

the devil you know

A while ago I was asked by a colleague for my recommendation for a coating for a material called Vitex. I was totally blindsided never having heard of the material although, inexplicably, an image of foamed insulation came to mind!

The cognoscenti among you will know that Vitex is, in fact, a tropical hardwood, which is being imported from the Solomon Islands as an alternative to Kwila.

We, at Resene, had no practical knowledge of it, although it was not too difficult to turn up the measured properties of the material. This did allow a reasonably intelligent prediction to be made but one not backed up by exposure work in New Zealand.

Needless to say, panels are now out on our exposure racks and on our deck/bridge, but it is disquieting having to give coating advice on new products arriving into our unique climate without a history of knowledge.

Bamboo products are also quite new, especially in the decking area, but they also bring other uncertainties – other than their newness that is!

The use of bamboo is a brilliant concept. Moso bamboo, which is the prevalent material used for reconstituted timber products, grows at prodigious rates of up to 100mms per day and reaches its full height of about 24 metres in just a few short months.

I have stood in such a bamboo grove in Sri Lanka and was advised by my guide that the creaking that I could hear was the actual sound of the bamboo growing!

Although the plant reaches full size very quickly, full maturity occurs over a 4-5 year period. During this time a process called lignification occurs, which increases the bamboo's hardness, strength and density.

Time of harvesting is therefore a critical variable.

Reconstituted bamboo, which is available as plain pressed, side pressed or strand woven board, goes through several processes before it gets to market. The stem is firstly split and planed into 'slats' that remain visible through to the end product of the 'pressed' boards. Material designated for 'strand woven' goes through an additional process of 'crushing' to break the slats down to rough, fibrous strands.

Bamboo has a very high level of starches and sugars, which makes it very palatable to a variety of bacteria and fungi. This issue is addressed by boiling the slats or strands for several hours in a solution of boric acid, lime or hydrogen peroxide in order to remove the majority of these sugars. Boric acid is probably the most favoured route as any residual boron will give ongoing protection. Obviously, this is another critical step with the probability of variation from supplier to supplier.

The next step in the process is carbonisation, which is the same concept as used with heat treated timber, which we dealt with in an earlier memo. Properly done, this treatment helps 'fix' residual starches as well as deepening the colour.

Drying, sanding and laminating are the next steps for the pressed boards while glue impregnation followed by compression is used for the strand woven material. This compression step significantly increases the density, strength and hardness.

It is worth spending some time on the types and amounts of glue used. As in reconstituted wood products made in New Zealand, the principal glues used are heat-curing urea/formaldehyde, melamine/formaldehyde and phenol/formaldehyde. Cost and performance (especially water resistance) increase from urea, through melamine to phenol. Even within the types, there can be differences in quality depending on the skill of the resin maker. Finally, the ratio of glue to strand is a major variable –

continued overleaf...

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I have seen a range of 3-15% quoted. Well-made and well-designed strand woven bamboo has the potential to match the performance of the best hardwoods, but the worst can be a disaster. If you have identified a good reliable source, then my advice is to stick with it. Better the devil you know than the devil you don't.

Because of the natural beauty of wood, it is equally natural that it is required that any coating applied, to say a timber deck, should enhance rather than hide this beauty. This means that finishes with at least a degree of transparency are 'de rigueur.' Although ultra violet light absorption can be built into clear finishes, one cannot cut out everything and even a trickle of UV getting through the coating will eventually damage the timber surface to the extent it will induce flaking – which is an absolutely unacceptable form of coating failure.

The 'answer' – which is not really a great answer, is to sacrifice the greater durability that can be achieved with thicker coatings, for the easier, but much more regular, maintenance associated with 'non-film forming' stains. Even this is a misnomer as most of the stains will form a film over non-porous substrates. 'Penetrating stains' is a more accurate description.

A simple rule of thumb regarding the natural durability of timbers is that the denser a timber is the more durable it will be – and hardwoods as well as resin-rich, highly

compressed strand woven bamboo are very dense. The amount of stain penetration into such new timber is negligible. The very thin, poorly penetrated stain wears away quite quickly over just a few months resulting in a patchy deck and a grumpy client.

Penetrating stains work best over porous surfaces, which can only be induced in hardwoods by opening the surface pores via some means of degradation. Weathering works well and some of the deck cleaning/preparatory products are also useful. Degrading one's deck before preserving it is not the greatest solution in the world!

To pile on the frustrations, decks rarely wear or weather uniformly and repair of a patchy deck using a penetrating semi-transparent stain is not a trivial matter!

A final word! Just as weatherboards benefit from being coated on both sides, so do decking timbers. For a deck being built close to the ground, this means pre-coating the backs of the boards before fixing. If the underside is not to be seen, it is beneficial to use a more durable coating than the stain that will be used topside. My recommendation would be Resene Quick Dry primer undercoat or Resene StainLock.

Decks aren't quite the child's play that some would have us believe!



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