



# Glass Options

WINDOWS AND PATIO DOORS



Isn't your home your own little world? As typically your largest single investment, shouldn't it have a pleasant atmosphere for family and friends? Finding the right comfort level for each home and each family is the initiative.

Lincoln offers glazing options with thoughts of energy efficiency and creature comforts alike. Whether your home is in the Sunbelt consisting of long sunny summer days, hot muggy nights and high air conditioning bills or is in the heart of the Midwest with extended periods of days with below-zero temperatures and high heating bills, sit in your favorite chair, relax and let our 63 years of manufacturing excellence guide you through our diverse IG offering.







## **The Lincoln Glass Family**

### **Thermally Enhanced & Technologically Advanced**

#### **Energy Efficient**

Achieve optimum energy conservation, superior interior comfort levels and comply with Energy Star code requirements. Modern glazing options can be fine-tuned for a particular elevation and specific geographic locations.

#### **Low Maintenance**

Glass enhancements intended to address identifiable product concerns. Engineered around the central theme, 'safeguard my investment and reduce upkeep', these choices are designed to create ideal window packages and long-term customer satisfaction.

#### **Specialty**

Created for a distinctive design concept or as a unique buffer between occupied space and the outdoors, specialty glass goes beyond typical. Increasingly strict building regulations, privacy/safety issues and interior room lighting are specifically addressed.

## **Definitions**

**U-Factor** - The U-Factor (BTU/hr/ft<sup>2</sup>/°F) measures the rate of heat loss through a window. The lower the U-Factor, the better the window is at reducing heat loss.

**Solar Heat Gain Coefficient (SHGC)** - The Solar Heat Gain Coefficient measures the amount of solar heat that passes through a window. The lower the SHGC, the better the window is at blocking heat from the sun.

**Visible Transmittance (VT)** - Visible Transmittance measures how much visible light passes through a window compared to the amount that would pass through an open hole of the same size. The higher the VT, the more light is transmitted. A low VT often increases the amount of artificial light needed which leads to an increase in energy costs. A VT of 60 percent or more often appears clear, while a VT below 50 percent begins to look dark and/or reflective.

**Fading Transmission (T<sub>dw</sub>)** - Fading transmission measures the amount of fading-causing solar energy that enters through a window. The lower the T<sub>dw</sub> value, the better the window is at protecting against fading.

**Insulating Glass** - Insulating glass features two panes of glass separated by a spacer. The dead air space between the panes creates an insulating barrier and helps to reduce sound transmission.

**Warm-edge Spacers** - Warm-edge spacers are manufactured from low-conductivity material. They can improve the U-Factor of a window by 10 percent and increase the glass edge temperature by almost 5°F, helping reduce condensation.

**Low-Emissivity (Low-E) Coated** - A metal or metallic oxide layer applied to the surface of the glass that lowers the window's U-Factor. The coating blocks long wave infrared inside and short wave solar heat outside. This results in keeping heat inside during the winter and outside during the summer, reducing air conditioning or heating demand, thus lowering energy costs. It also reduces winter condensation because of higher indoor glass temperatures and blocks harmful ultraviolet rays, lowering the T<sub>dw</sub>, without blocking as much VT as tints do.

**Argon** - Argon is a gas used to fill the airspace between panes of insulating low-E glass. It may increase insulating performance by slowing the transfer of energy through the window, therefore lowering the window's U-Factor. Because the amount of argon in a unit may deplete over time, the insulating performance attributed solely to argon may diminish over time. Capillary/breather tubes are required on units with glass 12" and less in width or height and units shipped over high elevations. The capillary/breather tubes allow the unit to adjust to changes in pressure. Argon gas is not an option when capillary/breather tubes are used.

**Tinted Glass** - Tinted glass can lower the SHGC of a window significantly and can help control glare. Keep in mind that while blocking the sun's rays, tinting also reduces VT.

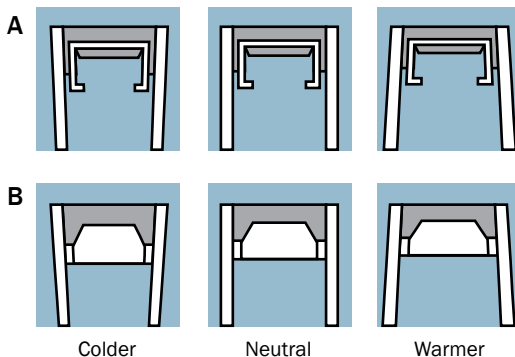
# ENERGY EFFICIENT

## Clear IG

All insulating glass (IG) is constructed with three major components. It's the quality of these components, the glass, spacers and sealants that set companies apart.

