NK Windows – Quoted Glazing Options

(Low E and Argon Explained)

Version: 03 **Date:** September 2016

The efficiency and comfort of a home is only as strong as its weakest link and windows are typically the biggest heat sinks a house has. The science of glazing has come a long way over the last decade and accordingly so has its thermal efficiency and ability to help protect people and property. The glass you choose will make a significant difference to your comfort and energy bills.

We quote 3 core glazing options: Standard Double Glazing; Planitherm XN (double glazing with Low E) and thermally performance boosted Planitherm XN +Argon. Over 75% of our clients choose the highest performing Planitherm XN +Argon option as it boosts the thermal performance of the window by over 100%.

What is Low E (Low Emissivity)?

The sun radiates ultraviolet (UV) light, visible light and infrared (IR) light. Ultraviolet light causes interior materials such as fabrics, floorings and wall coverings to fade. Visible light is the light humans can see – and also contributes to fading, whilst infrared light is heat energy. Microscopically thin, transparent Low E coatings have been developed to minimize the amount of ultraviolet and infrared light that can pass through glass without compromising the amount of visible light that is transmitted. When the interior heat energy tries to escape to the colder outside during the winter, the Low E coating reflects the heat back to the inside, reducing the radiant heat loss through the glass. The reverse, to a lesser extent, happens during the summer time.

Benefits of Argon Gas?

Argon is the gas used between panes in a double- or triple-glazed window. The inert gas is naturally occurring, colourless, odorless and harmless. Argon is denser than the atmosphere, providing more thermal efficiency than having air between the panes. Additionally, the presence of Argon slightly boosts noise insulation performance.

Standard Double Glazing

This is the entry-level option. Glass is a very good thermal conductor, so it makes a lot of sense to provide 2 panes of glass with a poor conductor between them. In the case of the Standard Double Glazing option, it is normal air.
As standard, our windows come with the optimal 16mm gap between the two panes. Homeowners should be aware that a gap of less than 12mm is of questionable value from a thermal performance perspective.

Planitherm XN – Low E Double Glazing

This is the mid/high-tier option that includes a high performance Low E coating suited to cooler temperate climates on an inside glass face and a warm edge thermal spacer. Planitherm XN provides very good winter heat retention and very good protection against summer overheating and fade damage.

Planitherm XN – Low E Double Glazing +Argon

This is the high-end and high value-for-money option and is installed in over 75% of all our clients' homes, including New Zealand's first 10 Homestar Built rated home. This option includes a high performance Low E coating suited to cooler temperate climates on an inside glass face, Argon Gas and a warm edge thermal spacer. Planitherm XN +Argon provides superior winter heat retention and very good protection against summer overheating and fade damage.

NK Windows – Quoted Glazing Options

(Low E and Argon Explained)

Version: 03 **Date:** September 2016

Benefits of Low E and Argon

- Less heat loss
- More insulation
- Less condensation
- More comfort
- Less heat gain
- Less glare
- Less fading
- More energy savings

There are many glazing options available, including: highly secure, improved safety, privacy, fade protection, sound block and solar heat block.

See the table below showing the thermal performance of common window frame and glass options in NZ.

Most existing NZ homes current situation			
Frame	**Glass**	**R-value**	**U-value**
Aluminium	Single	0.15	6.66
Wooden	Single	0.19	5.26
Aluminium	Double	0.26	3.85
Common renovation and new build options			
Frame	**Glass**	**R-value**	**U-value**
Aluminium	Double	0.26	3.85
Thermally broken aluminium	Double	0.31	3.22
	Double plus Low-E	0.40	2.51
	Double plus Low-E and argon	0.43	2.33
PVC frames from NK Windows	Double plus warm edge spacer	0.40	2.51
	Planitherm XN (Low E) and warm edge spacer	0.73	1.37
	Planitherm XN (Low E) +Argon and warm edge spacer	0.84	1.19
	Triple plus 2x Low-E, argon and warm edge spacers	1.20	0.83

R-value is a measure of thermal resistance used in the building and construction industry. U-value measures are also widely used to explain thermal performance. U-values and R-values are quite simply the inverse of one another. The higher R-value, the greater the thermal resistance.

Low E alone adds an approximate 43% thermal efficiency gain over standard clear double-glazing. Additionally, summer solar heat gain drops by 20%, fade protection is boosted 15% and 1% more light enters the room.

Low E and Argon combined add an approximate 68% thermal efficiency gain over standard clear double-glazing. Additionally, summer solar heat gain drops by 20%, fade protection is boosted 15% and 1% more light enters the room.