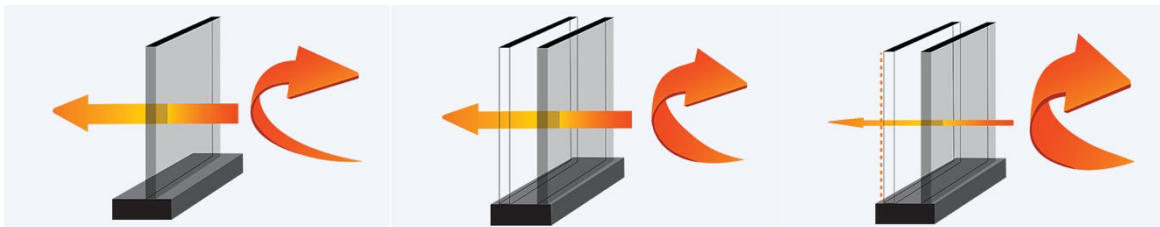


Double and Triple Glazing

Multiple glazing can greatly improve the energy efficiency of your home, while also enabling you to maximise window sizes to enjoy views and light.

Single glazing was the standard for older homes, but it has poor insulating properties: heat and cold pass easily through it. Under the revised clause H1 of the New Zealand Building Code, double glazing is required on all new builds in order to meet national home energy-efficiency targets.

Types of window glazing



Single glass: A single pane of glass provides very poor insulation because glass is a good conductor of heat. Much of the heat in your room literally goes out the window.

Double glazing: Install double glazing and you have a layer of air trapped between two panes of glass. Because air is a poor conductor of heat, much less heat is lost through the window.

Double glazing – Low E coating: If the inside of one pane has Low E coating, even less heat is lost, because the coating reflects heat back into the room.

Make the most of double glazing

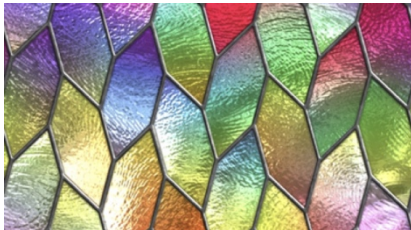


The glass industry refers to a double/triple glazing unit as an insulating glazing unit (IGU). The energy efficiency of an IGU can be further improved by the inclusion of low E (low emissivity) glass, which has a special surface treatment that slows the transfer of heat or cold through the pane.

IGUs can be custom-made to fit your window aperture. To perform well over a long lifespan, they must be professionally manufactured from high-quality components. They will also give of their best when fitted with thermally efficient window frames. You may also need to consider frames with passive ventilation for effective condensation control.

In situations where your window is likely to affect the weather tightness of your home, the task of fitting it may be classed as 'restricted building work' – to be done by your builder, rather than you.

Colonial bars and lead lights



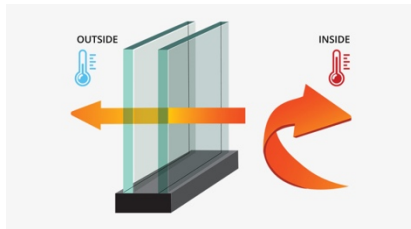
Windows or doors with colonial bars can be double-glazed; the IGU will be supplied with a spacer, which aligns with the colonial bar that is then attached on the interior and exterior faces of the glass. That said, colonial bars do introduce complications because they act as thermal bridges, and they can potentially damage the surface coating of low E glass.

Consequently, colonial bars in IGUs tend to be made so as not to touch the internal glass surfaces. If in doubt, discuss with your glazier. You may need to adjust the overall energy efficiency performance of your home if your IGUs contain colonial bars.

Lead light windows can be double-glazed; in effect, they end up being triple-glazed, with the lead light pane sandwiched within the two outer panes.

Triple glazing adds weight, but may be suitable in extreme climates, or in high-noise zones – e.g., if you live by an airport or busy road. Note, too, that acoustic performance depends both on the frequency and volume of the type of noise you’re trying to suppress, and on the airtightness of your building envelope, as even the smallest gap can undo the efficiency of soundproof windows.

Thermal Performance



In an IGU, a layer of air is trapped in the sealed space between the two (or three) panes. The air acts as a thermal break, dramatically reducing the rate cold or heat can pass through.

Completing the IGU is the thermal spacer, a surrounding strip of material that is hermetically sealed to keep moisture out. Spacers are typically made of a metal such as aluminium or steel, or polymer foam. Each has its benefits in terms of its thermal performance and ability to expand and contract in changing conditions. Consult your professional installer for advice on your local situation. The thermal performance of an IGU is rated by its U value, and this can provide a useful guide to the difference multiple glazing could make in your home. The lower the U value, the more energy efficient the window is, meaning less heat is lost. For example, the U value of a single-glazed window can be 5 or higher, while a triple-glazed window could have a U value of less than 1.

Weers



Another useful measure of energy efficiency is our WEERS ([Window Energy Efficiency Rating System](#)), which rates the actual energy efficiency of your windows. It can be given to your architect or energy consultant to use as part of assessing your home’s total energy performance calculation.

Window and glazing combinations are usually referred to by R value, which is the reciprocal of the U value (the higher the R value, the better the performance). It is the window supplier's responsibility to demonstrate the product they've supplied to a specific site meets or exceeds the R values nominated within the building consent, and to provide a 'statement of thermal performance' to their contracted party (normally the homeowner or builder)

Argon versus air

In the latest release of H1/AS1- Fifth Edition, MBIE outlined a re-classification of the Country's climate zones, in addition to updated requirements in thermal performance for both existing and newly built homes. The new requirements can be largely satisfied through the use of Low E glass, but the addition of an argon gas fill will help to further ensure compliance and provide a warm and comfortable living environment.

For most IGUs, argon is the preferred choice to fill the space between the glass layers. It is stable, non-toxic, and relatively abundant (around 1%) in the atmosphere. A common myth is that argon in the IGU can leak from the unit. The misconception arises from the fact that past manufacturing practices used inefficient filling and sealing methods. As the process has advanced, this is no longer an issue anymore, and international studies have shown the amount of argon retained in the IGU after 10 years is still over 90%.

The optimal spacer width for thermal performance is around 15mm. As most spacer bars are only available in 2mm increments typically 16mm is offered as the best choice. Not all frame depths will accept IGUs using 16mm spacers, so the spacer width is reduced to suit. This will have an effect on the overall performance of the unit and is the ideal time to substitute air for argon. If in doubt, consult your manufacturer or specialist to discuss the best IGU composition for your purposes.

Krypton is even denser than argon, so is more insulating and sometimes chosen for as the filler for the IGU space. However, it is rare and expensive, and can be difficult to buy, so is often not offered to consumers as an alternative. However, if requested your glass supplier can investigate the option.

Life expectancy

IGUs typically carry a 10-year warranty and, as the purchaser, you will expect your glazing to last longer than the warranty period, but it will not last forever, even if well maintained. When, under normal use conditions, condensation (fogging) occurs within the space between the panes, the unit is deemed to have reached the end of its useful life.

With NZ's diverse climatic conditions, during its life, your IGU is exposed to a range of environmental influences. These can include temperature and atmospheric pressure fluctuations, wind loads, sunlight / UV light, water, and water vapour, and in coastal locations salt-laden sea air. These environmental factors will influence the longevity of your IGU, and so will the design of the unit, its installation and how well it

is maintained. We recommend you use units supplied by a member of the IGUMA (Insulated Glass Unit Manufacturers Association) and installed in accordance with industry guidelines.

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