We feel our IG system is the very best glass seal on the market today! The concept is simple: use a technology advanced spacer system to create the insulated glass unit and reduce the amount of energy traveling through the glass structure. Expansion and contraction during a thermal cycle bring unwanted stress to IG units. Our spacer designs allow for glass movement resulting in low seal failure and stress crack rates and make Lincoln windows trouble free for years.

Couple a warm edge spacer system with double strength glass and WOW what a combination! The industry doesn't require heavier glass, we do. That's why Lincoln hasn't produced insulated glass units with anything but double strength or heavier glass for over 10 years. Can you believe that some window companies believe stronger glass should be an upgrade? Add the best sealants available in the market today and the result is an outstanding insulated glass package. Less seal failures and stress cracks - We call it standard, shouldn't you?



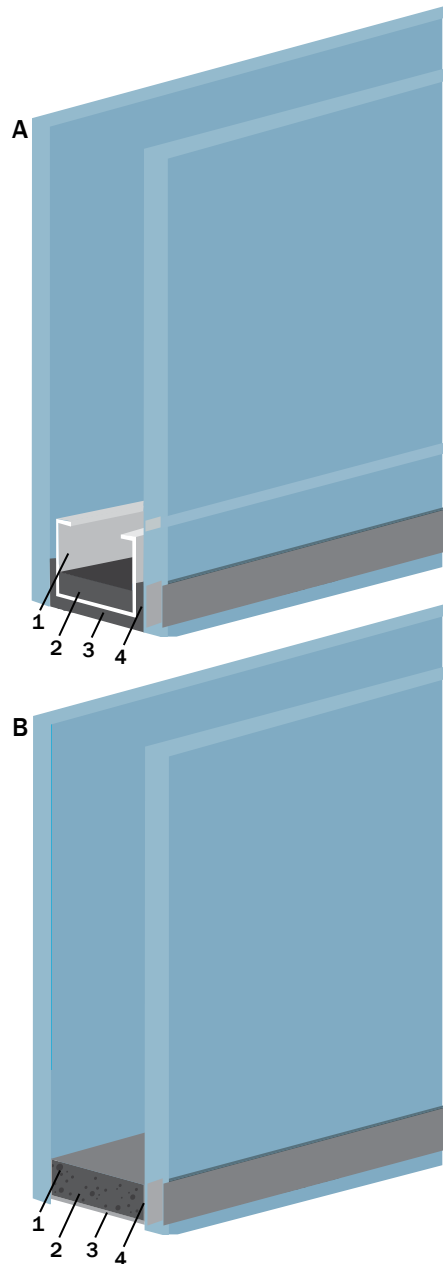
### Typical Glass Movement

#### A. Warm Edge Spacer

Consistent contact with glass surface.

#### B. Typical Box Spacer

Less flexible.



### Warm Edge Spacer Options

#### A. Standard Spacer

1. .010 u-shaped steel channel.
2. Desiccated matrix compound.
3. .050 hot melt butyl seal.
4. .030 hot melt butyl seal.

#### B. Foam Spacer

1. .188 extruded silicone foam.
2. Integral desiccant material.
3. Secondary seal.
4. Acrylic adhesive seal.

# ENERGY EFFICIENT

## LoE<sup>2</sup>

Increase the glass performance with this time-tested technology. Proven quality and value for a minimal investment.

Now you realize we can handle the basics. If your building project speaks of energy bill savings, more comfortable room spaces or meeting and exceeding energy star requirements, give LoE<sup>2</sup> the job.

