor deposition process. Pyrolytic coatings generally employ an oxide such as tin. The thickness of the metallic oxide is difficult to control however, and iridescent color in the form of a blue, green or rust tint in the glass may result.

MSVD uses a unique transparent conductive-metal layer similar to what is used on touch screens in many of the latest smart phones and tablet devices that does not "tarnish" like silver when exposed to humidity and moisture in the air. Minute particles of this unique transparent conductive metal are applied to the finished glass surface in a total vacuum. These atomic-sized particles are now firmly attached to the finished glass. Our Low-E and Low-E<sup>SC</sup> coatings are achieved by manipulating the thickness of the two layers of particles of this unique transparent conductive metal through a patented process. Ply Gem Windows products where Low-E is configured utilize this MSVD process to deliver the performance you need from your windows and doors.

## **WHAT IS A U-FACTOR?**

U-Factor is a measurement of the window's ability to prevent heat loss from the house. The lower the U-Factor rating is on a window, the greater its ability to prevent heat loss.

Ask your builder, contractor or authorized Ply Gem Windows dealer or distributor for the U-Factor information on the product line and window or patio door style you are considering. The National Fenestration Ratings Council (NFRC) develops and administers comparative energy and related rating programs that provide fair, accurate and credible user-friendly information on fenestration product performance. NFRC technical data, including U-Factor information, is available on all Ply Gem Windows glass options across all products.

The energy we use in our homes can have a big impact on the environment. But by improving a home's energy efficiency, you are taking an essential first step in sustainable remodeling and building. That's where Ply Gem Windows comes in. Our windows and doors provide you with the smart, sustainable features you need.

According to the U.S. Department of Energy, the heat lost through windows can account for 10 to 25% of a home's heating bill. Ply Gem Windows has multiple Low-E glass and spacer options for you to select to help reduce this energy loss. This can increase your home's comfort and decrease your utility costs.

For more specific information on the energy efficiencies of varying glass types and total window units, ask your builder or authorized Ply Gem Windows dealer or distributor for U-Factors and Solar Heat Gain Coefficient (SHGC) values on the specific window style you are interested in.





# GLASS OPTIONS



## LOW-E GLASS PACKAGES

Our Low-E glass packages combine Low-E and WarmEdge spacer options, providing insulating glass options to meet your specific needs. Our Low-E glass packages provide better performance in regions with hot summers and cold winters. Our Low-E<sup>SC</sup> (solar cooling) glass packages are optimized for regions with significant indoor cooling and glare reduction requirements. Our Low-E glass packages can be combined with capillary tubes to address performance needs in high elevation applications.

Low-E — Dual-pane with one lite of Low-E

Low-E<sup>SC</sup> — Dual-pane with one lite of solar cooling Low-E

Low-E2+ — Dual-pane with one lite of Low-E and one lite of Interior Surface Low-E

Low-E2+<sup>SC</sup> — Dual-pane with one lite of solar cooling Low-E and one lite of Interior Surface Low-E

Low-E<sup>PS</sup> — Dual-Pane with one lite of Passive Solar Low-E

Low-E2+<sup>PS</sup> — Dual-Pane with one lite of Passive

R VALUE: Restrictive ambient air flow  
U FACTOR: Rate of heat loss  
SHGC: Solar Heat Gain Coefficient  
VT: Visible Transmittance



## HP GLASS PACKAGES

Our HP glass packages combine Low-E with argon gas fill and WarmEdge spacer options, providing high-performance insulating glass options to meet your specific needs. Argon is a safe, odorless, colorless gas, which is heavier or denser than air. When used in conjunction with Low-E glass, argon provides better insulation. That's because heat and cold do not pass through argon gas as easily as through air. Argon is nontoxic and presents no human health or environmental concerns. HP glass packages are also available in solar cooling (SC) glass packages for regions with significant indoor cooling and glare reduction requirements.

