Cardinal Coated Glass

Superior glass products
for residential windows and doors

Neat

Note: All values calculated using Window 5.2. (See http://windows.lbl.gov/software/window/window.html and http://windows/lbl.gov/materials/optical_data/default.html 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 LoÉ 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/ARGON)	FADING TRANSMISSION	UV
Double-pane, clear	81%	.76	.48	.74	.56
Double-pane, tint	61%	.63	.48	.52	.32
Ordinary low-e	75%	.72	.35/.31	.63	.44
Ordinary low-e, tint	57%	.57	.35/.31	.45	.21
LoÉ²-366	**66%**	**.27**	**.29/.24**	**.43**	**.05**
LoÉ²-366 Neat	**66%**	**.27**	**.29/.24**	**.43**	**.05**
LoÉ²-272	**72%**	**.41**	**.30/.25**	**.55**	**.16**
LoÉ²-272 Neat	**72%**	**.41**	**.30/.25**	**.55**	**.16**
LoÉ²-270	**70%**	**.37**	**.30/.25**	**.53**	**.14**
LoÉ²-270 Neat	**70%**	**.37**	**.30/.25**	**.53**	**.14**
LoÉ²-240	**40%**	**.25**	**.30/.26**	**.35**	**.16**
LoÉ²-240 Neat	**40%**	**.25**	**.30/.26**	**.35**	**.16**

Cardinal CG
A Cardinal Glass Industries Company

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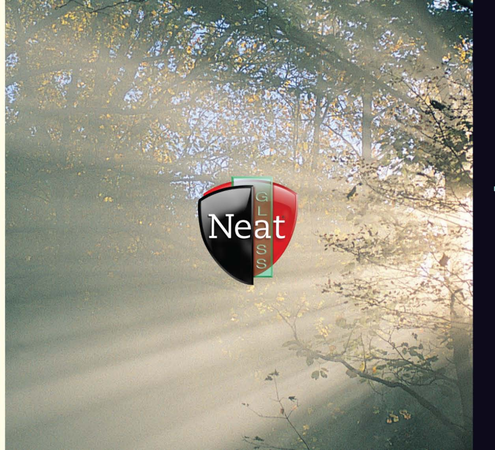
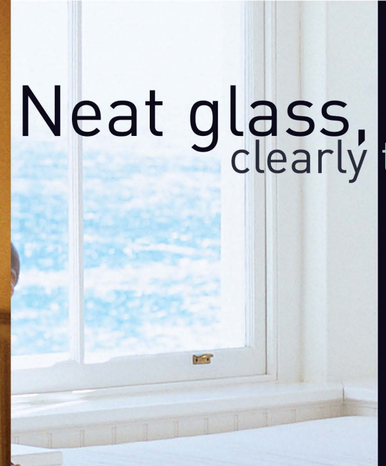


The dawn

of a new era in
easier-to-clean glass.

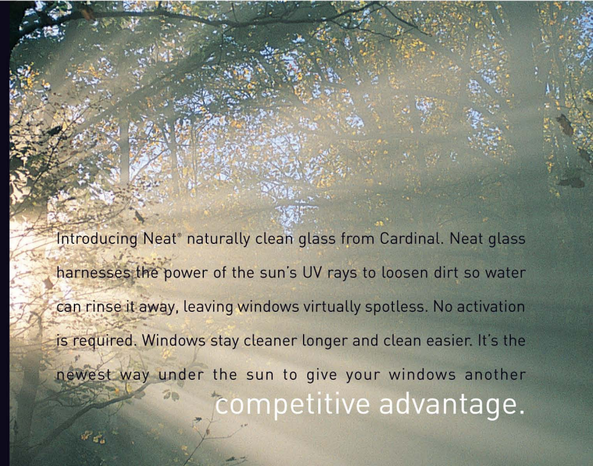
Windows that almost clean themselves?

How Neat is that?



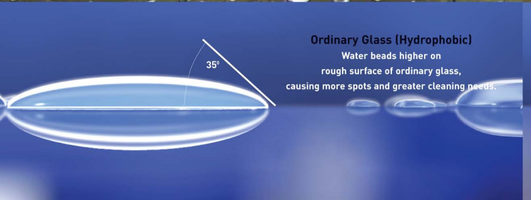
Neat glass, clearly the top choice.

