



Resene Paints Limited

Architects Memo

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CONDITION OF SUBSTRATE FOR EXTERIOR TIMBER PAINTING

Prior to this discussion on primers, four factors which were assumed to be perfect before painting were mentioned. It may be opportune to discuss the consequences if these factors are less than perfect.

1. **Pretreatment.** The two major pretreatments used in New Zealand are boron and copper-chrome-arsenate, used to greater and lesser degrees. It is important to realise that the latter treatment is a fixed salt and the boron a soluble salt. Boron treatment should only be used in dry areas, unless protected by a substantial, durable paint system. Highly permeable systems or systems prone to checking can allow the soluble salts to be leached from the timber, thus increasing the risk of the timber rotting.
2. **Moisture content.** The moisture content of timber at the time of painting should ideally be as close to the moisture content expected in service. Too high a moisture content can lead to blistering and flaking problems, too low a level can lead to cracking following the swelling of the timber when it comes up to its equilibrium level. Moisture problems occur less frequently with water-based paints than with other systems.
3. **Storage.** Incorrect storage can result in the contamination of the timber with a variety of contaminants which can affect paint performance,

i.e. mould, soil, fuel oils, cement dust etc. Individual discussion of these points is not necessary as the problems are self-evident. A less easily distinguished problem is the effect of weathering which can leave a loose mat of cellulose fibres on the surface or lead to checking of the timber surface. Unless weathered timber is sanded back to a sound surface, premature failure of the paint, usually by flaking, is certain.

4. **Detail and Design.** It is a phenomenon of all liquids that, due to surface tension effects, they will pull away from sharp edges resulting in a decrease in thickness at those edges. In paint systems this can result in sharp edges being only half as thick as the rest of the paint system. As sharp edges also tend to become drip points for water, they can easily be identified as weak spots in the system. Practice bears this out as failure of paint on exterior woodwork invariably starts as cracking then curl-back from a sharp edge. The radiusing of sharp edges even by as little as a 5 mm radius, can increase paint durability by a more significant amount than any of the formulating principles known to the industry at present.

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