



EXTERNAL USE OF GLUED PRODUCTS

Colin MacKenzie
Timber Queensland

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This Presentation

- Some Basics
- Durability
- Treatment
- Installation
- Other



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Glued and Engineered Timber Products

You can 'engineer out' some of the undesirable characteristics, but the durability of glued products still needs to be considered in specification and use.



Durability of Glued Products

Combination of:-

- Suitability of adhesive for exposure conditions
- The timber durability (and treatment)
- Resistance to weathering

Adhesives and exposure conditions

AS 4364 Timber – Bond Performance of Structural Adhesives

Adhesive Type	Exposure conditions	Typical Adhesives used
Type I	Full weather exposure Temp.>50°C	Resorcinol, phenol- resorcinol and polyurethane
Type II	Protected from weather Temp.<50°C RH<85% @20°C	Melamine urea formaldehyde, polyurethane

Adhesives

Adhesives commonly used in manufacture of ETP's

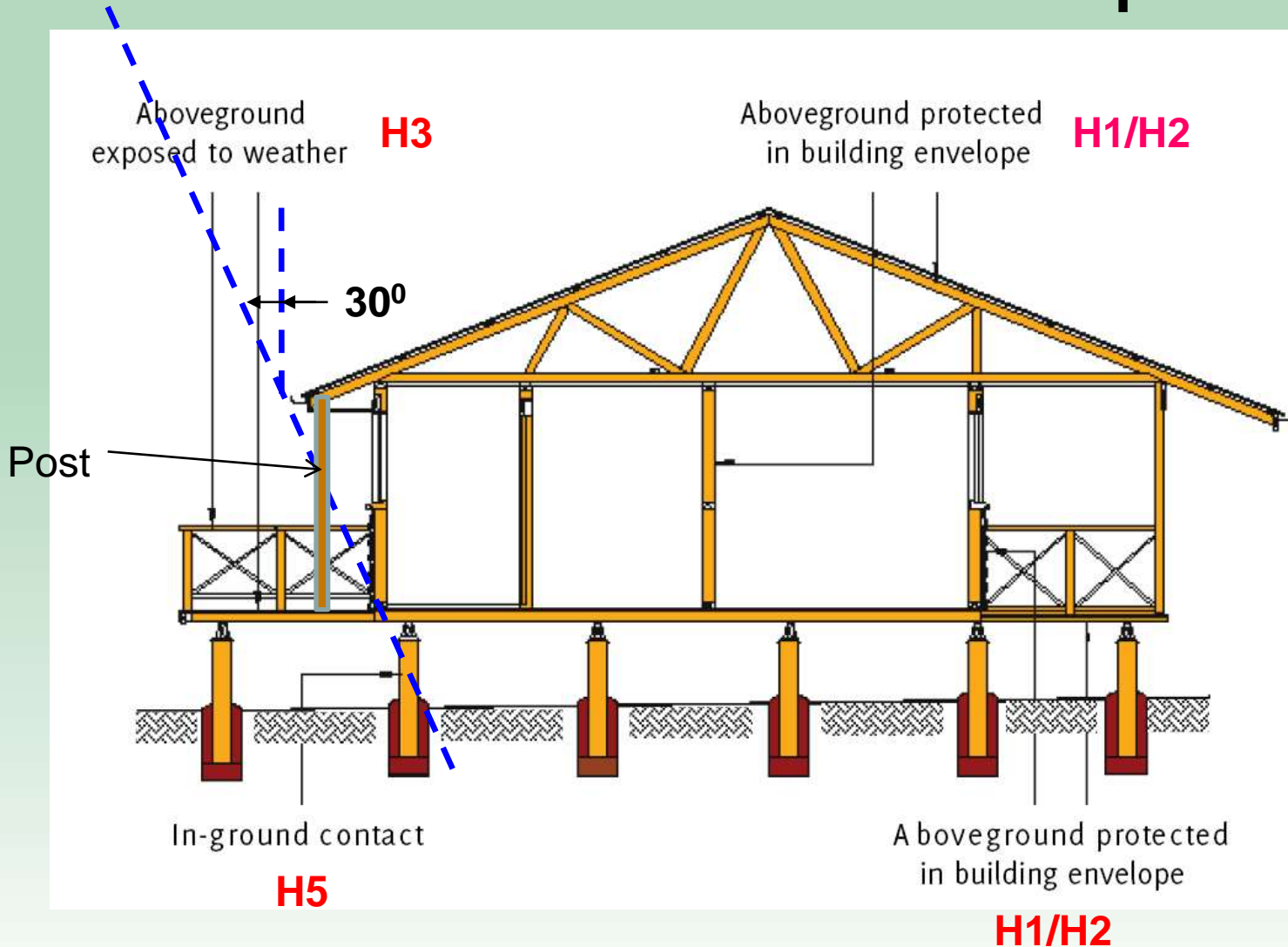
EWP type	Manufacturing standard	Adhesives Commonly used for manufacture
Glued-laminated timber	AS/NZS 1328.1	Type I (usually) Type II (permitted)
Laminated veneer lumber (LVL)	AS/NZS 4357 ¹	Type I
Plywood	AS/NZS 2269 ¹	Type I
Oriented-strand board (OSB)	Overseas standards e.g. EN300	Type II
Particleboard	AS/NZS 1860.1	Type II
I-beams	Proprietary	Depends upon components

