

The Benefits of Argon Gas in Windows

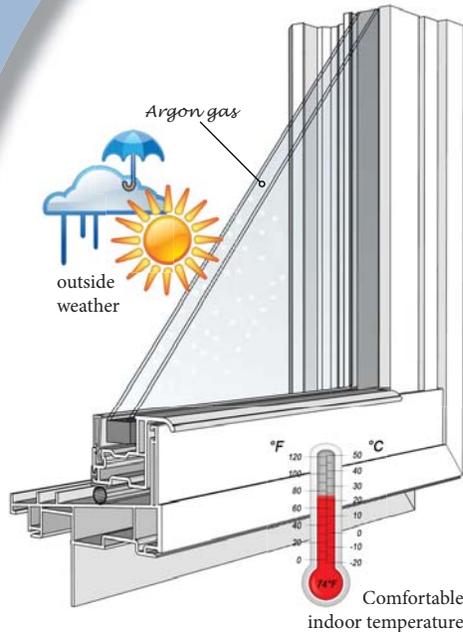
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Argon gas is a colourless, odourless, non-flammable, non-reactive inert gas.

According to the U.S. Department of Energy, heat gain and heat loss through windows accounts for up to half of a home's heating and cooling needs. Improvements in window design, including the use of gases enclosed within the glass unit, are an important step toward reducing overall energy costs.

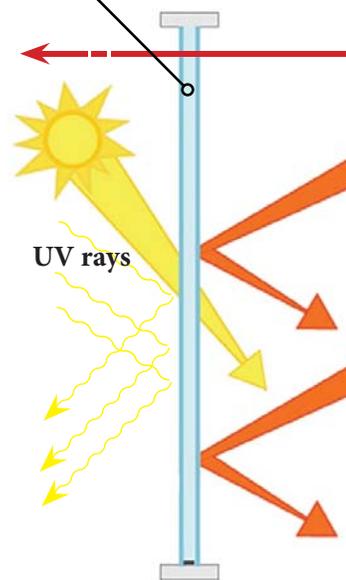
A dry gas in the sealed space between the glass panes reduces heat loss by reducing conductive and convective heat transfer. Argon is the preferred gas as it offers best value and works well with Low-E coated glazing.

Adding a low-E coating to the window is an effective way to block out the damaging UV rays that can cause fading to your furniture, rugs and drapes and infrared radiation which can increase the temperature of your home during warmer months.

The combination of Low-E and Argon may do more to increase energy efficiency of the home by reducing the amount of solar heat gain through your windows through-out the year. The other key advantage is that the combination keeps the interior pane of glass closer to the temperature of the interior air, which will minimize the air currents created when different temperatures come into contact. This reduces drafts and cold spots.

Argon gas

Radiation is the movement of heat as infrared energy through the glass. Low-E coatings reduce the solar heat gain by reflecting the rays.



Conduction is the direct transfer of heat through the window to the outside.

Convection occurs when air gives up its heat to the cooler glass and sinks toward the floor. This movement sucks new warmer air toward the glass that is in turn cooled creating a draft.



**Just
Windows**

by Slocomb

IGU TYPE	U-Value	R- Value
Low E /Argon	.30	R=3.33 (increase of over 300%)
Low E	.35	R = 2.85 (increase of over 285%)
Clear IG	.50	R= 2 (increase of 200%)
Single Glaze	1.0	R=1

Argon-filled units can improve a double glazing window's U value or energy rating by over 30%. Argon fillings should last the lifetime of a double glazing window and over a period of 25 years should not lose more than 5%. This means that although the initial investment is a little more, the amount saved off heating bills will be far greater, meaning that the increased expense will pay for itself many times over the course of the lifespan of the windows.

How to estimate the heat loss through a window

Heat transfer through a window can be expressed by using the following calculation, where H_t is the heat loss per hour reported in BTU's per hour, U is the window product U-value, A is the area of the window in square feet, and d is the temperature differential between the exterior and interior of the building. This formula should be used as a guide and should not be used to definitively answer questions regarding the amount or the value of the energy saved.

$$H_t = U * A * d_t$$

IGU TYPE	U	A	d	H_t BTU's
Low E / Argon	.30	15	30	135
Low E	.35	15	30	157.50
Clear IG	.50	15	30	225
Single Glaze	1	15	30	450

Example for a 3'0"-5'0" window with a temperature differential of 30 degrees