TIMBER QUEENSLAND
We build Queensland

TECHNICAL DATA SHEET
ISSUED BY TIMBER QUEENSLAND

FINISHES FOR EXTERIOR TIMBER

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RECOMMENDED PRACTICE // NOVEMBER 2026

1. TIMBER WEATHERING AND DURABILITY

All timber (irrespective of species, durability classification, or whether it is preservative treated or not) will undergo changes when exposed to the outdoor environment. Exposure to ultraviolet (UV) radiation and fluctuating moisture will cause timber to weather. This typically results in fading to a silver/grey appearance, surface roughening and fibre degradation and/or splitting, checking, and dimensional movement.

Softwoods, such as pine, are generally more susceptible to surface degradation, resin bleed, and environmental damage compared to most hardwoods, particularly in highly exposed conditions.

2. ROLE OF COATINGS

Application of a suitable coating system is strongly recommended to reduce the rate of weathering, improve durability and service life and maintain the desired appearance of the timber. Uncoated timber will deteriorate more rapidly, both aesthetically and structurally.

3. CRITICAL MAINTENANCE REALITY

All timber finishing systems require **regular inspection, cleaning, and maintenance reapplication.** Even high-performance coatings will degrade over time due to UV exposure, moisture cycling, and environmental contaminants.

4. WEATHERING PROTECTION MECHANISMS

Coatings protect timber through several mechanisms:

Moisture Control

To protect from rapid moisture content changes, finishes form a barrier between the weather and the timber, reducing water absorption on wetting, and slowing moisture loss on drying. This helps minimise dimensional movement and surface cracking.

UV Protection

UV degradation is managed through:

- **Pigments** that reflect or absorb UV radiation
- **UV absorbers and stabilisers** (e.g. HALS) that reduce coating and timber breakdown

Pigmented systems provide significantly greater UV protection than clear finishes

5. TYPES OF TIMBER FINISHES

Timber finishes can be broadly grouped into:

- **Opaque coatings** (paints) provide maximum protection, no visible grain.
- **Semi-transparent coatings** (stains) offer a balance of protection and appearance.
- **Transparent coatings** (clear finishes) come with minimal protection and a natural look.
- **Penetrating finishes** (oils) create a low film build and provide natural appearance.

Selection involves balancing aesthetic preference, maintenance frequency and choosing which level of protection is required.

6. PENETRATING OILS SYSTEMS

Penetrating oil technologies vary significantly in composition and performance.

Types of Oil-Based Systems

Solvent-borne oils:

- **Non-curing oils** (e.g. mineral oils): penetrate timber but may migrate over time
- **Oxidatively curing oils** (e.g. linseed, tung): polymerise within the timber structure, improving durability

Oil–resin systems:

- Combine oils with resins (e.g. alkyds)
- Provide enhanced durability and water repellence depending on formulation

Water-based (water-miscible) oils:

- Modified plant-based or synthetic oils dispersed in water.
- Lower VOC emissions and increasingly capable of delivering performance comparable to traditional systems.

Key Considerations

- Performance is highly formulation dependent
- Lower pigment levels reduce UV protection
- More natural finishes typically require more frequent maintenance

Biological Growth Considerations

Some natural oil components may increase susceptibility to mould growth under high humidity conditions. Modern coatings typically include additives to reduce this risk; however, regular cleaning remains essential in exposed environments.

7. FILM-FORMING COATINGS (PAINT SYSTEMS)

Film-forming coatings provide the **highest level of protection** by forming a continuous barrier on the timber surface. Thousands of old Queensland homes with timber cladding in perfect condition after one hundred years' service stand in testimony to the protective qualities of paint films.

Common Technologies

- Solvent-based alkyd systems
- Water-based acrylic systems
- Polyurethane coatings (clear and pigmented)

Performance

- Longest maintenance intervals (up to ~10 years depending on system, exposure, and maintenance)
- High resistance to moisture and UV degradation

Limitations

- Obscure timber grain and natural appearance.
- Require careful surface preparation prior to recoating.
- Full compliance with the maintenance schedule is required, this may include sanding before re-coating.
- Failure (cracking/flaking) can trap moisture and accelerate timber deterioration.

