

Product Performance

Calculated R-value ratings comparing warm edge spacer performance against conventional spacer performance in both LoE² glass units and clear insulating glass units are provided through independent testing laboratory analysis. An R-value indicates the amount of resistance a material or airspace has to thermal conductivity. A greater R-value indicates that a lower level of heat is transmitted through the material.

Window Unit Comparison • Thermal Performance		
LoE ² [®]	Warm Edge Spacer	Conventional Aluminum Spacer
Center R-Value	4.20	4.20
Edge R-Value	3.33	2.44

Window Unit Comparison • Thermal Performance		
Clear Insul	Warm Edge Spacer	Conventional Aluminum Spacer
Center R-Value	2.04	2.04
Edge R-Value	2.00	1.75

(Conditions: 1/8" Glass, 1/2" Air Space, 3/4" Overall, LoE² with Argon, 0° Outside, 70° Inside)



Look for the optimum performance windows with the LoE² Glass Label.

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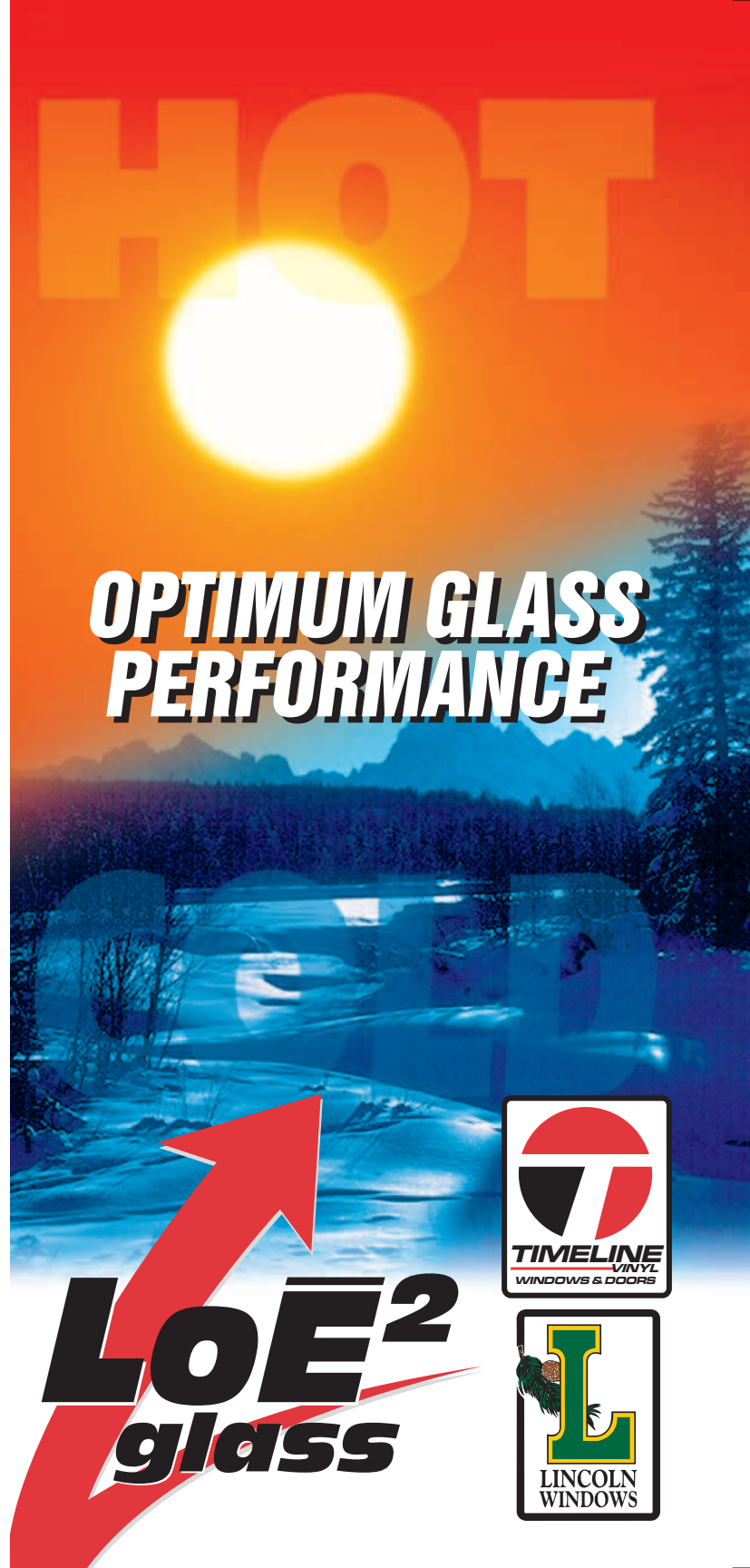
LINCOLN WOOD PRODUCTS, INC.
TIMELINE VINYL PRODUCTS, INC.
1400 W. Taylor Street • P.O. Box 375
Merrill, Wisconsin 54452-0375



HOT

OPTIMUM GLASS PERFORMANCE

LoE² glass



Cardinal® LoE²® Glass...

