Use of hySPAN & hyJOIST for Weather Exposed Applications

What is weather exposed?

Firstly, there are no hard and fast rules as to what is and what isn't weather exposed. The worst potential effect of external exposure is decay resulting from high moisture content. Any hySPAN® or hyJOIST® element which stays wet for long periods may decay. Roofed over elements are less likely to be frequently wetted by rain and TRADAC in Queensland have evolved the following guideline based on a 30° to the vertical line as illustrated in Figure 1. The parts of the building outside of this line are regarded as weather exposed.

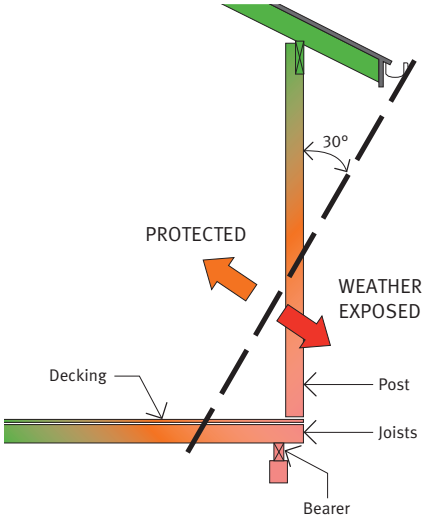
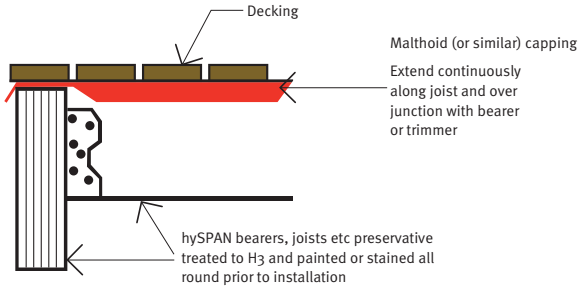


Figure 1 weather exposed

More about the effects of weather exposure

The combined effects of sun, wind and rain are complex. Sun and wind have a drying effect and in this respect are beneficial however cyclic wetting and drying and ultra-violet rays break down the wood surface, increasing porosity and the tendency to retain moisture. Whilst the resultant surface checking and discolouration are adverse to appearance it is the retention of increasing amounts of moisture that ultimately leads to decay of susceptible wood fibre. Fungi consume wood fibre as a food source to cause decay but only if the wood is susceptible and sufficiently damp. In practical terms the two most effective ways of minimising the risk of decay is to,

1. Chemically treat the wood with preservative so that fungi cannot utilise it as a source of food,
2. Limit the availability of moisture.



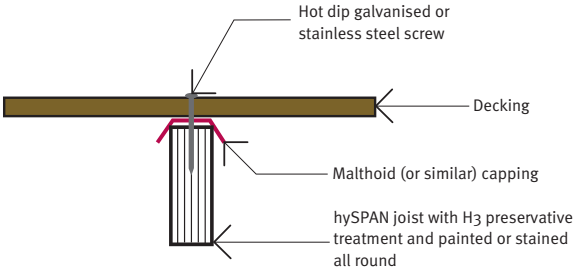


Figure 2 details for weather exposed decks

hySPAN

Where hySPAN is used for weather exposed applications preservative treatment to H3 in accordance with AS 1604.4 is a minimum requirement. In addition, installation detailing to minimise moisture availability is strongly recommended.

In practice, preservative treatment may not be 100% effective and therefore it just makes good sense to reduce the possibility of decay by also seeking to exclude as much moisture as is practicable. Examples of such details include painting, the use of cappings and ensuring that joint interfaces do not trap and retain moisture.

Some suggested installation details for hySPAN used as bearer and joists for weather exposed decks are given above. For fixing of decking to joists it is strongly recommended to use screws. Decking materials are subject to constant wetting and drying which has a prying effect on fixings that can lead to lose decking boards. Screws have significantly better resistance to this action than nails and the longer the screw, the better the resulting connection.

hyJOIST

hyJOIST is not recommended for weather exposed applications even with preservative treatment. The top of the bottom flange of hyJOIST is difficult to protect, moisture will pond on the horizontal surface and be retained by accumulated dirt. These factors increase the susceptibility of hyJOIST to degrade and decay from weather exposure even if preservative treated.

hyJOIST used in poorly ventilated (but not weather exposed) sub-floor environments may however be beneficially treated to H3 level to minimise the risk of decay.

Preservative treatment

Preservative treatments conforming to AS1604.4 fall into two categories – water based and solvent based. Both categories required specialised plant and processes in order to obtain suitable penetration of preservative.

Water based treatments can be further segregated into two different process methods (i) Low uptake fusion, and (ii) High uptake wetting. The high uptake (high pressure) systems involve harsh wetting and drying regimes that can affect structural integrity and because of this the low uptake (low pressure) systems are favoured.

The other treatment category is solvent based. This preservation process is known generically as LOSP (Light Organic Solvent Preservative)

For hySPAN & hyJOIST, required to be treated to H3 level, the preferred preservations processes are the low uptake water based system or the LOSP process.

Like most industries the wood preservation industry has its fair share of those that promise more than they deliver. Accordingly, only use hySPAN or hyJOIST with preservative treatment where there is suitable branding or documentation,

a) clearly identifying the level of treatment as H3 (the minimum for above ground weather exposure – H2 is not adequate)

b) specifying the Standards reference AS 1604.4 and,

c) identifying the preservative treatment company.

Because the effect of inadequate treatment may only become apparent some years after installation, it is strongly recommended the above details are recorded (eg a photograph of the branding) and retained for future reference.

Frequently Asked Questions

1. **Is the adhesive used to make hySPAN and hyJOIST affected by wetting?**

   No, the adhesive used is fully waterproof and if the bond has been properly made will be totally unaffected by moisture. The phenolic adhesive used is the same type of adhesive as used for the manufacture of marine and structural plywood and has been proven for structural adequacy for in excess of 50 years exposure to weather.

2. **What is malthoid?**

   Malthoid is a bitumen impregnated felt product used primarily as a masonry dampcourse. It is widely available in hardware stores in 110 mm wide rolls, an ideal width to lay along the top of joists. Simply fix with staples to hold in place and lap or seal at joints with a compatible sealant prior to laying decking.

3. **Won't nailing or driving screws through the malthoid allow water to penetrate and render the detail ineffective?**

   Almost certainly some moisture will penetrate the malthoid barrier at some fastener penetrations but its use will still substantially reduce the moisture uptake by the joists.
   Malthoid is preferred because it tends to seal around the fasteners a little better than alternatives. Further, dirt usually accumulates between the decking boards and acts as a moisture reservoir; a malthoid barrier between the decking and joists protects the joists from this moisture.

4. **What type of paint is recommended?**

   There are many different paint or stain products, all of which are likely to be beneficial. Acrylic paints are preferred because they 'breathe' and allow excess moisture to escape. They are also easy to apply and maintain. Good quality paint or stain products and light colours will tend to last longer and therefore provide better protection with less maintenance. Refer to the paint manufacturer for further guidance.

5. **If I follow the guidelines will maintenance still be needed?**

   Inspection once or twice a year is wise. Inspect after rain and assess the continued effectiveness of moisture barriers. Act promptly to divert any unnecessary moisture such as from a leaking gutter, plumbing or discharge from an airconditioner or evaporative cooler. Be alert for any signs of decay, remedy the cause and replace affected components.

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