

# Lonza

Lonza Wood Protection

**Keeping up appearances:  
modern timber preservatives,  
finishes and coatings  
that extend service life.**

*Steven Koch  
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# Why Use Timber?

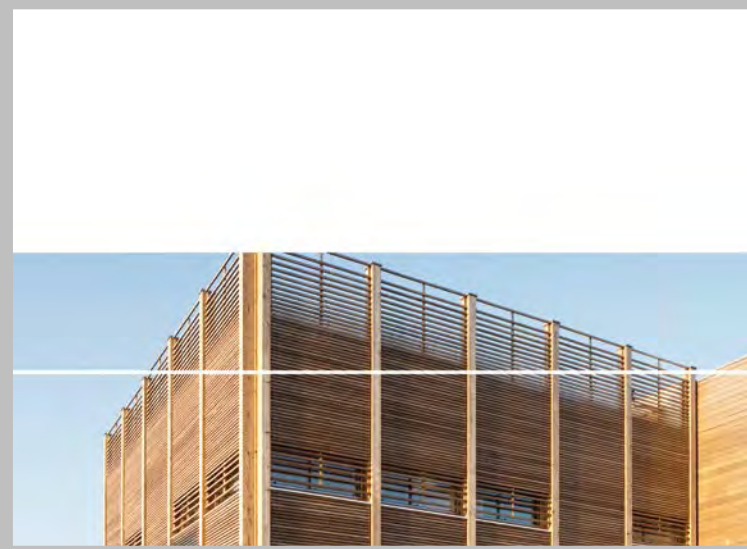
- ✓ Sustainable material.
- ✓ Low energy to produce.
- ✓ Excellent insulator.
- ✓ Light yet strong.
- ✓ Low impact on environment.
- ✓ Recyclable.
- ✓ Treatments can improve performance.





# Why Protect Timber?

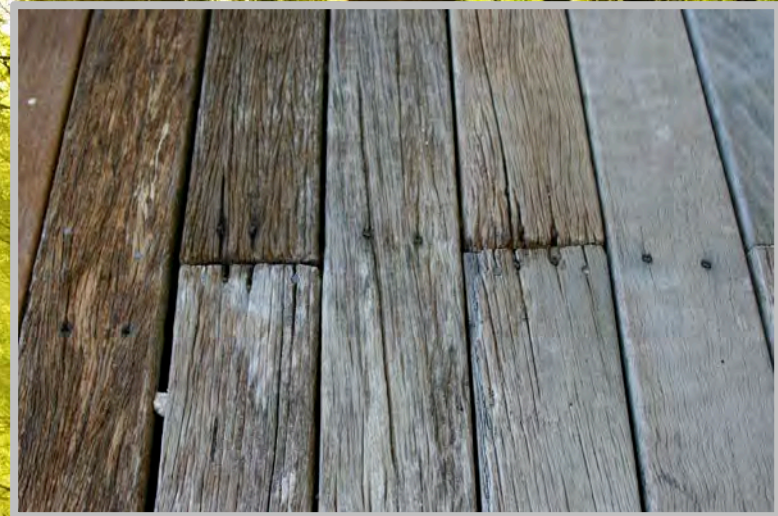
- ✓ Enhance timber durability
- ✓ Extend service life
  
- ✓ Achieved by:
  - improving resistance against fungi and insects.
  - protecting against weather.