HP — One lite of Low-E and argon gas fill

HP<sup>SC</sup> — One lite of solar cooling optimized Low-E and argon gas fill

HP2+ — One lite of Low-E and one lite of Interior Surface Low-E with argon gas fill

HP2+<sup>SC</sup> — One lite of solar cooling optimized Low-E and one lite of Interior Surface Low-E with argon gas fill

HP<sup>PS</sup> — One lite of passive solar Low-E glass (Surface 3) with argon gas fill

HP2+<sup>PS</sup> — One lite of passive solar Low-E and one lite of Interior Surface Low-E with argon gas fill

HP2<sup>MAX</sup> — Triple-pane glass package with two lites of Low-E and an interior glass substrate with two chambers of argon gas fill

HP3<sup>MAX</sup> — Triple-pane glass package with two lites of Low-E and one lite of Interior Surface Low-E with two chambers of argon gas fill

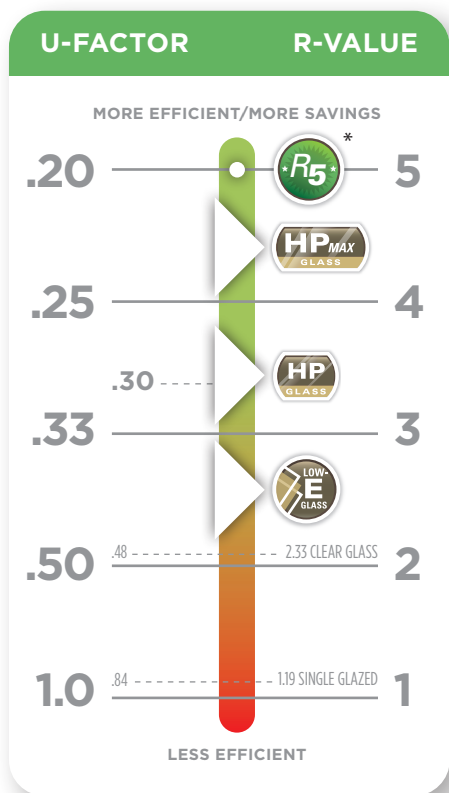


#### WHAT ARE R-5 WINDOWS?

High-performance R-51 windows are highly insulating windows with a whole-window R-Value of 5 (a U-Factor of around 0.2). These products are the top tier of energy-efficient windows for cold and mixed climates.

ENERGY STAR® windows have a U-Factor of around 0.3. Reducing the U-Factor from 0.3 to 0.2, with high-performance R-5 windows, reduces average heat loss through the window by more than 30%,<sup>2</sup> and saves consumers money on energy bills.

- R-5 = U-Factor of .22 or lower for operating units; .20 for fixed units
- U.S. Department of Energy – Energy Efficiency and Renewable Energy EERE News, May 27, 2010



#### WHAT IS WARM EDGE?

Other window companies use spacer systems with four separate pieces of aluminum joined together by corner keys. The Warm Edge spacer system reduces thermal transfer around the glass perimeter by utilizing a unique U-shaped channel to separate glass panes and interrupt the natural flow of heat to cold.

The Warm Edge spacer system features one continuous piece of low-conductive metallic or nonmetallic material creating a stronger, more energy-efficient insulated glass unit. Plus, it flexes with glass expansion and contraction to ensure a strong seal for the life of the window.



#### WHAT IS WARM EDGE+?

Our optional Warm Edge+ spacer system improves the window's thermal performance by utilizing less-conductive materials than standard Warm Edge to provide a lower U-Factor.



