Solar Control Glass

CARDINAL CG
A CARDINAL GLASS INDUSTRIES COMPANY

ENGINEERING THE FUTURE OF COATED GLASS

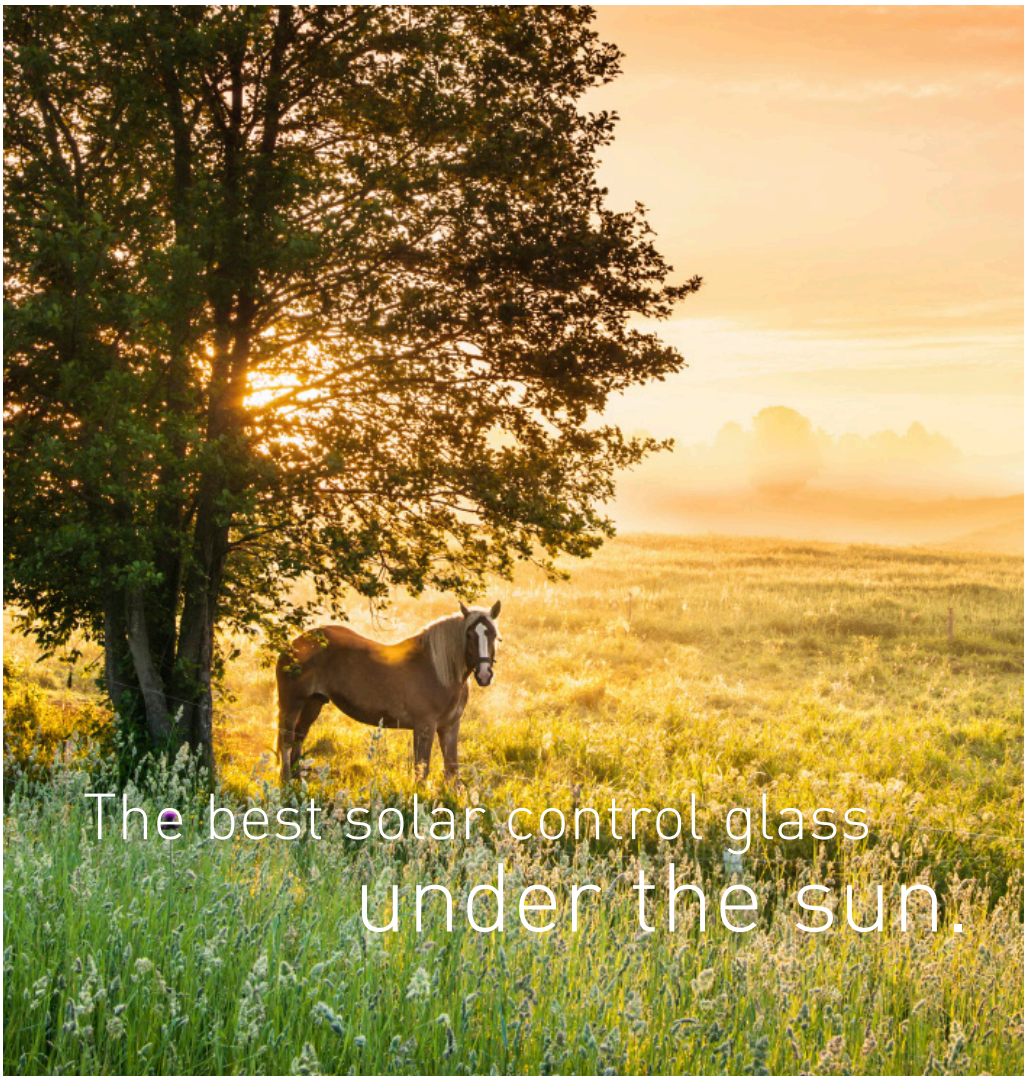
The solar performance of our new LoĒ³-340 glass is unprecedented in a double-pane unit – no room-darkening tint required. With its SHGC of just 0.18, it greatly reduces oppressive solar heat gain. And wherever glare is a problem, LoĒ³-340 controls that as well. Then when cold weather rolls around, its low U-Factor reduces indoor heat loss.

Result? Year-round comfort.

When it comes to reducing solar heat gain from the blazing sun, LoĒ³-340 simply has no equal. And because it's not tinted, you enjoy a number of other advantages as well. First, there's the cost savings of no tint. Then you avoid the disadvantages of tinting: the potential for thermal stress breakage and the potential need to heat treat the glass.