# Understanding Hazards

## Fungal decay



## Termites



## Weather



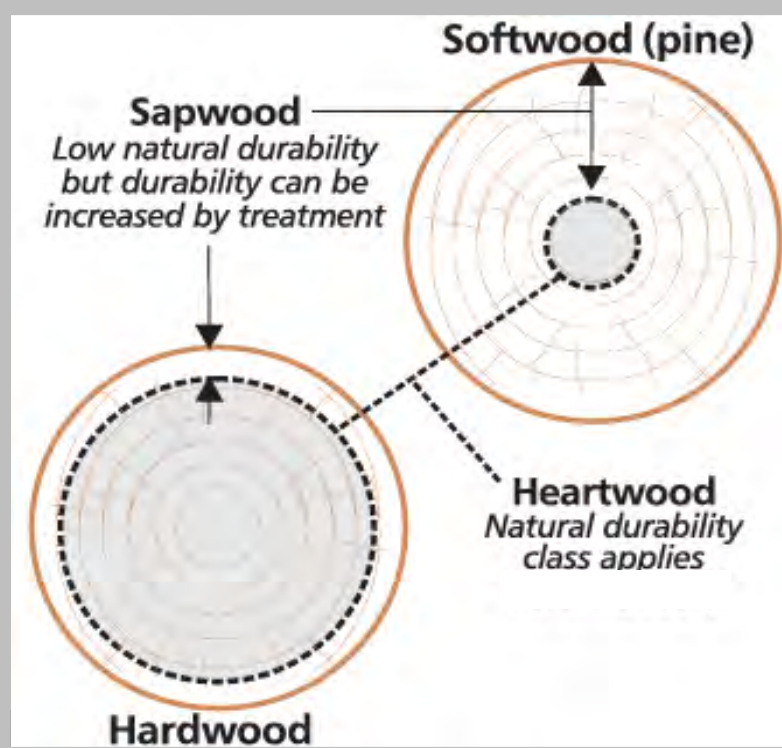
## Boring Insects





# Natural Durability

- ✓ The sapwood of ALL species is considered NON DURABLE.
- ✓ Sapwood of CCA treated Pine performs better than Class 1 Natural Durability timbers.
- ✓ Heartwood can be classified according to its natural durability against wood destroying organisms.
- ✓ AS 5604 provides natural durability ratings for timber.



CCA treated sapwood of Natural durability class 2 heartwood



# General Natural Durability Guide

Natural durability class	Probable heartwood life expectancy (years)		
	Fully protected from the weather and termites	Above ground exposed to the weather but protected from termites	In-ground contact and exposed to termites
Class 1 - Highly Durable	50+	40+	25+
Class 2 - Durable	50+	15 to 40	15 to 25
Class 3 – Moderately Durable	50+	7 to 15	5 to 15
Class 4 – Non Durable	50+	0 to 7	0 to 15



# Treatment Hazard Classes

- ✓ Hazard Classes nominate the level of treatment required to protect wood products in various end use applications – AS 1604.
- ✓ The higher the Hazard Class, the more severe the exposure to biological hazard is (H1-H6).
- ✓ It is important preservative treatments are applied with the correct penetration and retention for the identified hazards.





# Timber Treatment Hazard Classes - AS 1604

Hazard Class	Exposure Risk	Specific Service Conditions	Biological hazard	Typical uses
H1	Inside, above ground, dry	Completely protected from the weather and well ventilated, and protected from termites	Borers	Susceptible framing, flooring, furniture, interior joinery
H2F	Inside, above ground, dry	Protected from wetting, Nil leaching	Borers, Termite	Framing, flooring and similar, used in dry situations South of the Tropic Capricorn
H2	Inside, above ground	Protected from wetting. Nil leaching	Borers, Termite	Framing, flooring trusses and similar, used in dry situations
H3	Outside, above ground	Subject to periodic moderate wetting and leaching	Moderate decay, borers and termites	Decking, fencing, cladding, fascia, window joinery, exterior structural timber ( above ground) engineered wood products
H4	Outside, in ground	Subject to severe wetting and leaching	Severe decay, Borers, Termite	Fencing, pergolas, landscaping timbers, posts, greenhouses, non structural retaining walls less than 1m high
H5	Outside, in ground or fresh water	Subject to extreme wetting and leaching and/or where the critical use requires a higher degree of protection	Very severe decay, Borers, Termite	Structural retaining walls, building poles, house stumps, cooling tower infill, piling in fresh water or critical application
H6	Marine waters	Subject to prolonged immersion in sea water	Marine borers, Decay	Boat hulls, marine piles, jetty cross-bracing, landing steps, sea walls