8. COLOUR AND HEAT EFFECTS

Colour selection significantly impacts performance. **Light colours** reflect more UV radiation and provide better protection to timber and coating. **Dark colours** absorb more heat, increase timber movement and increase the risk of cracking, coating failure, and resin bleed, particularly in softwoods.

9. CLEAR AND TRANSPARENT FINISHES

Clear Finishes provide minimal UV protection due to transparency. They allow natural timber appearance but will require frequent maintenance in exposed environments.

Even with UV absorbers, clear coatings generally have limited durability outdoors.

Transparent (Lightly Pigmented) Finishes contain low levels of pigment. They provide an improved UV protection compared to clear finishes and offer a balance between durability and natural appearance.

10. EXTERIOR TIMBER STAINS

Timber stains are typically water or solvent-based semi-transparent pigmented systems. They provide moderate UV protection, good aesthetic enhancement and easier maintenance compared to film-forming systems.

11. PERFORMANCE EXPECTATIONS

Coating performance depends on:

- Exposure conditions (UV, rain, humidity)
- Product formulation
- Application quality
- Maintenance practices

Typical **maintenance intervals** vary for each system. Decking oils with high exposure will require reapplication every **6–12 months.** Stains, depending on their exposure, will last **1–3 years**. Paint systems can last **up to 10 years** with proper maintenance.

A water droplet being immediately absorbed into the timber is an indication that its coating is no longer working.

12. MAINTENANCE GUIDELINES

Regular inspection is critical—particularly for horizontal and exposed surfaces. To clean the surface, remove dirt, mould, and contaminants using appropriate cleaning products. Recoat when water no longer beads on the surface or when the coating shows signs of wear or breakdown.

13. ENVIRONMENTAL EXPOSURE CONSIDERATIONS

Maintenance frequency is affected by:

- Geographic location
- UV exposure and orientation
- Coastal or tropical environments
- Timber species and coating type

High Exposure Environments such as Coastal, tropical, or high UV areas require more frequent inspection and maintenance.

14. CRITICAL APPLICATION REQUIREMENTS

The **Most Common Cause of Coating System Failure** is **Failure to Follow Manufacturer Specifications**

Essential Application Parameters:

- **Application Rate:** Must follow specified square meters per litre or wet film thickness
- **Number of Coats:** Apply the minimum recommended number of coats
- **Dry Time:** Allow proper drying between coats
- **Surface Preparation:** Follow all preparation requirements

All paint manufacturers provide technical data sheets and pack instructions outlining the bare minimum requirements for coating application. **Compromising these factors will compromise product performance.**

15. SUBSTRATE CONSIDERATIONS

Timber properties influence coating selection.

Density

High-density hardwoods are commonly used as feature timbers. Stains and oils are often selected. Lower-density softwoods are more absorbent and therefore suitable for penetrating finishes.

Texture

Smooth grain is better suited to paint finishes. Coarse grain is suited to stains and oils.

Condition

Dressed timber is better suited to painting. Weathered timber is better suited to staining or oiling, after cleaning.

16. SURFACE PREPARATION

Surfaces must be:

- Clean and dry
- Free from dust, grease, and contaminants
- Properly prepared in accordance with product recommendations

17. END GRAIN PROTECTION

End grain is **highly susceptible** to moisture ingress and should:

- Be minimised by design where possible
- Be sealed using appropriate end-grain sealers
- Be maintained regularly, particularly in exposed locations

18. TREATED TIMBER

Treated timber requires **adequate drying** before coating and **appropriate surface preparation**. In some cases, additional primers or adhesion aids may be required depending on the treatment type.

19. SUSTAINABILITY AND ENVIRONMENTAL CONSIDERATIONS

Key considerations include:

- Compliance with VOC regulations
- Increasing availability of low-VOC and water-based systems
- Selection of durable coatings to reduce lifecycle impacts
- Responsible disposal of coatings and treated timber waste

20. SAFE USE AND DISPOSAL

Health and Safety

Use appropriate PPE when sanding, cutting, or coating timber. Refer to Safety Data Sheets (SDS) for coatings.

Disposal

Do not burn treated timber offcuts or dust. Dispose of waste in accordance with local regulations.

KEY PRINCIPLE

No coating system eliminates maintenance requirements

There is an inherent trade-off between natural appearance and maintenance frequency:

- The **more natural** the appearance, the **more frequent maintenance** is required.
- The **more protective** the system, the **greater the impact** on timber appearance.

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