

Tunncliffe's

Tunncliffe Timber Company Limited

Double Glazing in Exterior Timber Joinery

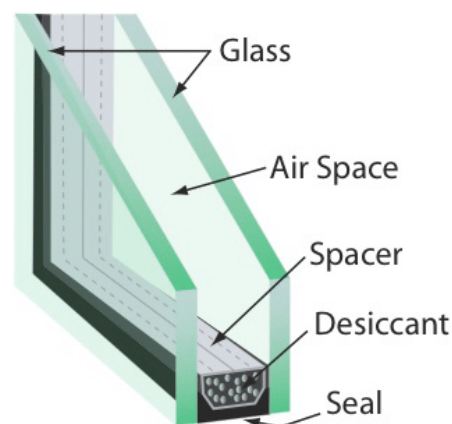
In most circumstances exterior joinery must be compliant with the performance standard NZS 4211. In addition, windows and doors typically need double glazing to comply with H1/AS1, which became a requirement when Building Code Clause "H1 Energy Efficiency" was introduced in 2007.

As much as joiners need to upskill to build compliant joinery they also need to understand what is required for the glazing. Double glazing is a different beast from single glazing and it is a mistake to treat them the same. Glazing must be installed in a certain way to be covered under the manufacturer's warranty.

Double glazing is typically done with an Insulating Glass Unit or **IGU**. This is a manufactured product, which is the big difference when compared with a single pane of glass. A single pane of glass is in fact a commodity or raw material, a great commodity, which has been around for centuries. The history of glassmaking can be traced back to 3500 BC in Mesopotamia. Archaeological evidence suggests that the first true glass was made in coastal north Syria, Mesopotamia or ancient Egypt. The most familiar, and historically the oldest, types of glass are "silicate glasses" based on the chemical compound silica (silicon dioxide, or quartz), the primary constituent of sand.

With regard to installing a single pane of glass it is generally accepted that not much can go wrong, other than leaks, using glazing beads, putty or silicone. It is an absolute different story for IGUs. As a manufactured product it has a life span, which is mainly depending on the level of exposure to the elements. In other words, correct installation of the unit will have a big impact on the long term performance of the product.

An IGU consists of two (or more) glass panes, spaced apart around the edges by a spacer which includes a desiccant (hygroscopic material which works similarly as the little sacks you find in packaging to keep product dry). The spacer is visible at the edge and is normally black or silver. The unit is sealed together with one or more sealants, usually visible as the black outside edge. The space in between the panes can contain air or argon gas.



The biggest enemy of an IGU is trapped moisture, which deteriorates the seal around the edge of the unit. The sealant keeps the unit together and protects the desiccant, which in turn keeps the gas or air in good condition. If the seal is broken the unit fails, moisture will get in between the panes causing permanent condensation. The accumulation of moisture will ultimately cause the timber sash and glazing bead to rot out. The unit needs to be installed allowing drainage and ventilation all round.

Drainage describes the direct shedding of rainwater and condensation. This is accommodated by cavities around the units, a slope on the bottom rail in combination with drainage holes in the beading and/or through holes, which run from underneath the unit to the underside of the sash. The cavities around the units are created using santoprene or silicone setting and spacer blocks.

The ventilation, airflow around the unit is a key factor to safeguard the unit from failing. It keeps the area dry.

Also to consider is our sunlight in this part of the world, which is pretty harsh, it contains a high level of UV. This is the reason why beading at installation needs to come up as high as or preferably higher than the level of the spacer and/or sealant to protect it from direct sunlight.

IGUs are considerable heavier than single panes, which will have an effect on the design of the window and door units with regard to strength and glazing may need to be done on site. Adjusting timber sizing and hardware will come into play.

It is a myth to think you will be able to keep water out by glazing the unit as if it was a single pane using silicone and beading. Moisture is in the atmosphere and in timber. The amount of moisture in the air changes over time and timber responds to that causing it to move. This will result in dimensional changes in the joinery. Over time silicone will not be able to seal openings and stay water proof. Moisture will build up around the unit, between the beading etc.

Experts are telling us that silicone is not an ideal glazing sealant for timber joinery due its adhesion and moisture transmission, so seek advice on other glazing options. Typically combinations of glazing tapes and sealants are used and work best.

Despite the recent developments with regard to NZS 4211 the reality is that there is still a considerable amount of "less compliant" exterior timber joinery being produced in New Zealand. The strongest possible message should be out there to **never wet-glaze; silicone or glue IGUs into timber joinery.**

Double glazing is relatively new to New Zealand, In Europe and North America it is a trialed and tested product for decades. Problems of early failure of IGUs have been experienced ever since they were first introduced. Many of the reasons for failure have been established and it should be possible to avoid those resulting from poor manufacture, poor glazing and lack of maintenance.

It should be an advantage to New Zealand following in the footsteps of our Northern Hemisphere colleagues. There is the opportunity to avoid the mistakes that were made in the early days of double glazing. It doesn't take much to follow your glass supplier's

recommendations. If you do a simple Google Search as to how double glazing is incorporated into timber joinery we are pretty sure you won't find a recommendation to just silicone the units in.

There would be a real risk of failure and could potentially give timber joinery and double glazing a bad look over time.

There is a resurgence in the use of timber joinery, especially in the high end of the market, due to trends but also because of the favourable thermal capabilities of timber when compared to aluminium.

Freely available for our industry to refer to are the principals put out by BRANZ as per the image attached to this article, which is an effort to safeguard our industry from potentially long term issues. ●