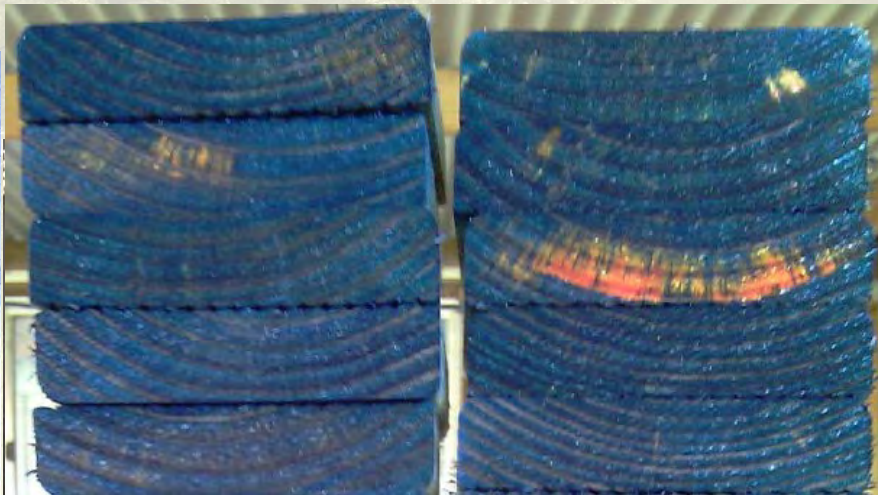
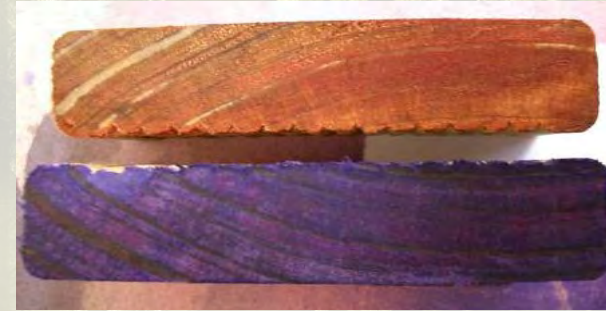


# Timber Treatment Penetration Requirement

Hazard Class	Natural Durability (AS 5604)	Sapwood Penetration	Heartwood Penetration
H1	Lyctid susceptible	100%	Not required
H2	Termite resistant	100%	Not required
	Non termite resistant		5 mm (<35) 8 mm (>35) envelope
H2F	Termite resistant	envelope	Not required
	Non termite resistant		2 or 5 mm on non termite resistant species
H3	Class 1 (above ground)	100%	Not required
	Classes 2 to 4 (above ground)		5 mm (<35) or 8 mm (>45) envelope
H4	Classes 1 & 2 (in-ground contact)	100%	Not required
	Classes 3 & 4 (in-ground contact)		10 mm envelope
H5	Classes 1 & 2 (in-ground contact)	100%	Not required
	Classes 3 & 4 (in-ground contact)		20 mm envelope
H6	Class 1 (marine borer resistant)	100%	Not required
	Classes 2 to 4 (marine borer resistant)		20 mm envelope



# Penetration examples



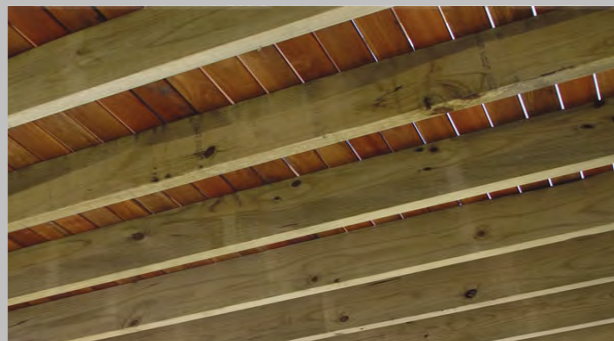


# Timber Preservatives

There are a range of treatments to suit different applications and user preferences.