Select double-pane, tempered or laminated, in custom shapes and sizes, and with any of our LoE coatings. All are available with Neat naturally clean glass. To help you eclipse the competition. For more information, visit cardinalcorp.com.

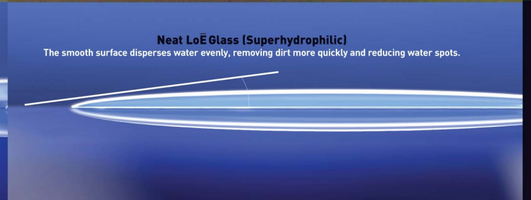


Introducing Neat® naturally clean glass from Cardinal. Neat glass harnesses the power of the sun's UV rays to loosen dirt so water can rinse it away, leaving windows virtually spotless. No activation is required. Windows stay cleaner longer and clean easier. It's the newest way under the sun to give your windows another competitive advantage.

Ordinary glass versus Neat glass



Ordinary Glass (Hydrophobic)
Water beads higher on rough surface of ordinary glass, causing more spots and greater cleaning needs.



Neat LoĒ Glass (Superhydrophilic)
The smooth surface disperses water evenly, removing dirt more quickly and reducing water spots.

1. THE CLEANING PROCESS STARTS WITH ULTRA-SMOOTH GLASS

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

2. TITANIUM DIOXIDE AND RAIN FINISH THE JOB

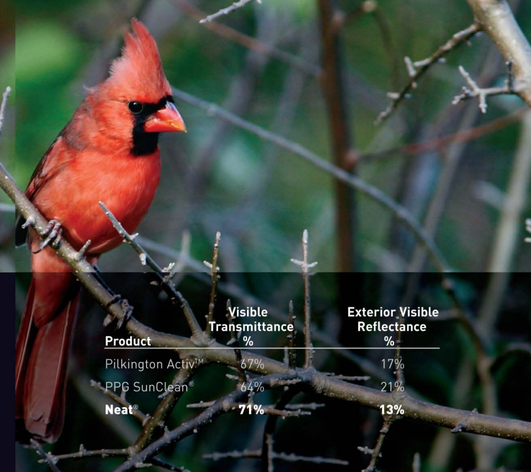
Titanium dioxide reacts chemically with the sun's UV rays, causing organic materials that are on the glass to decompose. It works even on cloudy days, as 80 percent of UV radiation gets through cloud cover. Then when it rains, the decomposed dirt is rinsed away, leaving the glass almost spotless. Result?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

3. SPUTTERING PROVIDES ANOTHER CLEAR ADVANTAGE

It actually provides two more advantages. First, Neat allows more visible light transmittance than any comparable competitive product. Second, it's also less reflective. These two benefits add up to a product that does not require a change in NFRC labeling. This makes the use of Neat a much smoother and easier conversion.

4. FINALLY, LoĒ ADDS COMFORT AND EFFICIENCY

When Neat is applied to LoĒ glass, it combines the ultimate in low maintenance with the best energy-conserving LoĒ glass on the planet. So homes stay warmer in winter, cooler in summer. Neat LoĒ conserves energy year-round, too, saving homeowners an average of 25 percent annually.



Product	Visible Transmittance %	Exterior Visible Reflectance %
Pilkington Activ™	67%	17%
PPG SunClean®	64%	21%
Neat	**71%**	**13%**

The science of Neat

It's not magic but close to it. A variety of different technologies go into manufacturing Neat glass. But the key technology – the one that helps windows stay cleaner longer – is the super-thin coating we apply. Using our patented double-sputtering process, we apply an invisible, durable and permanent coating of titanium dioxide and silicon dioxide.

Pretty darn neat.

That's what homeowners and builders alike will think. A little sun, a little rain, and *voila.* Clean windows, thanks to Neat. What's more, you get all the performance benefits of our LoĒ glass –a cooler home in the summer, a warmer one in winter. Finally, here's one more Neat advantage – Neat allows more visible light transmittance and has less exterior reflectance than ordinary low-e glass. Sounds neat to us.