

## Choosing Glass

This guide introduces the most common types of glass used in windows and doors in New Zealand.

At its most basic level, all glass is made by heating sand until it melts and turns into a liquid. Most window glass is made using the float process: a sheet of molten glass is 'floated' on a bed of molten tin and drawn out to create a pane that is smooth and flat with a uniform thickness.

By changing the ingredients or process, or adding different coatings, the colour, strength and other properties of the finished glass can be altered to suit different situations. Low iron content, for instance, will produce extra-clear glass.

As well as aesthetics, glass selection impacts energy use in homes, as windows are the greatest source of heat loss in a new build. It's worth investing in making your windows as energy-efficient as possible – picking special options such as low E glass – for comfort and for lower energy bills.

It's important to note that, under the updated New Zealand Building Code, double glazing on exterior windows and doors is a minimum requirement in all new builds. And safety glass is mandatory in many interior applications, such as glazed partition doors and shower glass. To find out more about, read the section on the benefits of double or triple glazing.

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## Types of glass

### Float glass

Float glass, or ordinary glass, features in our older homes and remains the standard today. It has been annealed (slow-cooled) for stability, but it remains prone to breaking under stress or impact into shards that are dangerous. For obvious reasons, annealed glass is unsuitable for cat-flap panes or for roofing a greenhouse.

Float glass is imported into New Zealand, where it can be toughened and/or treated for special finishes.

## Safety glass



Glass is classified as a hazardous building material in the code, and safety glass is mandatory in areas that are identified as being at high risk of human impact, such as bathrooms, and for doors and larger windows.

There are two main types of safety glass used in New Zealand. Both will help protect you and your family from serious injury if the glass breaks for any reason. Safety glass is mandatory in bathroom shower cabinets, glass doors (including pet flap panes), internal partitions, overhead glazing, structural glazing and balustrades.

- Laminated safety glass contains a thin layer of vinyl, which keeps the pane intact if it is broken, reducing the risk of injury. It also adds security, and reduces noise and UV levels.
- Toughened glass is heat-treated then rapidly surface-cooled to make it extra strong. If it does break, it will shatter into many small, relatively harmless chunks instead of blade-like shards.

Safety glass will either be laminated glass or toughened glass and can be identified by a compliance logo marked with NZS 4223.3 in either permanent ink or an etch-marking. If there is no marking, it may not be safety glass and should be replaced.

Toughened glass needs to be cut (and/or drilled) before the toughening process, rather than after, so it must be ordered specially.

For security applications, there are various options including laminated glass and security films; these are particularly apt for glazed exterior doors.

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## Low E glass

Low E glass has a very thin layer of silver (or another low emissivity material) applied to one side. This reduces the rate at which heat (or cold) passes through the glass. Think of it as an invisible insulation barrier for your windows, providing a more comfortable indoor temperature.

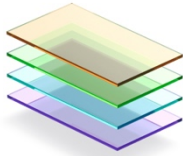
Low E glass needs to be enclosed within a double- or triple-glazed unit to protect the coating, but the benefit is a better performing product. So, you can have bigger windows, and heating and cooling costs are reduced.

Low E units must be installed facing a certain way to support their performance; your window installer or glazier should ensure this. Low E glass is available in a range of thermal performance levels. With some

low E glass, there can be a hazy appearance; this comes down to the thermal performance rating of the coating. So if you are opting for low E, discuss your needs with your glazier.

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## Tinted glass



The benefits of tinted glass include lower UV radiation, lower visible light transmission, and greater privacy. Tinted glass can become overly warm and therefore is usually heat-treated for protection. It can be used in IGUs, along with low E glass, to help with thermal control.

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## Decorative and textured glass



Float glass is available in frosted or patterned finishes, to add a decorative touch or for privacy. Some patterned glasses can be toughened; all can be laminated

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