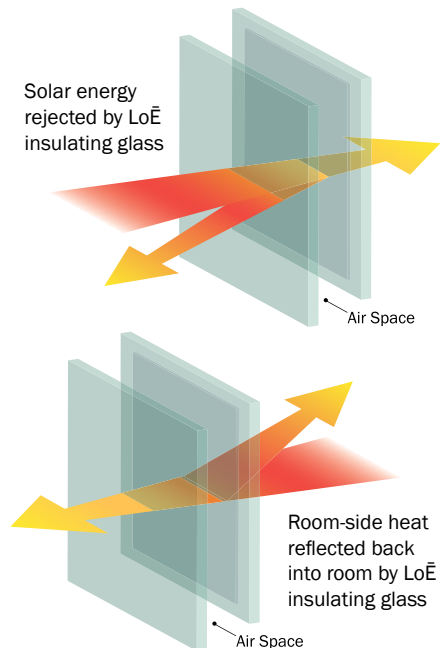
Safeguard your home from the elements by using this nearly invisible protection called LoE<sup>2</sup>. Consisting of two microscopic layers of silver and sealed in the airspace, this glass is the optimum step-up from our IG standard offering.

Obtain the perfect balance of U-value, solar shading and UV protection for remodeling projects, new homes and light commercial developments. So don't pay the energy penalty, choose the superior performance in windows with LoE<sup>2</sup> from Lincoln.



### Features and Benefits

- Dual pane
- Double strength glass
- Warm edge spacer
- Two layers of silver
- Better U-Factor
- Better indoor temperatures
- Less condensation
- Lower heating bills
- Ideal for cooler climates
- High visibility
- Gas or air filled



# ENERGY EFFICIENT

## LoE<sup>3</sup>-366™

The optimum choice for solar shading, performance, clarity, and fading protection.

Can you feel the southern climate heat? Does the daytime temperature raise every time you sit by the window? This is called solar heat gain and controlling it just became easier with the unparalleled performance of LoE<sup>3</sup>-366™ glass technology. By adding a third layer of silver coating, LoE<sup>3</sup>-366™ effectively blocks solar gain and reflects heat more efficiently.

The reduction of heat gain is only part of the story. The goal with any high performance glazing is clarity of the glass. LoE<sup>3</sup>-366™ was produced to show a minimum of exterior “mirror” reflectance and smoke-colored tints that can darken your home's interior.

Great glass performance can actually be seen as well as felt. UV light, the leading cause of fading, is blocked by up to 95% with LoE<sup>3</sup>-366™. This means furniture, flooring, artwork and other home furnishings all will benefit from this glass technology.



### Features and Benefits

- Dual pane
- Double strength glass
- Warm edge spacer
- High visibility
- Three layers of silver
- Best fading protection
- Lower air conditioning bills
- Ideal for warmer climates
- Environmentally friendly—uses less energy
- Gas or air filled





# ENERGY EFFICIENT

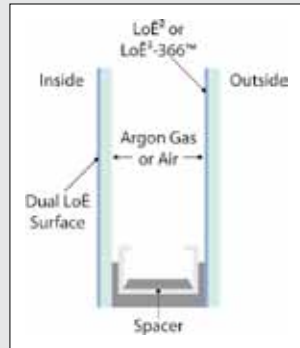
## Dual Low-E

Our most ecologically aware combination of glass products designed for projects requiring extraordinary energy efficiencies.

As the ENERGYSTAR program ratchets up its requirements, our glass offering continues to provide consumers with an ability to comply. Lincoln's Dual Low-E is the next generation insulating glass package that tackles these stricter requirements by combining  $\text{LoE}^2$  or  $\text{LoE}^3\text{-366}^{\text{TM}}$  with a pyrolytic (hardcoat) low-e surface.

