Ted's News
July 2016

What Brand Paint Should I Use?

I have just had the timber handrails on my home painted and, as you can see, they were labour intensive so the correct choice of paint was critically important. But then the same problem is faced by all my readers as there are serious consequences if you get it wrong. We are all too aware that paint quality, like paint prices, vary considerably and once you have experienced what life has to offer you should become sceptical about linking price and quality. At the same time you may have become wary about thinking that slick advertising also means top quality. So how do you decide what brand to specify or use when you do not have the specialist knowledge to assess quite complex chemistry?

Fortunately the Australian Paint Accreditation Scheme (APAS) is at your rescue. Australia has the largest paint accreditation schemes in the world and it is run by the CSIRO, arguably our most trusted scientific body. APAS was initially set up by the state governments and different federal agencies as they have a vested interest in ensuring long lived material is used. The CSIRO (in effect) has written the specification and they have tested the paints independently and accredited them and the associated manufacturing facilities. For a paint to get the APAS tick of approval it must

exceed the specification. Here is a link to the list of participating manufacturers. If the paint meets the specification it can be used with confidence and price is not important. Ensure the paint you use has the APAS logo.

More on Galvanised Bolts

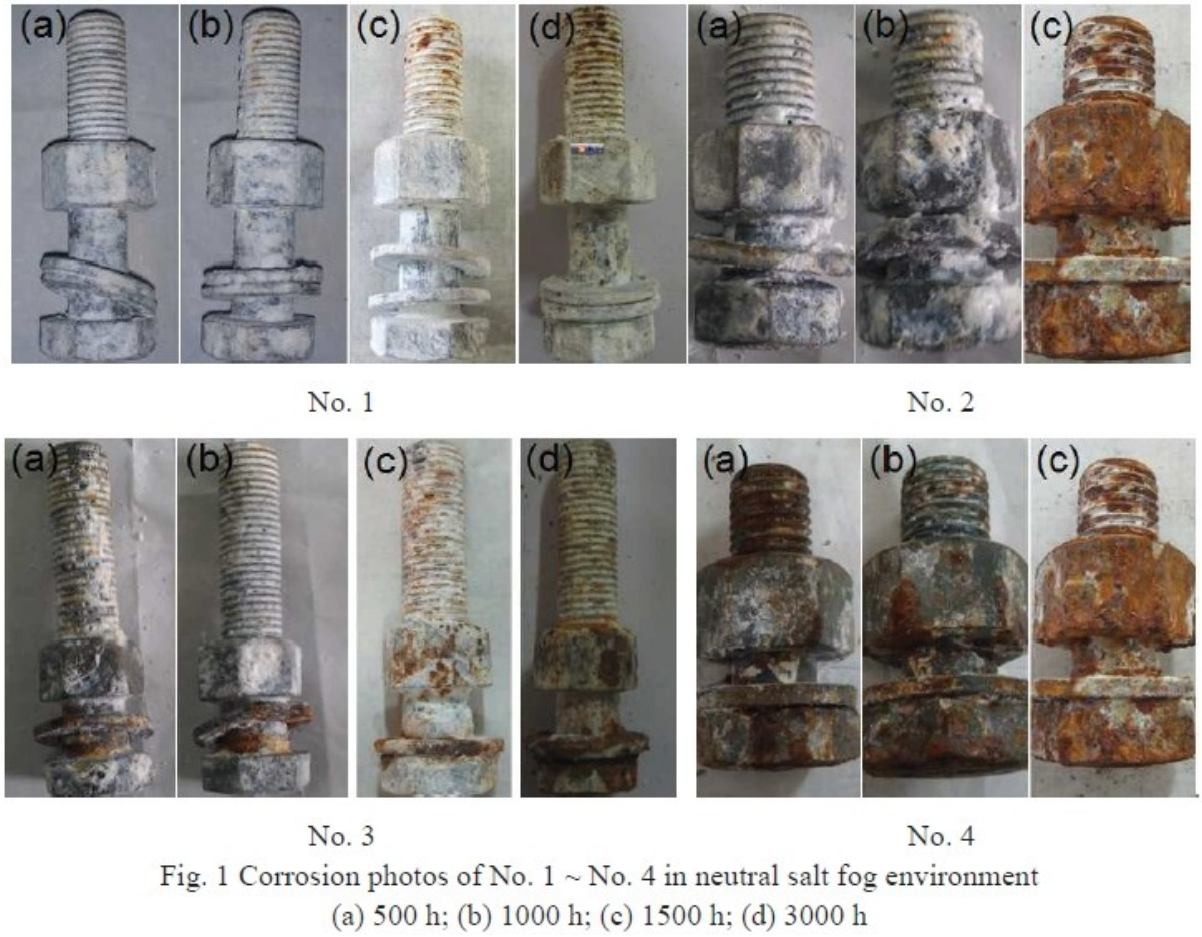


Fig. 1 Corrosion photos of No. 1 ~ No. 4 in neutral salt fog environment
(a) 500 h; (b) 1000 h; (c) 1500 h; (d) 3000 h

Last month I had a section stating that imported galvanised bolts can be more variable than the timber they were connecting. I had excellent feedback from one of my readers who is the Principal Consultant - Coatings & Advanced Materials for a very respected firm of engineers. His detailed reply concluded "it is my firm belief that galvanised fasteners are only suitable for timber constructions if the conditions are and continue to be ideal. Due the unpredictability and number of variables that influence exposure conditions as well as the substrate, selecting more corrosion resistant fasteners significantly reduces the risk of premature corrosion."

