

New Zealand windows and doors are developing



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Two major changes currently facing the New Zealand window and door industry are:

- most windows and doors are now double glazed throughout New Zealand. This resulted from the revision to the **NZ Building Code**, which requires higher thermal performance of homes throughout New Zealand;
- in 2006, there were over 7000 recorded cases of building failure in New Zealand Homes. One of the most common points of water entry and leakage sites identified is between windows and doors and wall joints.

Below I profile how the three main groups of window and door manufacturers are addressing these two issues

Aluminium – double glazing

The largest supplier of aluminium window and door profiles in New Zealand is **Architectural Profiles Limited (APL)**. (In Australia APL is known as Vantage.) APL has committed to the following developments to improve the thermal performance of New Zealand aluminium window systems:

- all three of APL's NZ standard residential window and door suites can be double glazed;
- the architectural residential market commonly uses large sliding, hinged and bi-fold doors. APL has developed two architectural window and door systems well suited to coping with the substantial weight of double glazing and door panels in large doors. These window and door suites: have 100mm commercial shop front style frames to carry the weight of double glazing; can take wide double glazing units of 28mm, heavy rated hardware to cope with large swinging or rolling panels; a glazing rebate underneath every double glazing unit that will effectively drain water from within the aluminium profiles to the exterior, which is critical to double glazing units not failing in a short time frame;
- developed a window and door system where all aluminium profiles are thermally separated. That → 22

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is, the front of all aluminium profiles are separated from the back using centrally located plastic spacer bars. The thermal performance of this system is very good and is similar to timber window and doors. This thermally separated system also enables twin colour aluminium profiles, one colour on the inside and another colour on the outside, which is an important benefit for interior designers and home owners;

- developed a timber inside and aluminium outside composite window and door system. This way home owners can have the best of both worlds – the look and feel of timber on the inside with all its thermal benefits and the low maintenance of aluminium on the outside. The thermal performance of this system is very good and is similar to timber windows and doors

Aluminium – stop homes leaking

Mainly through the **Association of Aluminium Window Manufacturers in New Zealand (WANZ)** the aluminium window industry has undertaken the following initiatives:

- considerable testing has been carried out in recent years including windows and doors, the critical exterior window and door flashings and the exterior wall cladding itself. Much has been learnt from this testing about how and why homes have been leaking;
- development of their own WANZ method for installing windows and doors. This system can be used in substitution of the NZ Building Code's recommendation for installing windows and doors **(E2)**. The WANZ system is

an alternative solution and it recommends that windows and doors be installed very differently to how the NZ Building Code (E2) recommends.

Timber – Double Glazing

The thermal performance of timber windows and doors frames is very high. The thermal performance of complete timber window and door units using double glazing is also very high.

To date, there has not been a unified industry group focusing on representing New Zealand timber window and door manufacturers. The substantial majority of timber windows and doors that have been manufactured in the past and are currently being manufactured have not been tested in a test booth and therefore do not have test certification. The **NZ Master Joiners Association** are presently focusing on carrying out this testing with urgency. Currently 100 timber window manufacturers throughout New Zealand have joined in with the NZ Master Joiners to support their initiative to complete the testing and produce a suitable technical manual to capture all the specifications for manufacturing tested and approved windows and doors.

Timber – help stop homes leaking

Over the last 150 years, history has shown that well made and maintained timber windows and doors, which have mainly been used in weatherboard or brick homes, rarely leak. The main reasons why timber windows on weatherboard homes rarely leak include:

- 75 mm wide window

facings which cover the weatherboards by some 60mm;

- head flashings cover the window facing by a vertical 35mm and which include a 'birds beak' to stop capillary action of water being driven up under the head flashing by wind pressure;
- the common practice of using scribes and sill flashings;

- trade qualified builders who, during their apprenticeships, were taught how to install windows and doors properly

The technical manual for timber windows and doors to be produced by the NZ Master Joiners Association will include installation details to be used by designers, local territorial authorities and builders on-site, which will clarify key issues relating to their proper installation methods.

PVC – double glazing

The thermal performance of PVC windows is very high. Using double glazing, the thermal performance of PVC windows is the highest practically possible. PVC windows can take 30mm plus double glazing units and treble glazing if required.

Furthermore, in PVC windows and doors the glazing rebate below every double glazing unit is designed solely for and suited double glazing. PVC windows suit double glazing because PVC windows and double glazing have been in widespread use and extensively tested in Europe and North America for decades.

Three key criteria of glazing rebates of PVC windows to suit double glazing are:

- 22mm cover of exterior glazing beads on the exterior to protect the perimeter edge

of double glazing units from UV damage;

- 8mm gap between the underneath of double glazing units and the top of the glazing rebate, which ensures water is not trapped underneath double glazing units by capillary action;
- the double glazing bead is designed to and allows water from the glazing rebate to effectively drain below it to the exterior.

These three criteria help ensure double glazing units will not break down in short time frames.

In New Zealand, as is the case in Australia, PVC profiles are mostly imported from Europe and North America. Therefore, New Zealand PVC window and door manufacturers benefit from using a product designed specifically for double glazing and one that is supported by good technical literature for correct manufacturing.

PVC – help stop homes leaking

PVC windows and doors have significant advantages to help ensure that homes and windows do not leak including:

- the ability to use head flashings with 35mm vertical cover across the heads of all window and door frames;
- the mitres of all window and door frames are welded and fused together so they can not leak (they do not rely on sealant at all sill jamb mitre junctions);
- all rubber weather seals are co-extruded as part of the PVC profiles so they will not shrink in time and therefore will not allow water to penetrate into window and door profiles from between the glass and the glazing seals. -S-