Note:

1. Indicates Type I (Type A bond) is mandatory under the manufacturing standard.
2. "Proprietary" indicates information may be obtained from the manufacturer.

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Hazard Levels and Exposure



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Durability

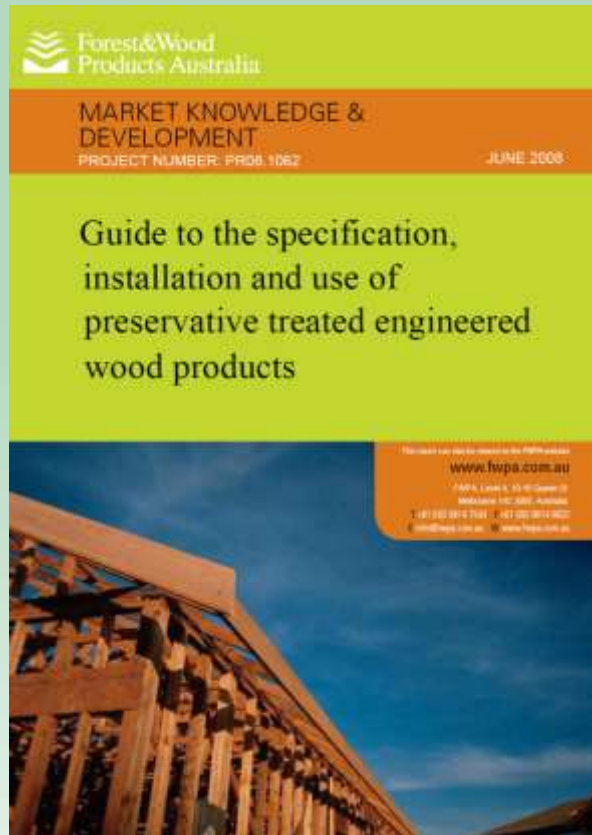
Durability Class	Durability Rating	Expected Service Life (yrs)	
		In Ground	Outside Above Ground
1	High	25	>40
2	Reasonably High	15 - 25	15 - 40
3	Moderate	5 - 15	7 - 15
4	Low	<5	<7

Durability

Durability Class	Species or Species Group	
	In-Ground	Above Ground
Class 1	Ironbark, Tallowwood, Gympie messmate, Turpentine, Forest red gum	Ironbark, Tallowwood, Gympie messmate, Turpentine, Forest red gum, Red river gum, Blackbutt, Spotted gum, Cypress, Yellow balau, Kwila (merbau)
Class 2	Red river gum, Blackbutt, Spotted gum, Jarrah, Cypress, Yellow balau	Jarrah, Western red cedar, Sydney blue gum, Rose gum, Rosewood
Class 3	Kwila (merbau), Messmate, Sydney blue gum, Rose gum, Western red cedar, Huon pine, Rosewood	Messmate, Mountain ash, Keruing, Huon pine
Class 4	Douglas fir (Oregon), Vic ash, Tas oak, Red balau, Radiata, Slash, Meranti	Douglas fir (Oregon), Vic ash, Tas oak, Red balau, Radiata, Slash, Meranti