A useful resource to assist you in understanding whether to use galvanised fasteners or not is Corrosion of Metals in Wood Products by Dr. Samuel Zelinka. What I found particularly helpful was Section Six which deals with the difference between atmospheric corrosion of a galvanised finish and corrosion in wood. In his conclusion he says, "Corrosion in wood is not atmospheric corrosion. Corrosion in wood is different from atmospheric corrosion. There are different thermodynamics, different kinetics, and different corrosion products form. It is not safe to assume that just because a solution works for atmospheric corrosion that it is a good idea to apply it to fastener corrosion in wood." Dr Zelinka is the Project Leader, Building and Fire Sciences, Forest Products Laboratory, USDA Forest Service and has written many useful documents on the subject of corrosion.

Of course, corrosion is not an issue in a non ventilated roof with nail plated trusses as the moisture content quickly drops below 20%. Historically, away from the coast, black steel bolts have done well in this situation. Once we talk weather exposed structures, that is a totally different situation as once we have moisture we have the potential for corrosion.

The State of Timber Research in Australia

Part 2 of 2

Centre for Future Timber Structures research centre at the University of Queensland

From right to left: Dr Rob McGavin, Forestry Minister Leanne Donaldson and Dr Henri Bailleres.
Image by James Bowden from TIMBER&FORESTRY ENEWS

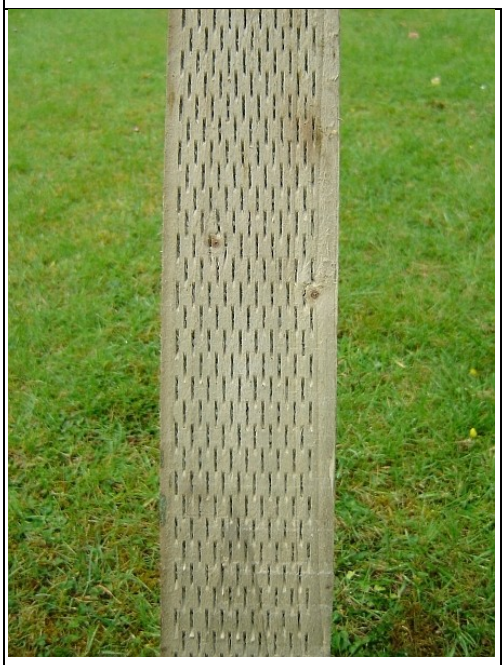
Despite wood being an ideal construction material with significant environmental and economic advantages over concrete and steel, Australian construction authorities were cautious about its use in multi story buildings. This has caused Australia to lag behind other developed countries in the adoption of tall timber buildings. While the National Construction Code now allows builders to use timber for buildings up to 25 metres in height – or around 8 storeys, the technology to make this commonplace, particularly in tropical and subtropical areas, is still in its infancy.