- ✓ **Insect Protection** (boron salts, permethrin, imidacloprid, bifenthrin) (H1,H2)
- ✓ **Envelope Applications** (permethrin, bifenthrin, imidachloprid) (H2F)
- ✓ **Glue line additives and veneer treatments for EWP** (imidachloprid, bifenthrin) (H2F)
- ✓ **L.O.S.P** (azoles & permethrin or bifenthrin) available in low VOC solvents (H1,H2, H3)





# Timber Preservatives

- ✓ **Copper based** (Copper Azole, ACQ) (H3 - H5)
- ✓ **CCA** (H1 - H6)
- ✓ **Creosote** (H4 - H5)
- ✓ **CCA / Creosote** (H6)
  
- ✓ **Supplementary / Maintenance** (Blue Stain Control, Copper Naphthenate Oil/Emulsion, Ecoseal and Enseal, Paints and stains e.g. Tanacoat)





# Weathering and Finishing

- ✓ Timber is affected by sun, moisture, pollution, chemicals and abrasion.
- ✓ Checking, dimensional stability, bleaching, erosion, surface mould & stains can impact on appearance expectations and service life.
- ✓ Supplementary treatments, coatings or finishes will help maintain appearance and extend serviceability.





# Coating / Finishing

- ✓ Applied to enhance and maintain:
  - Aesthetic appearance,
  - Moisture protection,
  - UV protection,
  - Abrasion resistance.
- ✓ Types (water & solvent):
  - Supplementary & Resealing treatments.
  - Stains & Penetrating Oils,
  - Vanishes,
  - Opaque film forming coatings (paint).





# Factors affecting performance

Factor	Affect on Performance
Environmental Conditions	Dry temperate vs tropical, marine and severe industrial environments. Exposure and orientation to weather.
Pre-treatment	Preservative impregnation and supplementary treatments, putties and sealants
Maintenance Schedule	Re-coating before major paint film breakdown occurs, improved durability at reduced cost.
Colour selection	Lighter colours last longer; less prone to heat timber can lead to early coating breakdown, timber checking, resin mobilisation, premature decay.
Application Procedure	Adequate film build and attention to coating end-grain results in improved performance.
Building Design	Roof overhangs, flashing, capping, joist strips, and avoiding water traps
Substrate affects	Depends on additional factors (next slide)



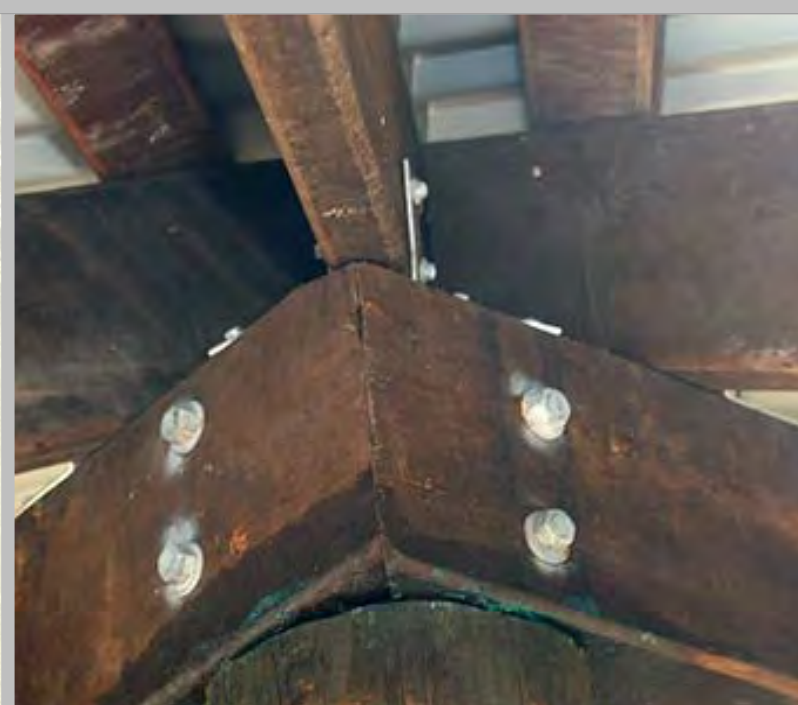
# Substrate affect on performance

Substrate Variable	Affect on Performance
Species	Differs between and within species e.g. Natural Durability
Density	Denser timbers are less prone to moisture uptake
Timber edges	Sharp edges create stress in paint films, causing failure.
Unseasoned (green) timber	Increases risk of blistering and peeling . Stains / Penetrating oil can be more effective.
Weathered versus unweathered timber	Surface deterioration of timber fibers can result in poor paint adhesion. Preparation important. Stains may perform better than conventional finishes.
Extractives	May cause topcoat discolouration or blistering
Smooth texture versus coarse texture	Smooth texture surfaces have better paint holding potential than coarse texture ones. Use of stains on the latter gives good performance.