Durability BCA/CTIQ etc



For Guide: www.ewp.asn.au

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Treatment Standards

AS 1604	Specification for preservative treatment
AS 1604.1	Part 1: Sawn and round timber
AS/NZS 1604.2	Part 2: Reconstituted wood-based products
AS/NZS 1604.3	Part 3: Plywood
AS/NZS 1604.4	Part 4: Laminated veneer lumber (LVL)
AS/NZS 1604.5	Part 5: Glued-laminated timber products

AS 1604.5 – 2010 requires H3 structural laminated to have
Class 1 durability all sapwood treated
Class 2, 3 and 4 all sapwood treated and in addition, 5 or 8 mm
envelope of heartwood or max 20% of heartwood in each laminate etc.

Treatment Types

TYPE		HAZARD LEVEL					
		H1	H2	H3	H4	H5	H6
Envelope	Water/oil		☺				
Water	Boron	☺	?				
	CCA	☺	☺	☺	☺	☺	☺?
	Copper Azole	☺	☺	☺	☺	☺	
	ACQ	☺	☺	☺	☺	☺	
Solvent	LOSP	☺	☺	☺			
Double	CCA + Creosote						☺

Weather exposed applications



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Manufacturers Recommendations

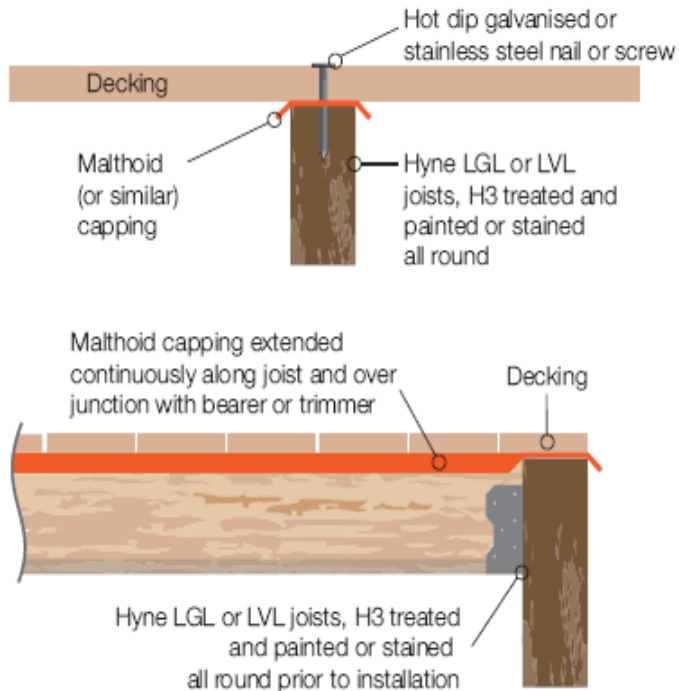
All the major manufacturers/suppliers of glued products for use in external applications have very detailed and explicit recommendations for use

Typical manufacturers recommendations

- 'I' Beams not suitable for weather exposed app's
- H3 treated pine (LVL and glulam) or Durable hardwood (glulam) OK
- No moisture traps
- HDG or stainless fasteners
- Before erection – prime all round with oil-based primer
- Two coats of solid, light coloured, oil or acrylic
- Sun exposed faces to be sheeted
- Malthoid or similar to tops of joists/beams
- End caps to exposed end grain

Typical manufacturers recommendations

DIAGRAM 3 BEARER AND JOIST IN WEATHER EXPOSED DECK



Other Considerations

- “Waterproof” decks – are they?



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Trusting paints or 'sealants' etc?