In May, the Federal Government announced $4 million in new funding toward the establishment of a National Institute for Forest Products Innovation but its two key centres will be located in Tasmania and South Australia. This Federal initiative ignored the existing world class R&D capability in Queensland. There are a number of centres around the world working on this same idea and, and like the proposed new centres, they are all in milder climates. It made sense to have a third centre in Queensland which offers the opportunity to develop the use of timber in commercial buildings in sub-tropical and tropical climates.

Researchers from the Department of Agriculture and Fisheries Forest Product Innovation team at the Salisbury research facility have been instrumental in establishing the Centre for Future Timber Structures research centre at the University of Queensland which was opened this month. They will work closely with scientists from UQ and elsewhere to ensure the success of the centres mission. This mission “is to engineer new timber building products, deliver tall timber buildings and transform Queensland’s timber industry in the process.” The researchers plan to develop products using techniques from the aerospace industry to greatly improve the strength of timber products. Already work is underway on the use of robotic construction to dramatically increase construction speed, reduce weight and cut waste on site. Fire, of course, is the obvious objection so specialists in this field will work closely with Queensland Fire and Emergency Service to ensure the inherent fire safety of timber products and construction.

This has all required new money which has come from the Queensland Government which invested $1 million which in turn has been matched by the University of Queensland. The Australian Research Council is providing an additional $1.5 million to the project. Private sector partners are Queensland-based timber processor Hyne Timber, global engineering firm Arup Engineering and the major building company Lendlease. Lendlease has already constructed high-rise timber buildings in Melbourne. All up this funding matches the federal government's contribution to the southern centres. For more information contact Dr Bailleres.

Concrete Sleepers or Timber?



Incised post - Image courtesy of Walford Timber Limited and Koppers Performance Chemicals

Excalibur Incising machine for round timber - Image courtesy of Arch Timber Protection -a member of the UK Timber Decking and Cladding Association

A new motel is being built next door to my home, a little tedious but nothing I can do about it. There are a number of expensive retaining walls being built using galvanised steel posts and coloured textured concrete sleepers. Quite frankly I believe this is a better option than using most of the treated pine landscaping on the market. Sadly it need not be the case. Let me explain...

The spacing they have used of 2.4 metres would have required an F7 200x100 pine sleeper. This size sleeper wholesales for about $400 m3 (abt. $19.20 each) and would sell at trade at the big boxes for about $475 m3 (abt. $22.8 each) but they are not structurally rated! So, if you value your professional indemnity, you simply cannot use them. Next there is a high probability they are not treated well. Now, the suppliers could guarantee penetration of the preservative into the heartwood by incising (see images above). This process is seen as a cost of doing business on the west cost of the USA and increasingly in the UK. The cost to do this in the production line is probably about $25 per m3 or $1.20 each. So a sleeper that has the improved durability, and allowing some profit on the incising, is about $24.50 - $25.00 each but it is still not structurally rated! Let's assume then that behind the inciser you put a proof grader and you have 10% loss of timber not meeting specification, you now have a product getting close to being fit for use and it is under $30. But at this stage it is all hypothetical as, to my knowledge, such a product does not exist on the Australian market. And that is not factoring in the extra cost of treating to H5 instead of H4 which in ACQ will probably add another $7-8 each per sleeper at trade. If we go to concrete we will need two sleepers (from the one company I approached) to do the same job of one piece of pine. That will sell at trade for about $70.

So until some smart timber manufacturer sees the opportunity and runs with it, I am loathed to say, in my opinion you are better off with concrete. As for incising, keep insisting on it for any external pine application. I am told that there is starting to be interest by millers in installing in- line incising plants. There are only two of these plants in the country at the moment, but as there are two manufacturers it cannot be said that it is not available.

Need a Timber Consultant or Expert Witness?

I have over 40 years experience in the industry and can assist you with any of your timber needs.

Design - I have seen what works and what doesn't and have a good library of CAD drawings and images to back up what I say, which can often be contrary to common practice.
Inspection - I have written the books on the subject and can assess construction and material as to its suitability for the application.
Reports - I can drive a word processor with ease and can give you a well reasoned reply.