

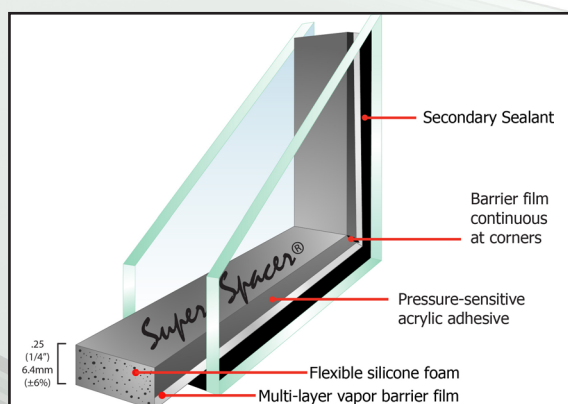
# ENERGYMAX

## ENERGY PERFORMANCE TO THE MAX



### The Perfect Glass Combination No Matter Where You Live

- Cardinal 366 Triple-Silver Low-E exterior pane combined with Cardinal i89 on interior pane
- Provides maximum energy efficiency for double-pane insulating glass
- Ideal balance of solar control and high visibility
- Blocks 95% of the sun's damaging rays to help prevent fading for furniture, floors, and window treatments
- Cardinal i89 Low-E reflects heat back into the room, making your living space feel warmer and more comfortable
- Easy, no-worry cleaning comes courtesy of Cardinal i89 interior Low-E, which is scratch resistant and smooth to the touch
- Available for use with most Quaker window and door series



### Super Spacer & Butyl Secondary Seal

- Low thermal conductivity
- Substantially reduced perimeter condensation
- Excellent UV resistance and temperature performance
- Superior argon gas retention
- Enhanced environmental comfort
- Excellent durability for sustainable performance

### Commitment to Quality

Every window and door built with Low-E glass also comes filled with the optimal amount of Argon Gas using an automated process in our state-of-the-art Insulating Glass Facility.

Windows and doors that are going into higher elevation areas will automatically have a Capillary Tube.

Our commitment to quality extends to the glass that we source. Quaker's glass is supplied by Cardinal Industries, the preeminent glass manufacturer in North America.



Learn more about Quaker glass offerings at [www.quakerwindows.com](http://www.quakerwindows.com)



## TECHNICAL AND TEST DATA FOR CARDINAL LoE<sup>3</sup>-366® & LoE-i89 GLASS:

### Cardinal LoE<sup>3</sup>-366®

Process: Sputter  
Coating: Silver  
Layers: 3  
Location: I.G. Surface #2  
Visual Aesthetics: Virtually Clear\*

### Cardinal LoE-i89

Process: Sputter  
Coating: Indium Tin Oxide  
Layers: 1  
Location: I.G. Surface #4  
Visual Aesthetics: Virtually Clear\*

(\*please note that viewing angle, sky conditions, colors of objects reflected, colors of materials behind the glass i.e. blinds/drapes, and viewing distance from the glass will impact perceived aesthetics)

### Optical Properties of Insulating Glass Units

IG Configuration Outboard Lite / Inboard Lite	Glass Thickness		Visible Light			Fading		SHGC	LSG
	mm	in	Trans. (%)	Refl. Out (%)	Refl. In (%)	UV Trans.	ISO-CIE Trans.		
Cardinal LoE <sup>3</sup> -366® (#2) / LoE-i89 (#4)	3.0	1/8	63	11	11	5%	41%	0.27	2.33

### Winter Day Solar Heat Gain Comparisons

Insulating Glass Unit	U winter BTU/(hr-ft <sup>2</sup> ) (W/m <sup>2</sup> )	SHGC	Solar Radiation Reflected BTU/(hr-ft <sup>2</sup> ) (W/m <sup>2</sup> )	Solar Radiation Transmitted BTU/(hr-ft <sup>2</sup> ) (W/m <sup>2</sup> )	Total Energy Rejected BTU/(hr-ft <sup>2</sup> ) (W/m <sup>2</sup> )	Total Energy Gained BTU/ (hr-ft <sup>2</sup> )(W/m <sup>2</sup> )
Cardinal LoE <sup>3</sup> -366® (#2) / LoE-i89 (#4)	0.20 (1.14)	0.26	109 (344)	60 (189)	198 (625)	64 (202)

### Summer Day Solar Heat Gain Comparisons

Insulating Glass Unit	U summer BTU/(hr-ft <sup>2</sup> ) (W/m <sup>2</sup> )	SHGC	Solar Radiation Reflected BTU/(hr-ft <sup>2</sup> ) (W/m <sup>2</sup> )	Solar Radiation Transmitted BTU/(hr-ft <sup>2</sup> ) (W/m <sup>2</sup> )	Total Energy Rejected BTU/(hr-ft <sup>2</sup> ) (W/m <sup>2</sup> )	Total Energy Gained BTU/ (hr-ft <sup>2</sup> )(W/m <sup>2</sup> )
Cardinal LoE <sup>3</sup> -366® (#2) / LoE-i89 (#4)	0.17 (0.97)	0.27	109 (344)	60 (189)	181 (571)	69 (218)