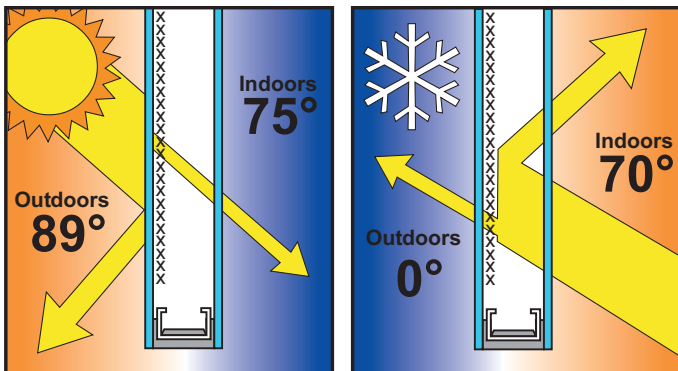
LoE² glass by Cardinal helps to provide year round energy savings by controlling heat loss and heat gain in your home.

“Low E Squared” glass is coated with optically transparent layers of silver sandwiched between layers of anti-reflective metal oxide coatings. The “smart” coatings selectively filter the sun’s heating energy in the summer and reduce heat loss in the winter.

During the summer months, the greatest potential for energy cost savings is the reduction of air conditioning costs. LoE² effectively filters out the solar energy that drives up summer cooling costs while blocking out 84% of harmful ultraviolet rays which damage curtains, carpeting and furniture.

In the winter, LoE² reflects the room-side heat back into the room which helps reduce heating costs. Plus, because the interior of the glass is warmer, there is a significant reduction in the potential for wintertime “sweating” or condensation associated with ordinary non-coated insulating glass windows.

Energy Savings & Comfort



Summer

Solar energy rejected by LoEdge insulating glass.

Winter

Room-side heat reflected back into room by LoEdge insulating

... with Argon...

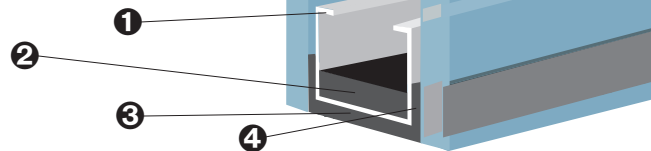
Insulating glass units with LoE²® coatings with pure inert Argon gas limit the radiative and conductive loss of long-wave room-side heat energy through the window.

With the LoE²® coatings and Argon gas, the net result is a 104% performance improvement in winter night-time R-value ratings compared to non-coated air-filled insulating glass.

... plus Warm Edge Glass Technology

Warm edge insulating glass technology offers superior thermal performance and aesthetics, it retains its performance over the years as a result of its innovative spacer system design.

Warm edge insulating glass technology centers around the automated fabrication of insulating glass unit spacers. The warm edge spacer is made from a thin steel strip, automatically formed into a one-piece glass spacer/structural support by computer operated machinery. Warm edge spacers provide excellent structural integrity and superior thermal performance in addition to being more aesthetically pleasing due to the low profile U-channel which is hidden from sight by the sash.



- 1 .010 thick roll formed mild steel one piece construction with integral fabricated corner key
- 2 Extruded 6 grams/lineal foot of desiccated matrix
- 3 Extruded .050 hot melt butyl seal and thermal barrier
- 4 Extruded .030 hot melt butyl seal and thermal barrier

Warm Edge Technology Structural Advantage

With most competitive technologies, thermal cycling can weaken the sealant to glass and sealant to spacer bonds.

As the glass expands and contracts, it can cause the spacer to “walk” out of its original

position and lose its bond to the glass causing a seal failure. With warm edge insulating glass technology, however, thermal cycling stress is absorbed primarily by the steel spacer material rather than the sealant. The result is a high resistance to spacer migration and improved unit seal longevity.

