

## 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.

### 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.

### 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 is not 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 below.

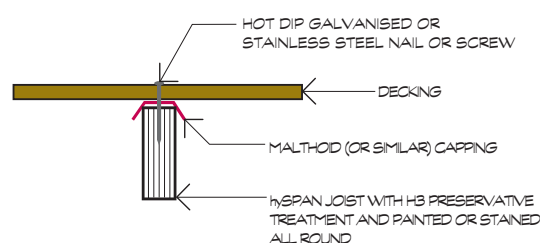
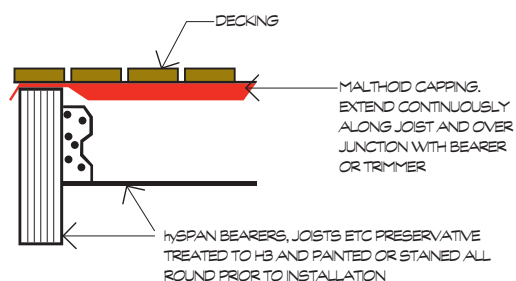


FIGURE 2 DETAILS FOR WEATHER EXPOSED DECKS

### 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

Preservation treatments conforming to AS 1604.4 fall into two categories – water borne and solvent (or oil) borne. Both are pressure treatments requiring specialised plant and processes in order to obtain suitable penetration of preservative. Water borne processes involve harsh wetting and drying regimes that can affect structural integrity and because of this, solvent (or oil) based preservatives are favoured. For hySPAN and hyJOIST, required to be treated to H3 level, the preferred preservative process is known generically as Light Organic Solvent Preservative (LOSP).

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.

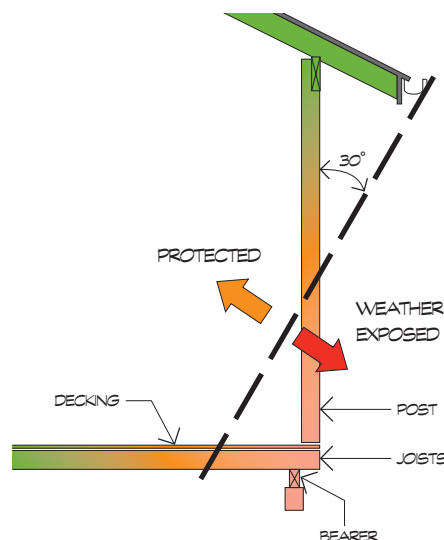


FIGURE 1 WEATHER EXPOSED

## 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.

## HYSpan BEARERS AND JOISTS FOR BALCONIES & DECKS MORE THAN 1.0 METRE ABOVE GROUND

### BEARERS SUPPORTING FLOOR LOADS ONLY

HYSpan SECTION d x b mm	Floor load width - FLW (m)									
	1.8	2.4	3.6	4.8	6.0	1.8	2.4	3.6	4.8	6.0
	Maximum single span (m)					Maximum continuous span (m)				
95 x 63	1.5	1.4	1.2	-	-	2.0	1.7	1.4	1.2	-
130 x 63	2.0	1.9	1.6	1.5	1.3	2.7	2.4	1.9	1.6	1.5
150 x 63	2.4	2.1	1.9	1.7	1.5	3.2	2.7	2.2	1.8	1.7
170 x 63	2.7	2.4	2.1	1.9	1.7	3.5	3.0	2.5	2.1	1.9
200 x 63	3.1	2.8	2.5	2.2	2.1	4.0	3.6	2.9	2.5	2.3
240 x 63	3.7	3.4	3.0	2.7	2.5	4.6	4.3	3.6	3.1	2.7
300 x 63	4.4	4.1	3.7	3.3	3.1	5.4	5.1	4.5	3.8	3.4

### FLOOR JOISTS

HYSpan SECTION d x b (mm)	Floor joist spacing (mm)											
	400		450		600		400		450		600	
	Maximum single span & overhang (m)						Maximum continuous span & overhang (m)					
	Span & O'hg		Span & O'hg		Span & O'hg		Span & O'hg		Span & O'hg		Span & O'hg	
90 x 42	1.8	0.5	1.7	0.4	1.7	0.4	2.1	0.5	2.0	0.4	1.9	0.4
95 x 45	2.0	0.5	1.9	0.5	1.8	0.4	2.3	0.5	2.2	0.5	2.1	0.4
130 x 36	2.6	0.8	2.4	0.7	2.3	0.6	3.1	0.7	2.9	0.7	2.7	0.6
130 x 45	2.8	0.8	2.7	0.8	2.5	0.7	3.4	0.8	3.2	0.8	3.0	0.7
150 x 45	3.3	0.9	3.1	0.9	3.0	0.8	4.2	0.9	3.8	0.9	3.5	0.8
170 x 45	3.8	1.1	3.6	1.0	3.4	0.9	4.8	1.0	4.4	1.0	4.0	0.9
200 x 45	4.5	1.2	4.4	1.2	4.0	1.1	5.4	1.2	5.2	1.2	4.8	1.1
240 x 45	5.2	1.5	5.0	1.4	4.7	1.3	6.2	1.5	6.0	1.4	5.6	1.3
300 x 45	6.1	1.8	5.9	1.7	5.6	1.6	NS	NS	NS	NS	NS	NS

#### Notes:

- Tables prepared for decks and balconies where the imposed floor actions do not exceed 2.0 kPa / 1.8 kN.
- Floor load width (FLW) for bearers: For outer bearers FLW may be taken as one half the end span of the joists plus any overhang span. For internal bearers FLW may be taken as the average of the joist spans on each side of the bearer.
- Tables apply for hySPAN bearers and joists preservative treated to H3, painted and otherwise protected from moisture in accordance with good practice and the principles explained in this publication.

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