### Winter Night Airspace Heat Transfer

Insulating Glass Unit	U winter BTU/(hr-ft <sup>2</sup> )(W/m <sup>2</sup> -K)	Radiative Heat Loss BTU/(hr-ft <sup>2</sup> )(W/m <sup>2</sup> )	Conductive Heat Loss BTU/(hr-ft <sup>2</sup> )(W/m <sup>2</sup> )	Total Heat Loss BTU/(hr-ft <sup>2</sup> )(W/m <sup>2</sup> )
Cardinal LoE <sup>3</sup> -366® (#2) / LoE-i89 (#4)	0.20 (1.14)	1 (3)	13 (41)	14 (44)

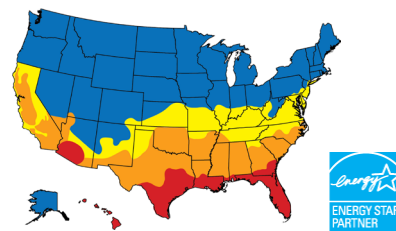
### Window U-Factor

Glazing	Class 1		Class 2		Class 3	
	BTU/(hr-ft <sup>2</sup> -F)	(W/m <sup>2</sup> -K)	BTU/(hr-ft <sup>2</sup> -F)	(W/m <sup>2</sup> -K)	BTU/(hr-ft <sup>2</sup> -F)	(W/m <sup>2</sup> -K)
Cardinal LoE <sup>3</sup> -366® (#2) / LoE-i89 (#4)	0.28	1.59	0.26	1.48	0.24	1.36

## Energy Values For Quaker's Popular Products When Using Energy Max

	U-Value	SHGC	VT	CR	Center Of Glass U-Value
Brighton Casement	0.28	0.18	0.42	46	0.20
Brighton Double Hung	0.27	0.19	0.43	45	0.20
Brighton Picture Window	0.25	0.21	0.48	46	0.20
Brighton Narrow Sliding Door	0.25	0.19	0.44	48	0.20
Brighton Outswing Door	0.28	0.16	0.35	48	0.20
CityLine/CityVu C600 Casement	0.27	0.19	0.43	53	0.21
CityLine/CityVu/C600 Pict. Wdw.	0.24	0.24	0.55	53	0.21
E600 Project-Out Awning	0.33	0.17	0.39	45	0.21
E600 Picture Window	0.25	0.23	0.54	46	0.21
EdgeLine/H450 Casement	0.39	0.21	0.46	47	0.21
EdgeLine/H450 Pict. Wdw.	0.26	0.24	0.56	51	0.21
Manchester/V200/V250 Casement	0.24	0.18	0.41	48	0.20
Manchester Sliding Door	0.24	0.21	0.50	49	0.21
Manchester/V200/V250 Dbl. Hung	0.24	0.21	0.49	47	0.20
Manchester/V200/V250 Pict. Wdw.	0.22	0.22	0.52	47	0.20
Manchester/V200/V250 Sgl. Hung	0.25	0.21	0.49	48	0.20
ModernVu/M600 Casement	0.40	0.19	0.42	45	0.21
ModernVu/M600 Pict. Wdw.	0.26	0.23	0.55	49	0.21
TimberLine/TimberVu/W600 Casement	0.24	0.19	0.43	52	0.21
TimberLine/TimberVu/W600 Pic. Wdw.	0.23	0.24	0.55	53	0.21
VuPoint/V300 Casement	0.23	0.17	0.40	49	0.21
VuPoint/V300 Picture Wdw.	0.22	0.23	0.54	50	0.21

Test data for other Quaker products not listed can be found at [quakerwindows.com](http://quakerwindows.com). Values shown were achieved using standard glass pane thickness. Other thicknesses may cause test data to vary slightly.



## Energy Star Qualifications

Climate Zone	U-Value	SHGC	Wind Infiltration*
<b>Northern</b>	≤ 0.27	Any	≤ 0.30
(Alternate #1)	≤ 0.28	≥ 0.32	≤ 0.30
(Alternate #2)	≤ 0.29	≥ 0.37	≤ 0.30
(Alternate #3)	≤ 0.30	≥ 0.42	≤ 0.30
<b>North Central</b>	≤ 0.30	≤ 0.40	≤ 0.30
<b>South Central</b>	≤ 0.30	≤ 0.25	≤ 0.30
<b>Southern</b>	≤ 0.40	≤ 0.25	≤ 0.30

\*All Quaker Windows meet or exceed wind infiltration requirements necessary for Energy Star qualification