



Solar control

for just about the coolest windows

Although windows provide beautiful views and wonderful natural light, they can also account for up to 30% of the annual energy consumed in a home. In the summer, Cardinal's LoE²-270 keeps your home cool and comfortable by rejecting the sun's heat and damaging rays. In the winter, LoE²-270 helps your home stay warm and cozy by blocking heat loss to the cold weather outside.

it can control your comfort.

The difference is clear.

Cardinal LoE²-270's patented coating blocks 86% of the sun's harmful ultraviolet rays and 86% of the sun's infrared heat. LoE²-270 even outperforms the tinted glass often used in warm climates. You can see out and the light shines in, with no heavy bronze or smoke colored tints to darken the personality of your home. And because LoE²-270 blocks most of the sun's damaging ultraviolet rays, it will help your curtains, carpets, furniture and wall coverings stay beautiful for years to come.



Also, LoE²-270 can be purchased in hurricane-resistant laminated glass, in a variety of custom shapes and sizes.

To learn more about LoE²-270 and other Cardinal glass products, ask your contractor or architect, or visit our web site at www.cardinalcorp.com.



Cardinal comfort inside.

Regardless of where your home is located, choosing windows that provide you with the highest level of comfort and energy savings year-round is extremely important. And choosing the right glass for your windows is the most important factor in that decision. Go beyond ordinary low-e glass. Let LoE²-270 help you handle the weather – any weather.

Heating and Cooling Energy Savings *
(Percentage of dollars saved over ordinary glass)

NORTHERN 14-31%

Save energy with glass so smart,

NORTH/CENTRAL 15-31%

SOUTH CENTRAL 14-28%

SOUTHERN 16-36%

*Total energy costs (heating + cooling) comparing a clear double-pane glass to LoE²-270 glass for a house with 15% window to wall ratio uniformly distributed on all four sides of the house. The smaller savings value assumes identical occupancy patterns. The larger value shows the potential savings when the improvement in occupant comfort is included. A home with LoE²-270 can deliver equivalent comfort with a lower heating setpoint in the winter and a higher cooling setpoint in the summer.

under the sun.

When the temperature is heading to the top of the thermometer, ordinary window glass simply welcomes in the heat. Cardinal LoE²-270 however, has been specially formulated to reject the sun's heat and damaging rays and keep your home cool and comfortable. The patented LoE²-270 coating provides the best clarity and highest performance of all low solar gain low-emissivity glass products.

The end result of all this engineering is that Cardinal LoE²-270 provides the ultimate in comfort because it reduces window heat gain by 50% or more when compared to ordinary glass.

90° outside 75° inside

Cardinal LoE²-270
reduces window heat
gain by 50% compared
to ordinary glass.

During cold weather, the insulating effect of your windows 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 window 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. To maintain the best comfort during the winter, select a glass product that produces surface temperatures that will stay above this point during the coldest outdoor conditions.



Inside Glass and Outside Temperatures

The table below compares the room-side center of glass temperatures of four different glass types against two different winter conditions

	-20°F	+20°
Single-pane, clear	0°	31°
Double-pane, clear	37°	51°
Ordinary low-e	47°	58°
LoE²-270	52°	61°

The superior insulating capability of Cardinal LoE²-270 is a key factor in the construction of comfortable windows for cold climates. The dramatic comfort improvement from windows with warm glass surfaces also means the relative humidity of the indoor air can be controlled and maintained properly. Proper humidity levels (not too much, not too little) will improve comfort and promote a healthier living environment.

CARDINAL CG 
ENGINEERING THE FUTURE OF COATED GLASS

LoE²-270

Note: All values calculated using Window 5.2. [See <http://windows.lbl.gov/software/window/window.html> and <http://windows.lbl.gov/materials/igdb/> for more information on glass optical data and the Windows 5.2 program.] Emittance of ordinary low-e is 0.20.

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.

Cardinal actively supports and participates in The National Fenestration Rating Council (NFRC). Windows with LoE²-270 that are rated and certified by the NFRC can comply with Energy Star™ requirements for all climates in the country.

[See <http://www.energystar.gov/products/windows/> for more information on the Energy Star windows program.]

GLASS PERFORMANCE

PRODUCT	VISIBLE LIGHT TRANSMITTANCE %	SOLAR HEAT GAIN COEFFICIENT	WINTER U-FACTOR (AIR/ARBON)	UV	FADING TRANSMISSION
Single-pane, clear	90%	.86	1.04/---	.71	.84
Double-pane, clear	81%	.76	.48/--	.56	.74
Ordinary low-e	75%	.72	.35/.31	.44	.63
LoE²-270	70%	.37	.30/.25	.14	.53



CARDINAL CG 

775 Prairie Center Drive
Eden Prairie MN 55344
cardinalcorp.com



ALL CLIMATE
SOLAR CONTROL GLASS

106 degrees outside,

The sun doesn't stand a chance against Cardinal LoE²-270 (pronounced low E squared-270). It's the perfect glass for fighting the heat. It reduces solar heat gain by 50% or more when compared to ordinary glass. In fact, its solar heat gain coefficient is better than code requirements. And because of its clarity, LoE²-270 outperforms tinted glass typically used in sunny climates.