Performance Data and Comparisons

The performance characteristics of Cardinal's LoÉ® products are shown on the attached "Insulating Glass Performance Comparison" charts. The following products and combination of products are compared:

- IG units with nominal 3 mm and 6 mm glass substrates;
- IG units with clear, green, gray, and bronze non-coated glass substrates;
- IG units with LoÉ²-272®, LoÉ²-270®, LoÉ³-366®, and LoÉ²-240® on the #2 glass surface;
- IG units with LoÉ-180® on the #2 or #3 glass surfaces;
- IG units with green, gray, or bronze outdoor glass substrates with LoÉ-180®, LoÉ²-272®, LoÉ²-270®, LoÉ³-366®, LoÉ²-240® or LoÉ-180® on the #3 Indoor glass surface;
- IG units with LoÉ²-272®, LoÉ²-270®, LoÉ³-366®, LoÉ²-240® or LoÉ-180® on the #2 glass surface with LoÉ-i89 on the #4 glass surface.

Although the Winter U-factors are not affected when Cardinal's LoÉ® coatings are used on the #2 or #3 glass surface, the Shading Coefficient and Solar Heat Gain Coefficient will be higher when the coatings are on the #3 glass surface compared to the #2 glass surface.

Cardinal does not recommend the use of LoÉ® coatings on tinted substrates; therefore, there is no performance data listed for these combinations. However, Cardinal will supply IG units with a tinted lite outdoors and clear LoÉ® coated products on (surface #3) indoors.

Cardinal also does not recommend solar control LoE® coatings (LoÉ²-272®, LoÉ²-270®, LoÉ³-366®, and LoÉ²-240®) be used on the #3 surface of a dual pane IG unit with a clear outdoor lite. The potential for having inside glass breakage from thermally-induced stress is increased. These coatings are designed as second surface coatings in a dual pane IG unit. The only LoÉ® coating recommended for use on the #3 surface of a dual pane IG unit with a clear outdoor lite is LoÉ-180®.

Cardinal Double-Pane Insulating Glass Performance Data

3 mm / 13.0 mm airspace / 3 mm

Exterior Glass	Interior Glass	Visible Light			SC	SHGC	Center of Glass U-Value (BTU/hr/ft²/°F)		Comfort Indoor Glass Temperature (°F)		UV Trans.	Tdw ISO/CIE
		Trans	Reflectance Out	Reflectance In			Air	Argon	Winter	Summer		
Clear	Clear	82%	15%	15%	0.89	0.78	0.48	0.46	45	90	58%	75%
LoE-180® (#2)	Clear	79%	15%	15%	0.74	0.64	0.31	0.26	55	87	29%	63%
LoE²-272® (#2)	Clear	72%	11%	12%	0.47	0.41	0.30	0.25	56	84	16%	55%
LoE²-270® (#2)	Clear	70%	12%	13%	0.42	0.37	0.29	0.25	56	83	14%	53%
LoE³-366® (#2)	Clear	65%	11%	12%	0.31	0.27	0.29	0.24	56	83	5%	43%
LoE²-240® (#2)	Clear	40%	14%	10%	0.29	0.25	0.30	0.26	55	86	16%	35%
Clear	LoE-180® (#3)	79%	15%	15%	0.79	0.69	0.31	0.26	55	94	29%	63%
LoE-180® (#2)	LoE-i89® (#4)	77%	15%	14%	0.72	0.62	0.24	0.21	46	105	27%	61%
LoE²-272® (#2)	LoE-i89® (#4)	70%	11%	11%	0.47	0.41	0.23	0.20	47	94	16%	53%
LoE²-270® (#2)	LoE-i89® (#4)	69%	12%	12%	0.41	0.36	0.23	0.20	47	93	14%	51%
LoE³-366® (#2)	LoE-i89® (#4)	63%	11%	11%	0.31	0.27	0.23	0.20	48	90	5%	41%
LoE²-240® (#2)	LoE-i89® (#4)	39%	14%	10%	0.28	0.24	0.24	0.21	47	95	15%	34%
Green	Clear	75%	13%	14%	0.69	0.60	0.48	0.45	45	99	34%	63%
Green	LoE-180® (#3)	71%	13%	15%	0.57	0.50	0.31	0.26	55	92	16%	53%
Green	LoE²-272® (#3)	66%	10%	10%	0.48	0.42	0.30	0.25	56	97	11%	48%
Green	LoE²-270® (#3)	64%	11%	12%	0.45	0.39	0.29	0.24	56	97	10%	46%
Green	LoE³-366® (#3)	59%	10%	10%	0.40	0.35	0.29	0.24	56	100	3%	38%
Green	LoE²-240® (#3)	37%	9%	14%	0.48	0.42	0.30	0.26	55	117	10%	30%
Gray	Clear	57%	9%	13%	0.70	0.60	0.48	0.45	45	95	32%	50%
Gray	LoE-180® (#3)	53%	9%	14%	0.56	0.49	0.31	0.26	55	93	17%	42%
Gray	LoE²-272® (#3)	50%	8%	9%	0.43	0.38	0.30	0.25	56	96	10%	38%
Gray	LoE²-270® (#3)	48%	8%	11%	0.40	0.35	0.29	0.25	56	97	9%	37%
Gray	LoE³-366® (#3)	45%	8%	10%	0.34	0.29	0.29	0.24	56	99	3%	30%
Gray	LoE²-240® (#3)	28%	7%	14%	0.44	0.38	0.30	0.26	55	116	9%	24%
Bronze	Clear	61%	10%	13%	0.72	0.62	0.48	0.45	45	94	31%	51%
Bronze	LoE-180® (#3)	59%	10%	14%	0.61	0.53	0.31	0.26	55	93	17%	44%
Bronze	LoE²-272® (#3)	54%	8%	10%	0.45	0.39	0.30	0.25	56	96	10%	39%
Bronze	LoE²-270® (#3)	52%	9%	11%	0.42	0.36	0.29	0.25	56	97	9%	37%
Bronze	LoE³-366® (#3)	48%	8%	10%	0.35	0.31	0.29	0.24	56	99	3%	30%
Bronze	LoE²-240® (#3)	30%	8%	14%	0.46	0.40	0.30	0.26	55	117	9%	25%

To meet Historical →

Notes:

(1) Data was calculated using Window 6.3 computer program with NFRC 100-2010 environmental conditions.
(2) Calculations based on 13 mm (1/2") airspace, 3 mm (1/8") glass, and 90% Argon gas fill level.
(3) Comfort Indoor Glass Temperatures are for the center portion of the glass.
(4) The UV Transmittance is determined as an average for wavelengths 310 -380 nm.
(5) UV Damage Weighted Transmittance (Tdw) is the weighted average for wavelengths 300 - 700 nm (based on CIE 89/3).

The highlited Glass pac will be used to meet historicals needs. (manufacturer)