Water through deck to supports below

Support Point for Bearer

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Weathering and Finishing



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Case Study 1



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Case Study 2



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Case Study 3



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Case Study 4



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Case Study 5



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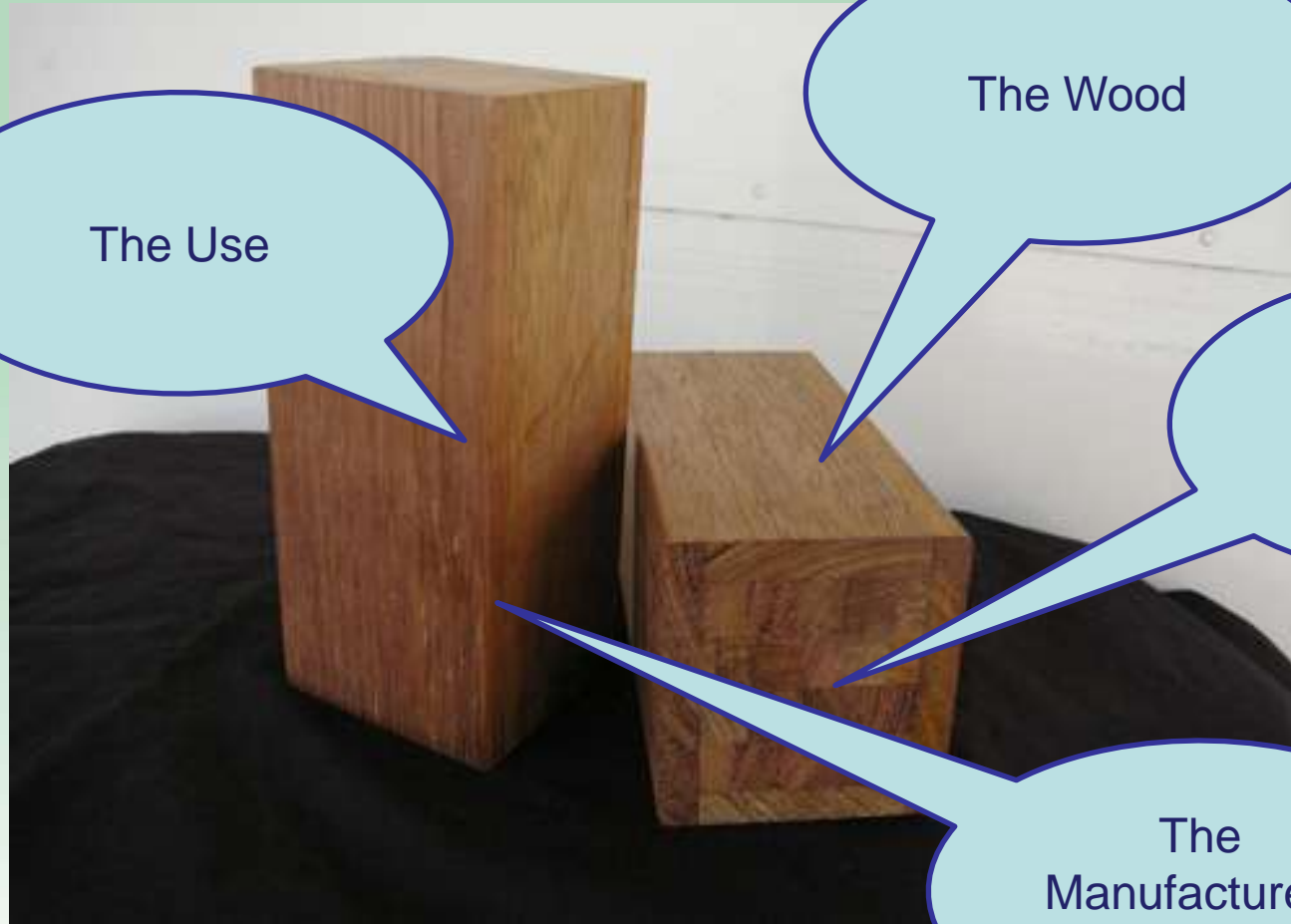
Other Considerations

- Glued products must be of suitable durability if exposed or partly exposed to the weather



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So, lets analyse a product!