# Supplementary Treatments

- ✓ Timber preservatives such as:
  - CN Timber Oil,
  - CN Protective Emulsion,can be used during construction to minimise moisture traps around joints and end grain, ensure preservative envelope is maintained.
- ✓ CN Timber Oil can also be used as a finish .





# Resealing Products

- ✓ Application of timber preservatives such as:
- Tanalised® Ecoseal,
  - Tanalised® Enseal or,
  - CN Oil
- will ensure that a satisfactory preservative envelope is maintained when a piece of timber is cut, notched or rebated.





# Stains & Penetrating Oils

- ✓ Inclusion of pigments and UV absorbers help retain desired colour.
- ✓ Waxes and resins impart water repellency
- ✓ Generally allow wood to “breathe”, good for exterior timber.
- ✓ Contain small amounts of biocide to retard surface mould.
- ✓ Tanacoat is an example of a premium penetrating wood oil.





# Varnishes

- ✓ Form a hard film which can offer good abrasion resistance.
- ✓ Enhance appearance with clear, glossy finish.
- ✓ Prevents water absorption.
- ✓ Film must be maintained to avoid cracking which can lead to water entrapment and decay
- ✓ May contain UV absorbers to protect film and timber surface.
- ✓ Cost of maintenance can be high if not properly maintained.





# Paints - conventional

- ✓ Extensive range and types available.
- ✓ Coatings adhere to surface “film forming”
- ✓ Protects against affects of UV
- ✓ Prevent water absorption.
- ✓ Film must be maintained to avoid cracking which can lead to water entrapment and decay.
- ✓ Cost of maintenance can be high if not properly maintained.





