

# NK Windows – Warmer Window Frames

## (Window Frame Thermal Performance Explained)

Version: 02 Date: April 2020

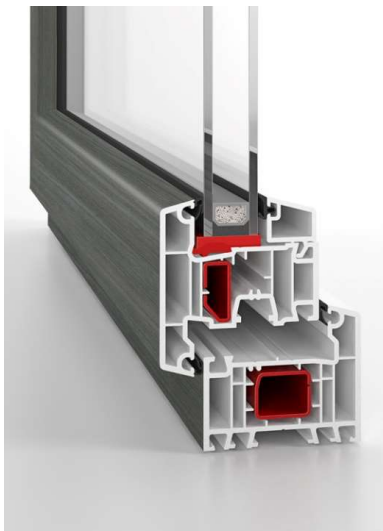
The energy efficiency and comfort of a home is only as strong as its weakest link, and windows typically contribute to 20-30% of the heat loss from a house. The thermal performance of window frames available in the market varies considerably. The window and door frames you choose will make a significant difference to your comfort, health and energy bills.

### Modern uPVC

NK Windows partner with German-based Aluplast GmbH for uPVC profile systems. They are world-leaders in the field and focus solely on uPVC for window and door systems. Their products are used around the globe. We only use uPVC profile that has been formulated for those countries in the world with high levels of UV light. We design and manufacture windows and doors to your exact requirements in Christchurch using German, Austrian and New Zealand components.

### Thermal Performance

Aluplast's Ideal 4000 Series profile is a 70mm deep extruded 5-chamber, steel reinforced profile with twin rubber seals.



With a thermal transmittance **R<sub>f</sub> Value of 0.77 m<sup>2</sup> deg C/W**, it is ideally suited to South Island conditions and outperforms any standard or thermally broken aluminium joinery on the market. Our system supports glazing units from 24mm to 40mm, which allows both optimum depth double glazing and triple glazing, resulting in reduced heat loss and condensation within your home. We are very proud to be the window and door partner of choice for New Zealand's first 10 Homestar Built rated house and for the Antarctica NZ program at Scott Base in Antarctica.



The table below shows the thermal performance of common window frame and glass options in NZ.

<b>Most existing NZ homes current situation</b>			
Frame	Glass	R-value	U-value
Aluminium	Single Glazed	0.15	6.66
Wooden	Single Glazed	0.19	5.26
Aluminium	Double Glazed	0.28	3.55
<b>Common renovation and new build options</b>			
Frame	Glass	R-value	U-value
Aluminium	Double Glazed	0.28	3.55
Thermally Broken Aluminium	Double Glazed	0.33	3.07
	Double Glazed, Low E & Argon	0.52	1.92
	Triple Glazed, Low E & Argon	0.67	1.49



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Frame	Glass	R-value	U-value
<b>NK Windows Ideal 4000 PVC frames</b>	Double Glazed (including warm edge spacer)	0.39	2.56
	Double Glazed, Low E & Argon (including warm edge spacer)	0.77	1.30
	Triple Glazed, Low E & Argon (including warm edge spacers)	1.04	0.96

(Note: Based on a standard 1500mm H x 1800mm W window)

Two measures of thermal performance are used in the Building and Construction industry:

- R-value is a measure of thermal resistance, so a higher value is better.
- U-value is a measure of the rate of heat loss, so a lower value is better.

U-values and R-values are the inverse of one another.

## Frame Installation

The standard installation detail in the New Zealand Building Code places the window frame in the outer layer of the structure, typically sitting across the exterior cavity and over the cladding. This is the most thermally inefficient method of installing a window frame. Thermal modelling suggests that by recessing the window frame, so that the exterior face of the joinery is at least flush with the outer face of the insulation line, the thermal performance of the frame improves a minimum of 15% for uPVC. In a temperate climate, where any improvement of the R-value impacts the comfort of your home, this becomes more important.

Note: We highly recommend weathertight exterior tapes as a back up to traditional flashing systems when recessing a window in to the insulation line.

The image below shows an Ideal 4000 frame installed with our unique exterior sill system, which supports “cladding plus cavity” depths of up to 85mm.



## Benefits of a Warmer Home

Needless to say, a warmer home is a healthier and more comfortable home. Warm frames, combined with good glass selection, mean no condensation and no condensation means no opportunity for harmful and unsightly mold to grow. Warm and tightly sealed frames mean no cool drafts or needless waste of energy and money!

**Please contact your NK Windows sales consultant if you want a warmer home.**