The Use

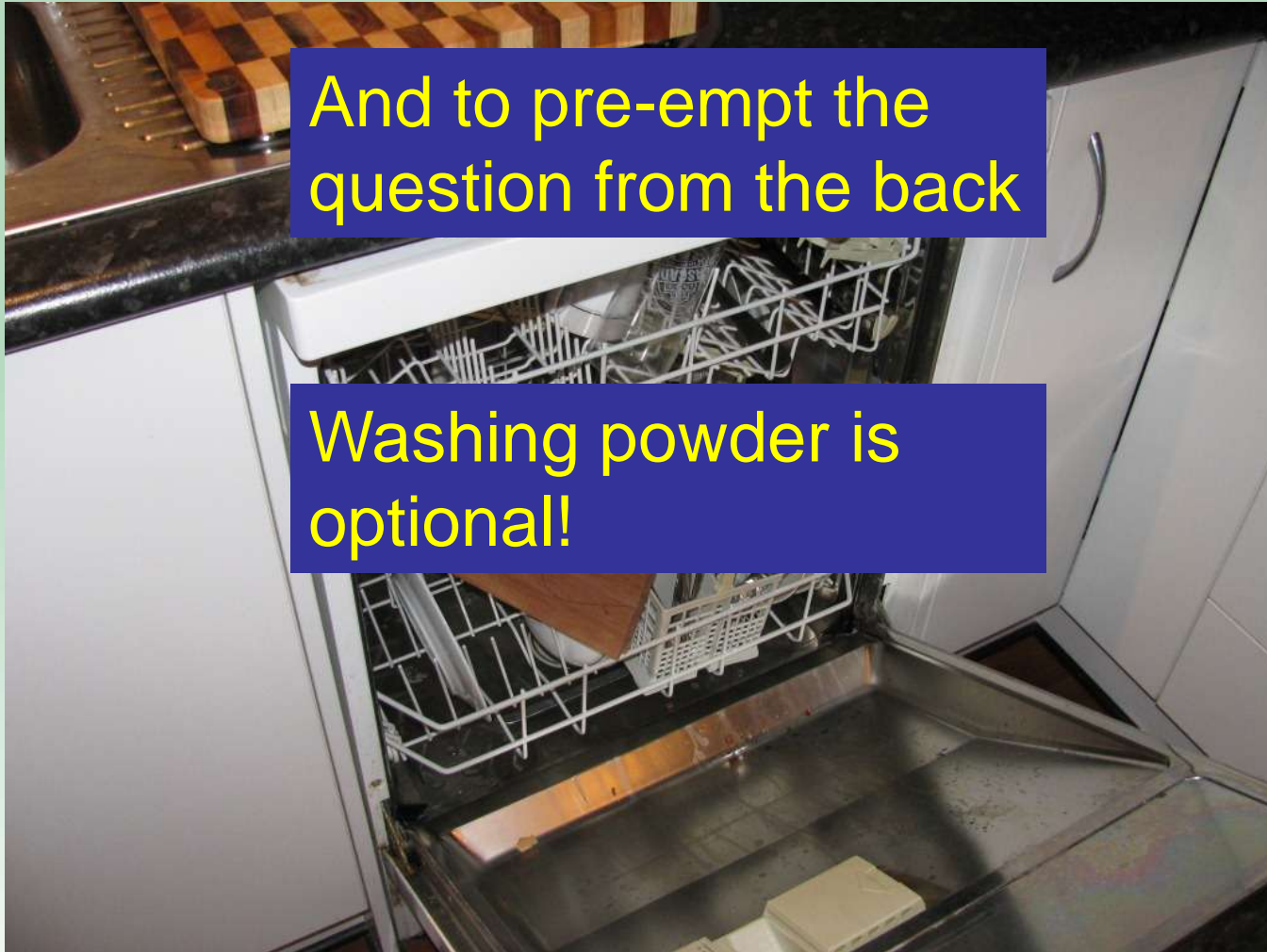
The Wood

The Glue

The
Manufacture &
Testing

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Don't chance it, test it!



Glued and ETP's and future developments



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THANK YOU

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