Tinted glass has several other glaring deficiencies. Regular tinted glass works by absorbing sunlight, so the glass becomes hot in the sun. The color of the glass also changes with its thickness. On the other hand, LoĒ³-340's appearance and performance remain the same regardless of glass thickness.

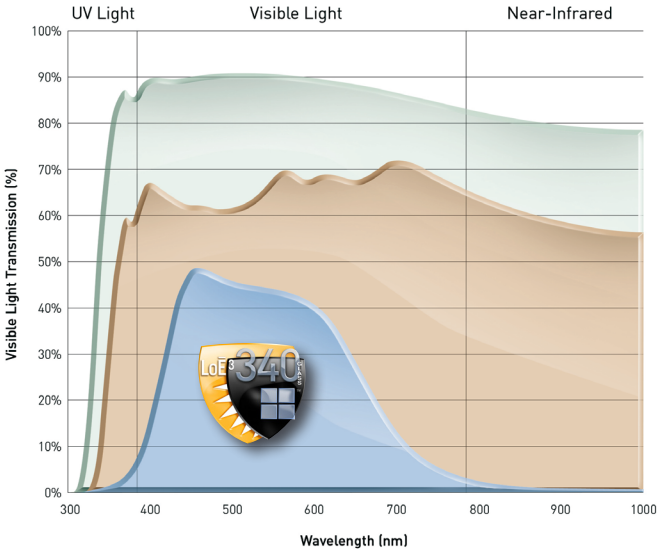
What's more, LoĒ³-340 has a very high LSG (light to solar gain ratio) of 2.17. So even though solar gain is being controlled, plenty of visible light is still allowed inside. (NOTE: LSG based on 340/clear with 3mm glass thickness.)



LoĒ³, spectrally selective glass.

This graph compares the solar transmission of clear glass, bronze tinted glass and LoĒ³-340. Clear glass allows nearly all the solar energy through. Bronze glass reduces transmission by absorbing sunlight, but it's more effective at blocking light than heat. To match the glare control of LoĒ³-340, a tinted glass would have to be 1/4" thick.

Even at this heavy thickness, the solar blockage of tinted glass doesn't compare with LoĒ³-340. The LoĒ³-340 plot demonstrates the "selective" nature of the coating. Visible Light Transmittance is more than twice the Solar Heat Gain Coefficient. As a result, LoĒ³-340 provides effective glare control and maximum solar blockage in a softly tinted design – without the punishing discomfort of heat-absorbing glass or the visual disruption of highly reflective glass.



What makes multi-layer LoĒ³-340 different is its ability to handle each portion of the solar spectrum differently.

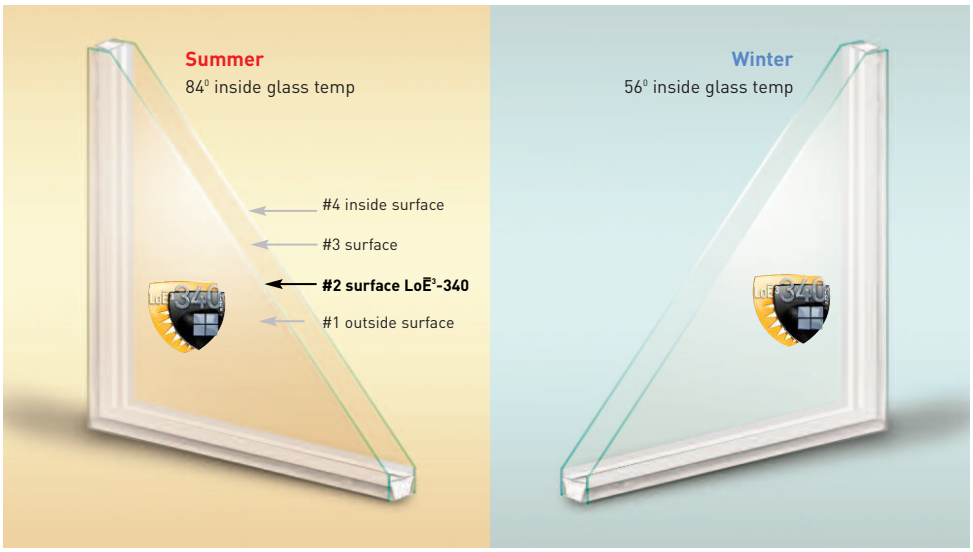
Enjoy all-season comfort.