# Examples of maintenance



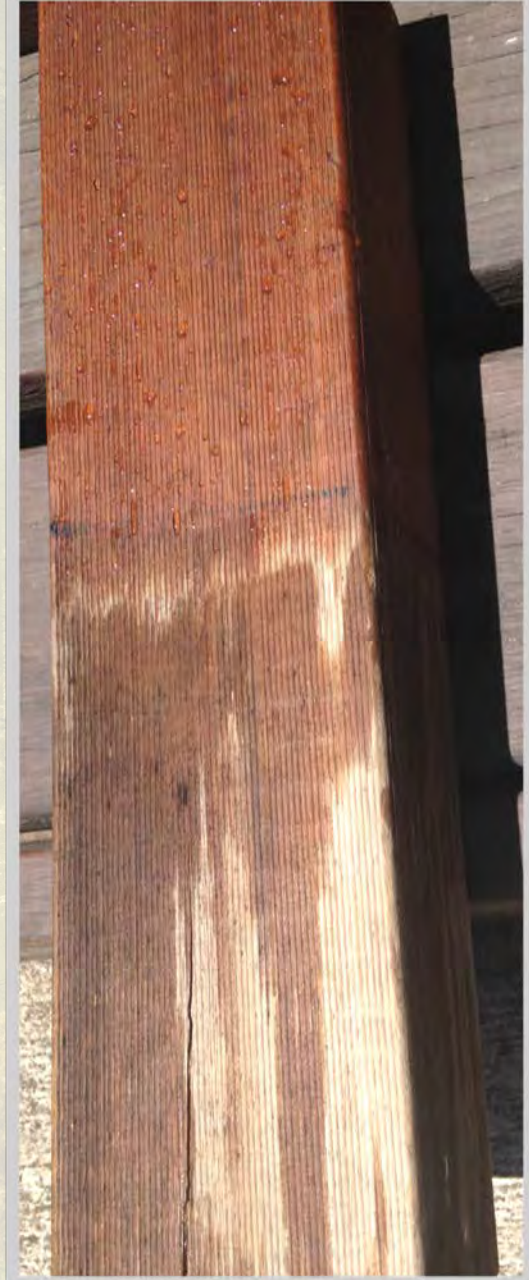


# Examples of maintenance



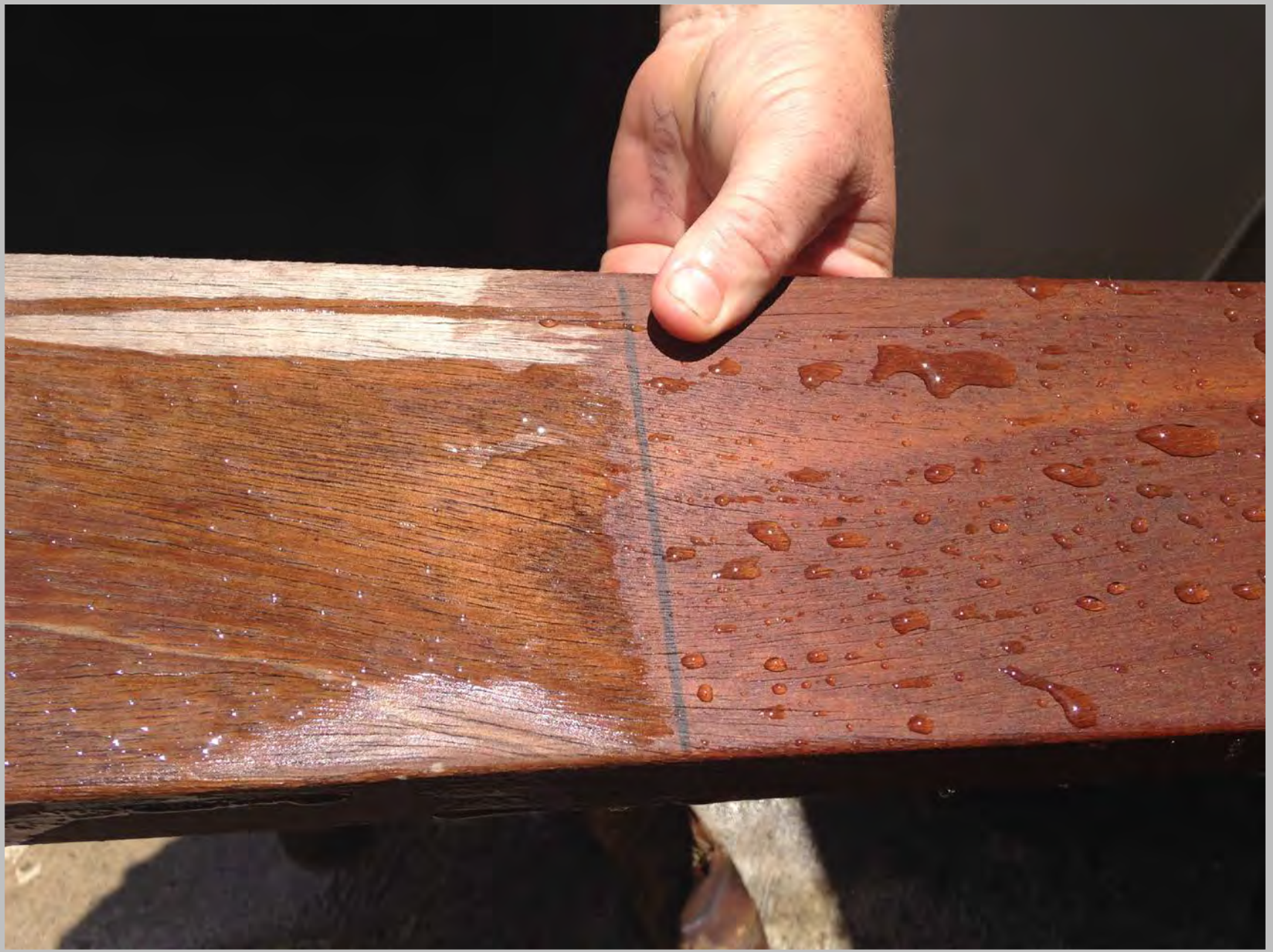


# Examples of maintenance





# Examples of maintenance





# Examples of maintenance





# Examples of maintenance





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Thank You

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