Dual Pane



Triple Pane

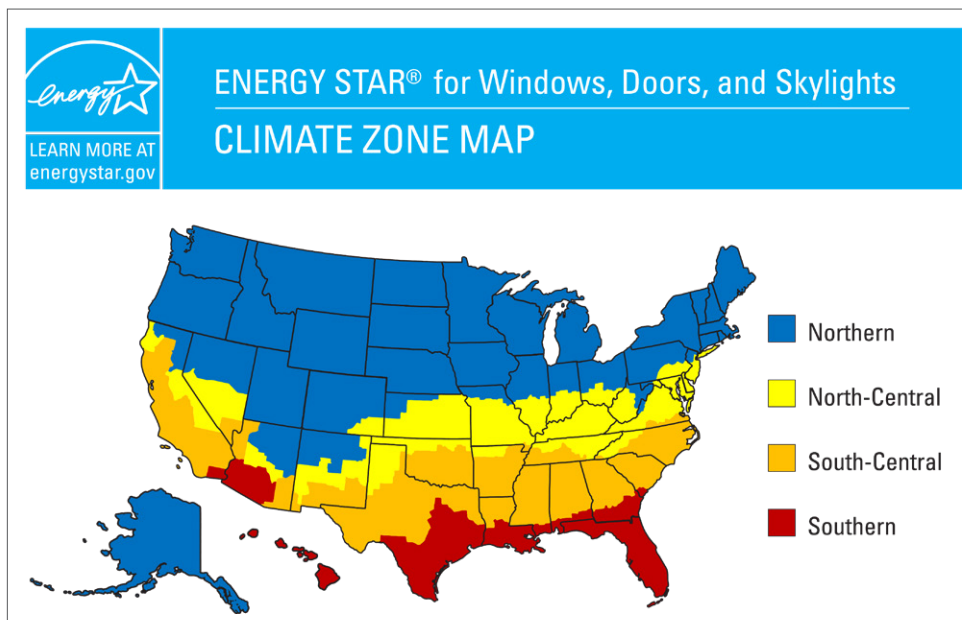
The lower the U-Factor, the greater the insulation value. R-Value is the inverse ( $R=1/U$ ) of the U-Factor. Total Unit Factors determined per NFRC-100 (National Fenestration Rating Council). Chart shows relationship between performance and Ply Gem Windows glass package options, not including energy package upgrade.

\*Ply Gem Windows R-5 products meet or exceed a U-Factor of 0.20 on fixed units and 0.22 on operating units.





## ENERGY STAR® VERSION 7.0



Because heating and cooling needs vary, there are different ENERGY STAR performance requirements for each region of the United States. Each set of requirements is based upon the typical climate and energy usage patterns of that region. The ENERGY STAR label will show you which windows are best for the area where you live. Ply Gem Windows is an ENERGY STAR partner.

ENERGY STAR Version 7.0 - Effective Date 10/23/2023





#### PROVIDE SUNSCREEN FOR YOUR VALUABLES.

Safeguard your valuable interiors with glass options that offer the ultimate in superior fade protection.

Your favorite photograph, your child's artwork, even your furniture and carpet can fade or discolor after repeated exposure to direct sunlight. Ply Gem Windows glass provides a sunscreen for your house, blocking damaging ultraviolet rays without noticeably reducing the light coming inside. Depending on the glass option, 99% of damaging UV rays can be blocked.



#### KEEP THE OUTSIDE NOISE AND INTRUDERS OUT.

Ply Gem Windows offers laminated glass for enhanced safety, security and sound control. These glass options help to reduce exterior noise and provide STC (Sound Transmission Class) values as high as 34. An STC rating provides a standard industry-accepted method for comparing the sound reduction effectiveness of various glass options and window and door systems. The higher the STC number, the greater the resistance to sound transmission.



#### DON'T TAKE YOUR GLASS FOR GRANTED.

A smart choice now can mean a world of savings later.

To learn more about Ply Gem Windows energy-efficient options, contact your authorized Ply Gem Windows dealer or distributor.



**Home Innovation**  
NGBS GREEN CERTIFIED™

This Home Innovation NGBS Green Certified mark is your assurance that a product is eligible for points toward National Green Building Standard.

Visit **[GreenApprovedProducts.com](http://GreenApprovedProducts.com)** for more details.

Many of the Ply Gem Windows have earned this certificate. To view specific certificates, visit **[plygem.com](http://plygem.com)**.



Ply Gem windows and patio doors can be configured to meet the ENERGY STAR guidelines for thermal efficiency in all climate regions.



[plygem.com/windows-doors](https://plygem.com/windows-doors)



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