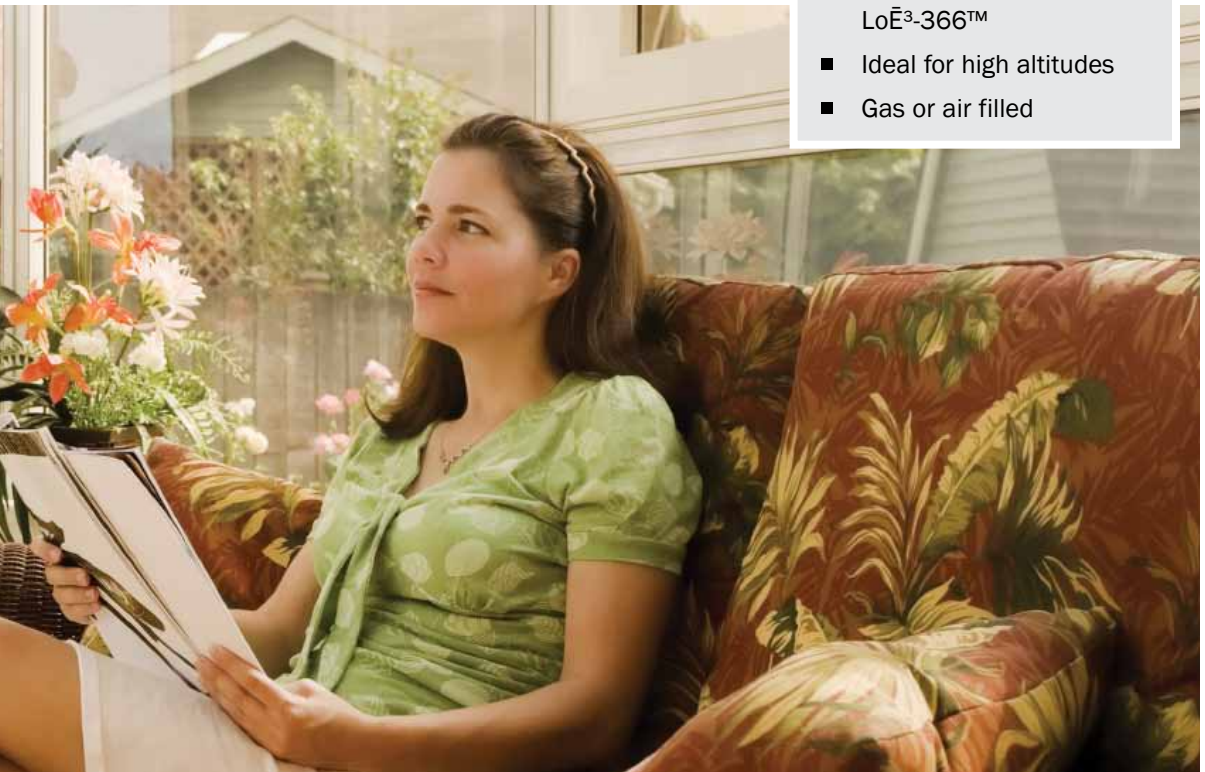
This energy efficient glass lowers U-values and retains more of your costly heat inside for the Northern and North/Central zones. For the South/Central and Southern zones, where Solar Heat Gain Coefficients are more important, our Dual  $\text{LoE}$  package with  $\text{LoE}^3\text{-366}^{\text{TM}}$  would be a natural choice.

This glass option can be argon gas-filled and assembled with alternative spacer systems for even higher performance ratings.



### Features and Benefits

- Dual pane
- Double strength glass
- Warm edge spacer
- Pyrolytic Low-E technology
- Superior U-Value
- Best SHGC
- Meets strict energy codes
- Combined with  $\text{LoE}^2$  or  $\text{LoE}^3\text{-366}^{\text{TM}}$
- Ideal for high altitudes
- Gas or air filled



# LOW MAINTENANCE

## Neat® & Preserve®

The ultimate choice in glass plus the benefits of two low maintenance features that will leave your windows clean and protected.

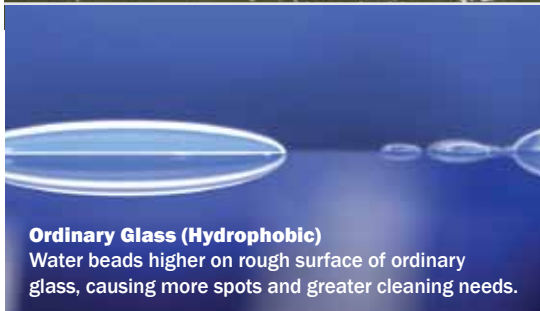
Do you want the perfect ending to our glazing story? Be truthful. Be inspired. Be Unique. By definition, our combination of LoE<sup>3</sup>-366™+Neat® and Preserve® really is the best performing glass in the window industry.

Pick Neat and Preserve to simplify your lifestyle during construction and the years to come. Welcome to shorter job site punch lists, less trips with the extension ladder and being the envy of your neighborhood. Welcome to Premium Performance glass from Lincoln Windows.



