

# Tunncliffe's

Tunncliffe Timber Company Limited

## Durability of Exterior Timber Joinery

Tunncliffe Timber Company Limited has been in the business of supplying timber joiners in New Zealand since 1946. As nothing ever stays the same we have seen some changes in the industry overtime. One significant change was the move away from the New Zealand native species due to the resource running out during the 60'/70's. We became reliant on home grown exotic Radiata pine and other imported timbers. Tunncliffe's developed its business around finger-jointed Radiata pine.



To be able to utilize Radiata pine for exterior use something needs to be done to make it durable enough. Tunncliffe specialise in H3.2 Tanalised® Ecowood™ treatment and the new generation of modification technology such as Thermowood®230.

Generally we all accept that nothing in life is absolutely perfect. Failures do happen; timber does rot, sometimes even when it has been chemically treated.

When we are talking about durability of exterior timber joinery; the durability of the timber plays an important part, but what a lot of people don't realise is that a combination of other factors are equally important. We need to consider the durability of the product as a whole, not solely the durability of the timber.

The main factors determining the durability of Exterior Timber Joinery are:

1. Design
2. Workmanship
3. Installation
4. Finishing
5. Timber

## 1 Design

The design of exterior timber joinery is very specific to the building in terms of looks, which involves aesthetic design but needs to be married up with technical design including parameters which are mainly focussed on how well the joinery sheds water.

Moisture is our biggest enemy with regard to durability. Once moisture is allowed to build up in and around joinery, this will eventually cause failure.

Construction details, such as steps and angles on sills, location of drip grooves in jambs, all aid in the reduction of moisture penetration into timber joinery. Good design is even more critical when the joinery is located in adverse conditions, such as a damp south facing elevation, or in places where vegetation impedes air flow, thereby impeding drying.

Some examples of good design that have been helping to protect timber joinery for generations are porches, verandas and eaves; elements that we seem to see much less often in today's architecture.

Fluctuating temperatures and moisture conditions cause timber to move, creating tension in the joinery, opening cracks and joints potentially letting in moisture, which leads to failure.

## 2 Workmanship

General quality of workmanship is also a factor as to the durability of the finished product: everything square, with perfectly fitting joints, all of the angles correct. Following best industry practise, tested design, compliance requirements and product recommendations will help. The main requirements to achieve this are skilled and experienced tradesmen, good tooling, quality timber to work with and sound business skills running the manufacturing operation.



### 3 Installation

Once the joinery has been assembled, the next step is to get it to the building site for installation. This process is critical and requires good planning, communication and care. It is important that the joinery is ready in time to be installed almost immediately and under the right conditions. Problems occur when the joinery gets damaged in transport, is installed in wet weather conditions, or when it is stored without sufficient protection from the elements on site.

It is a myth to assume that once timber joinery is primed it is sealed and protected against moisture. As a matter of fact this is a recipe for disaster. Primer is effective to protect the timber from moisture in vapour form; however, liquid water easily enters through the primer into the timber which subsequently has to come out again as a vapour. The moisture gets locked in and will cause major issues over time.

Correct installation of exterior timber joinery into the building is arguably the most critical factor with regard to performance and durability of the product. The correct fitting of flashings and facings will help to prevent moisture ingress into the joinery and/or the wall structure of the building and can lead to disasters that fall in the category of leaky building syndrome.

### 4 Finishing

Once installed, the joinery needs to be finished with a quality paint job to fully protect the product against the elements and most importantly it needs to be maintained over the years. It is not reasonable to expect paint to last forever and blame all other factors for product failure.

Most of the time, exterior timber joinery is painted; Radiata pine should always be. The choice of colour finish can have a significant impact on the durability of the product. Any colour darker than white will absorb heat in direct sunlight, which can cause significant problems. Direct sunlight is a problem most of the time and be reduced when the building design allows for protection in the form of eaves.





## 5 Timber

The type of timber and its durability including any treatment and/or modification is playing a part in the durability to the exterior joinery product.

As mentioned above, to be able to utilize Radiata pine in exterior timber joinery it needs something added to make it durable enough, such as chemical treatment. Tests and standards are created by authorities in order to safeguard a reasonable level of quality. However, due to the variability of wood fibres it is impossible to 100% perfect treatment in every piece.

There is a relationship between timber quality and treatability. To minimise the risk of under-treated timber at Tunncliffe's we have moved away from processing lower grade timber.

It is interesting to note that in the relatively few examples of joinery failures that we have seen over the past couple of decades, it has always been a combination of multiple factors that have contributed to failure. Almost never has timber quality been the only factor. If each of the above factors are duly considered and executed correctly, exterior timber joinery is a product with a very long life span.●