



NK WINDOWS
uPVC Systems

Decreased Noise with NK Windows

Date: May 2016

Everyone deserves peace and quiet in their own home. Your choice of window and door frame material, glazing and quality of install all affect the ability to abate unwanted sounds, whether it be road traffic, trains, aircraft or a noisy neighbour. NK Windows only offers high quality solutions including exceptional levels of sound control and peace and quiet for you and your family.

The science of noise abatement is based upon the interruption of sound waves travelling from the source to a receptor. Windows and doors can often be the weakest link in isolation of noise from outside the home.

There are many variables

Managing sound waves and acoustics is a well-understood science, but easy to get wrong if ill-informed. Critical factors to be aware of when considering an investment in windows and doors are: behavioural properties of frame material; sealing; glazing thicknesses/mass, airspace gap, airspace gas, laminates; and quality of installation.



Window frame material, glazing options and installation all affect sound insulation.

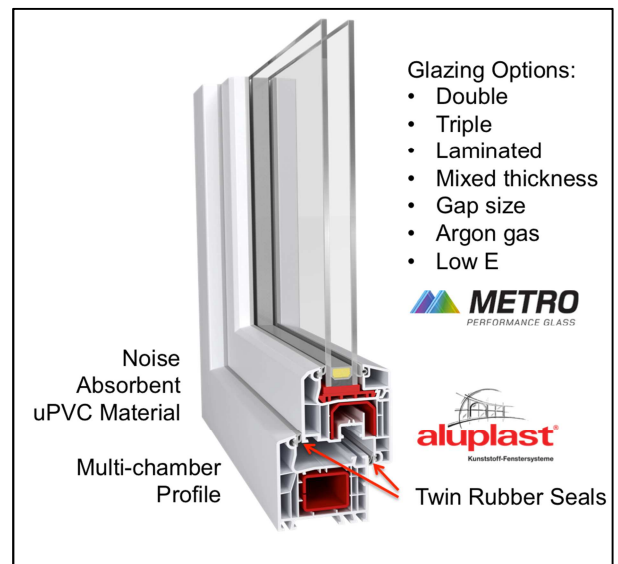
uPVC absorbency and sealing

uPVC provides natural noise absorbency performance advantages over aluminium and wood. This combined with

precision German designed and manufactured twin mechanical rubber sealing within a continuous groove provides superior protection from unwanted noise. uPVC frames are welded at the joints and have multi-chamber construction, again providing noise protection advantages over competing technologies.

The science of glazing

NK Windows have a default double glazing option very well suited to typical New Zealand conditions, however particular house locations, designs, environments and home owner preferences will often dictate a change.



The flexibility of uPVC systems easily allows for variations in pane thickness and glazing gap, which have a significant impact in disturbing and reflecting sound waves. Glass of the same thickness can resonate in unison, so in some instances installing panes of different thicknesses are very effective in addressing particular noise problems. Triple glazing offers additional noise protection along with exceptional thermal performance.

The use of specialist acoustic glazing laminate options increase glass mass (hard laminate) and absorb resonance (softer laminates) and can be particularly

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effective if different thicknesses of glass on either side of the interlayer are selected¹.

Although its primary benefit is thermal resistance, the use of argon gas between panes also provides noise absorbency gains.

Optimal double-glazing combined with our uPVC frame system can reduce perceived noise by approximately 80% or 25 dB. The table below provides an indication of relative noise levels and recommended residential maximums.

| Typical Sounds | Sound Pressure (dB) |
|------------------------------------|----------------------------|
| Thunder clap | 120 |
| Loud street | 90 |
| Vacuum cleaner | 90 |
| Average street | 70 |
| Average conversation | 50 |
| Whisper | 20 |
| Recommended Max² | Sound Pressure (dB) |
| Bedroom | 30-40 |
| Living rooms | 40-45 |
| Window Performance | Sound Pressure (dB) |
| Open window (loud street) | 80 |
| Old window (single glazed) | 60 |
| Aluminium window (double glazed) | 48 |
| NK Windows (double glazed) | 35 |

If the noise level is reduced by 10 dB, we perceive this as a 50% reduction in noise. Conversely, when the noise level is increased by 10 dB, we perceive this as twice the noise, and if increased by 20 dB, we perceive this as four times the noise.

The table above shows that replacing an old single glazed window with a high quality window from NK Windows results in a 25 dB reduction in sound pressure, meaning the perceived sound would be 18.75% of what it previously was - or a reduction of 81.25%.

The performance benefits of choosing a high quality window from NK Windows compared to an aluminium

double glazed window is a 13 dB reduction in sound pressure, meaning the perceived sound would be 41% of what it previously was - or a reduction of 59%.

A quieter home can improve your sleep, decrease stress, improve a work environment and concentration, and add value to your home.

Installation

A high performing window is only as good as its weakest link. It is essential that windows and doors be professionally installed so as to eliminate gaps around frames. Our own experienced and professional install teams use high performance foams and adhesives to match the precision engineered and locally manufactured window and door systems we supply. We are able to fit windows and doors into all construction and cladding types.

¹ Source: <http://www.metroglass.co.nz/catalogue/102.aspx>

² Source: Windows Association of New Zealand