Year-round thermal comfort is mainly the result of two things:

1. Blocking oppressive solar heat gain in hot weather, thus maintaining cooler glass temperatures.
2. Reducing heat loss in cold weather, thus maintaining warmer glass temperatures.

Because LoĒ³-340 is more than a solar control glass, its advanced design provides a very low U-Factor of 0.25. This results in more comfort and energy savings in cold weather.

One of the best ways to compare comfort is to use the Mean Radiant Temperature (MRT). MRT can be thought of as a "feels like" temperature; the closer the MRT is to the thermostat setting, the better the comfort will be.



INSULATING GLASS PRODUCT	WINTER °F (°C)		SUMMER °F (°C)	
	CENTER OF GLASS	MEAN RADIANT TEMPERATURE	MEAN RADIANT TEMPERATURE	SHGC
Clear, Clear	44° (7°)	60° (16°)	81° (27°)	0.78
Clear, LoĒ-180®	55° (13°)	64° (18°)	83° (28°)	0.69
Gray Tint, LoĒ-180®	53° (12°)	64° (18°)	83° (28°)	0.49
LoĒ-272®/Clear	56° (13°)	65° (18°)	79° (26°)	0.41
LoĒ-270®/Clear	56° (13°)	65° (18°)	78° (26°)	0.37
LoĒ-366®/Clear	56° (13°)	65° (18°)	78° (26°)	0.27
LoĒ³-340/Clear	**56° (13°)**	**65° (18°)**	**79°** (26°)	**0.18**

GENERAL NOTES: (1) Data was calculated using the LBNL Window computer program per NFRC environmental conditions.

Indoor glass temperatures and mean radiant temperatures.

Double glazing improves the winter comfort, especially when a low-emittance LoĒ³ coating is used. A double-pane window with a conventional tinted glass and low-e on the #3 surface (air-space side of indoor pane) improves the solar blockage, but exposes the building occupants to hot glass temperatures in the summer.

LoĒ³-340 is placed on the #2 surface (air-space side of outdoor pane) and provides the best comfort through all the seasons.

GLASS COMPARISONS

IG TYPE AND COATING	LIGHT TRANSMISSION	GLASS REFLECTANCE	COLOR OF GLASS	WINTER COMFORT	SUMMER COMFORT
Single-pane, Tinted	Moderate	Low	Tinted	Poor	Poor
Double-pane, Tinted	Moderate	Low	Tinted	Moderate	Moderate
Double-pane, tinted & low-e	Moderate	Low	Tinted	Good	Good
LoĒ³-340	Moderate	Low	Tinted	Excellent	Excellent

GLASS PERFORMANCE

IG TYPE AND COATING	VISIBLE LIGHT TRANSMITTANCE	SOLAR HEAT GAIN COEFFICIENT	WINTER U-FACTOR		UV LIGHT TRANSMISSION	FADE TRANSMISSION
			AIR FILL	ARGON FILL		
Single-pane, Gray Tint	60%	0.69	1.04	—	0.37	0.55
2 pane, Gray Tint	55%	0.58	0.48	0.46	0.32	0.49
2 pane, Gray Tint/LoĒ-180 (#3)	53%	0.49	0.31	0.26	0.17	0.42
LoĒ³-340/Clear	**39%**	**0.18**	**0.29**	**0.25**	**0.20**	**0.27**

GENERAL NOTES: (1) Data was calculated using the LBNL Window computer program per NFRC environmental conditions. (2) 90% argon/10% air fill is used for IGs with LoE coated glass, otherwise 100% air fill is used for uncoated units. (3) The UV Transmittance is determined as an average for wavelengths 300 – 380 nm. (4) UV Damage Weighted Transmittance (Tdw) is the weighted average for wavelengths 300 – 700 nm (based on CIE 89/3).

LoĒ³-340 – Less heat gain when it's hot, less heat loss when it's cold, more comfort year-round, and the best glare control under the sun.

Finally, LoĒ³-340 delivers the lowest UV transmission of any LoĒ glass we offer. This greatly reduces fading on furniture, carpet, draperies and everything inside the home.

It can be purchased in hurricane-resistant laminated glass, in a variety of custom shapes and sizes. To learn more about LoĒ³-340 and other Cardinal Glass products, ask your window manufacturer, contractor or architect.

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