



## Window Glass and Low-E Performance Options

*How to lower your heating bill, feel warmer in the winter, cooler in the summer, and protect your furniture from fading.*

**It's no longer enough** to simply have double paned windows. But for most people, the bewildering array of options like Low-e, Argon gas and others can be hard to decipher. Do they really work? Are they worth the extra expense? This article attempts to address those questions in a context meaningful to the average homeowner.

### Low-E

Low-emittance (low-E) coatings are microscopic, transparent, metallic oxide layers deposited on an inner window or skylight glazing surface in order to reduce the U-factor by suppressing radiative heat flow. Coating a glass surface with a low-emittance material blocks a significant amount of radiant heat transfer, thus lowering the total heat flow through a window.

### Argon/Krypton Gas

A typical double-paned, sealed glass IGU (Integrated Glass Unit) insulates better than a single pane of glass by trapping dry air between two panes of glass, thus minimizing heat transfer. Argon or Krypton are nontoxic, nonreactive, clear gases that are less conductive than air and thus improve the insulating ability of a sealed IGU.

### Triple Pane Windows

Just like a double paned glass unit, but with an extra pocket of dry air (or Argon) created by a third pane of glass. Better insulating than double paned units, but heavier, more expensive and require thicker frames to accommodate the extra width due to the third pane of glass.

### UV Protection/Fading Furniture

Only 50% of fading is caused by UV light. Visible light is responsible for approximately 23%, while heat itself accounts for 22%. This is why museums protect their most vulnerable artifacts in dark, climate controlled environments and do not allow flash photography. You cannot stop fading, you can only slow it by reducing the three factors that cause it.

The chart below details the performance abilities of the various energy efficient options available for today's windows.

Type of Window IGU	Visible Light Transmittance	Solar Heat Gain Coefficient	Total Solar Blockage	U-Factor (Air/Argon)	Fading ISO*	Estimated Cost <sup>^</sup> (10 sq/ft)
Double Pane, clear	81%	.76	24%	.48	.74	\$175.00
Triple Pane, clear	74%	.68	32%	.35	.66	\$220.00
Double Pane, Low-e 270	70%	.37	63%	.30/.25	.53	\$205.00
Double Pane, Low-e 366	66%	.27	73%	.29/.24	.43	\$228.00
Triple Pane, Low-e 270	67%	.36	64%	.25/.22	.49	\$280.00
Triple Pane, Low-e 366	63%	.35	65%	.25/.22	.45	\$360.00
<b>Double Pane, Low-e 270/i81 **</b>	<b>63%</b>	<b>.34</b>	<b>66%</b>	<b>.23/.20</b>	<b>.46</b>	<b>\$250.00</b>
Double Pane, Low-e 366/i81	58%	.25	75%	.23/.20	.37	\$290.00

\* The ISO calculation measures **fading** perception from solar radiation across the entire solar light spectrum, from ultraviolet (UV) through Infrared (heat) to visible light.

<sup>^</sup> Estimated installed cost, vinyl frames, annealed, 1/8 glass, 10 sq/ft (common bedroom unit)

\*\* **Best value for the money: best energy performance to cost ratio. Adaptable to all window frames.**