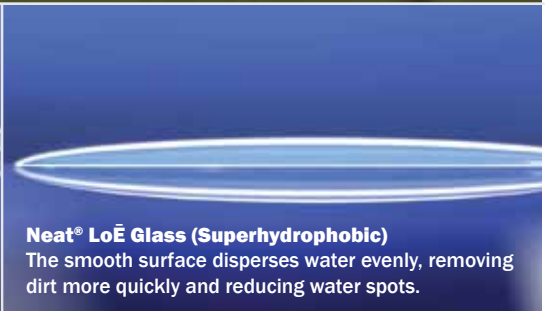
### Neat®

A silicon dioxide layer that makes the glass surface ultra smooth and superhydrophilic so water sheets off leaving fewer spots. Add to that a titanium dioxide layer that reacts with the sun's UV rays causing organic material on the glass to decompose - no manual activation required. Since the sun and the rain do most of the work, windows stay clean longer and are easier to clean when needed.



#### Ordinary Glass (Hydrophobic)

Water beads higher on rough surface of ordinary glass, causing more spots and greater cleaning needs.



#### Neat® LoE Glass (Superhydrophobic)

The smooth surface disperses water evenly, removing dirt more quickly and reducing water spots.



# LOW MAINTENANCE



## Preserve®

A low density polyethylene adhesive that protects the glass during shipping and construction offering savings of time and money during cleanup. Since it's clear, it allows in natural light during the building process. Once construction is complete it simply peels off, labels and all. Also, because it contains no harmful chemicals, it can be disposed of with other waste materials.



**NOTE:** Preserve® film coverage on the glass surface has a tolerance of +/- .25". Painter's masking tape will be needed to mask off the remaining visible glass surface before paint or stain can be applied.

# SPECIALTY

## Patterned, Tinted & Safety

The majority of projects utilize clear glass, but occasionally a project requires the use of a specialty glass. Whether it be to conceal the view from the exterior of a building, distort the details of objects through the glass or provide an extra level of safety, we have a variety of specialty glasses that will meet your needs. Our specialty glass options include: Laminated, Tempered, Tinted, Spandrel and Patterned.

### Tinted



Bronze



Grey



### Patterned



Pattern 62



Vertical Reed



Horizontal Reed



Rain

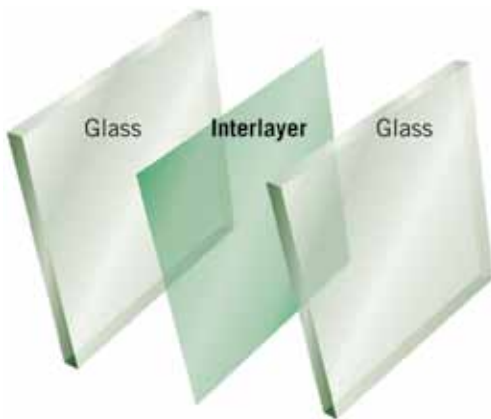


Glue Chip



## Safety - Laminated

This special glass is produced by bonding a combination of plastic vinyl layers and polyester film between two panes of glass into a single sheet. Sea-Storm® glass looks like ordinary glass, but is designed to pass stringent building requirements in high wind speed areas. It protects like a shield against accidental impact, forced entry, sun damage and unwanted noise. Extensive testing shows that upon impact, broken glass fragments tend to adhere to the durable, bonded plastic vinyl interlayer, reducing the risk of injury and damage to your buildings' structure.



Laminated Glass Construction with .090 PVB Interlayer.



## Features and Benefits

- **Storm Barricade:** Resists impact from air-borne projectiles and debris without the need for storm panels or shutters. Remains integral even after glass breakage and during high/low pressure 'pumping'.
- **Safety Shield:** Is tougher to break. If broken, the vinyl interlayer remains in the frame with glass fragments adhering to it, providing a strong barrier against forced entry.
- **Solar Screen:** Offers a clear glass appearance with enhanced protection against fading of artwork, flooring, furniture, and other home furnishings.
- **Sound Control:** Reduces unwanted outside noise in high traffic areas. Train tracks, airports and heavy highway traffic are less obtrusive.





## When only the best will do.

Choose Lincoln for your new construction, remodeling or even light commercial projects. With over 60 years of manufacturing experience built into every unit, we engineer our windows and patio doors for visual appeal as well as outstanding performance and back it up with exceptional customer service before and after the sale.

We are continually expanding our list of product offerings, options, and accessories and are confident that we have the perfect window or patio door to harmonize with your ideas and designs.



Lincoln Windows & Doors carry an extensive product warranty. Ask your dealer for complete information.



### Committed to protecting and preserving the environment.

Lincoln Windows is committed to environmental stewardship. As responsible corporate citizens, we are dedicated to manufacturing energy efficient products and managing our resources in a manner that reduces our impact on the environment.



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