Resene

Popular Paint Systems

Exterior and interior woodcare©

(Stains and clear finishes)

This document is an edited version of the Resene Best System Selling training notes provided to Resene staff and is provided to enable you to gain a greater understanding of the substrates and paint systems you may encounter in your decorating project. It is impossible to cover all decorating scenarios in a single document, so if you are in doubt about any aspect of your project please contact Resene for assistance.

Resene

the paint the professionals use

INTRODUCTION

Many of our homes, schools and commercial buildings are clad with stained timber or have stained elements such as pergolas, fences and decks, while clear finished and sometimes stained timber including wooden floors, joinery, wall panels and furniture is extensively used on interiors.

So what do we mean when we refer to stains and clear finishes?

Stains are semi-transparent finishes designed to colour and protect timber (both interior and exterior) while clear finishing generally refers to varnishing or polyurethaning interior timber, often over a stain (or oil) applied to enhance the grain of the timber.

Clear finishes have a very limited use outside, typically only on areas protected from the sun's damaging U.V. light, such as a feature front door and the tongue and groove timber used under a home's eaves.

Some things to look for when selecting stains and clears:

1. Products that are simple and easy to use and advice and help when needed.
2. A professional finish – something you can be proud of.
3. Waterborne where possible.
4. Durable, long life finish.
5. Easy to maintain.
6. Value for money.
7. Environmentally friendly – sustainable.
8. The confidence and support to undertake the project.

PREPARATION PRODUCTS

Resene Moss & Mould Killer

- Put simply, all exterior timber surfaces – especially in shaded and/or damp areas will, over time, support mould growth. Before prep-work and staining it is vital to kill and remove the mould and mould spores.
- Use a good garden sprayer and saturate the areas to be painted, paying particular attention to heavily infested areas. Then wash and scrub off with Resene Timber and Deck Wash or Resene Paint Prep and Housewash.

Resene Paint Prep and Housewash

- Developed to prepare surfaces for painting and staining - including previously stained timber and areas that has been treated with Resene Moss & Mould Killer.
- Can be used as an alternative to Resene Timber and Deck Wash and should be preferred for windows and French doors as it will not stain or mark window glass.
- Previously stained or weathered timber should be scrubbed using a hard short bristled brush before thoroughly rinsing with fresh water.
- Far more effective at 'dechalking' and cleaning than waterblasting and will not damage or gouge timber.

Resene Timber and Deck Wash

- Developed to prepare timber and Plywood for staining (or painting) - including previously stained timber and areas that have been treated with Resene Moss & Mould Killer.
- Previously stained or weathered timber should be scrubbed using a hard short bristled brush before thoroughly rinsing with fresh water.
- The photo shows an area cleaned using Resene Timber and Deck Wash. It is quite remarkable how quick and effective it is.

Resene TimberLock

- Resene TimberLock was developed to 'condition and preserve' timber before priming and painting.

- Resene TimberLock is not usually recommended under penetrating stains such as Resene Woodsman however it will improve the durability and performance of clear finishes such as Altex Timbercote (on a front door for example) and is recommended for use under Resene Lumbersider on old weathered timber.
- Recommended on Cedar window joinery before applying Resene Waterborne Woodsman. Because Cedar is so absorbent Resene TimberLock and Resene Woodsman can be used together to improve moisture resistance, particularly on the mitres, see the adjoining photo of a Cedar door and the water damage.

Resene Waterborne Woodsman

- Resene Waterborne Woodsman is a penetrating oil stain that penetrates into the timber (rather than forming a layer on the surface).
- The darker the colour the longer the maintenance interval will be (how long before it will need to be restained).
- Available in a wide range of colours from traditional wood colours to vibrant shades.
- Many colours are available as Resene Cool Colour options.
- A third coat will extend the time between coats but will deepen the colour (a third coat will also increase the effectiveness of the Resene Cool Colour technology).
- More durable than traditional solventborne woodstains.
- Can be used on rough sawn beams inside in lieu of Resene Waterborne Colorwood.
- Has Environmental Choice approval – (most traditional oil stains contain large quantities of solvent so Resene Waterborne Woodsman is an excellent option).

Resene Woodsman (Traditional oil based)

- Resene Woodsman is a traditional penetrating oil stain that penetrates well into the timber.
- Available in a wide range of traditional wood colours only.
- Recommended for hardwood and Pine decking and furniture as an alternative to Resene Kwila Timber Stain or Resene Furniture and Decking Oil.

Resene Kwila Timber Stain

- Developed to retain or restore the reddish brown colour of Kwila and Jarrah.
- It will reduce the initial tannin staining of Kwila but unfortunately will not stop it completely, and multiple coats will be needed.
- Initially it will require a maintenance coat every summer but the colour will build up and the time between recoating will increase.
- Can be applied by deck pad, mohair roller and/or brush.

Resene Furniture and Decking Oil

- Resene Deck and Furniture Oil is recommended as an annual pre-season treatment for Pine decks, outdoor furniture and Cedar garage doors.
- Will require annual reapplication however recoating is very straightforward.
- Repels water and resists mould and fungal growth.

Resene Timber and Furniture Gel

- Resene Timber and Furniture Gel can be used on new outdoor furniture or to revive weathered (and greyed) furniture.
- Depending on U.V. exposure will require maintenance every 1-2 years.
- Is available in 4 colours and is ideal for hardwood timbers.
- Is more like a wax or polish to apply (similar to interior furniture waxes) and doesn't splash or spill like furniture oils, making it ideal for chairs with canvas backs or where the furniture is located on a surface that may be easily stained – terracotta tiles etc.
- Can be applied with a clean rag or brush – first working the Resene Timber and Furniture Gel into the timber and buffing off excess.
- Is waterborne and quick drying – and back in service sooner.

Altex Timbercote (Marine Varnish)

- A tough marine or spa varnish developed for brightwork (varnished timber) on yachts and motor cruisers – noting that the intensity of the sun's U.V. light is worse on the water (due to U.V. light reflection back off the water).
- Dries to a very high gloss finish, and has a strong yellow undertone.
- Performs well on architectural timber features such as a front door.
- We do not recommend it for weatherboards or surfaces with a high exposure to U.V., such as North facing windows and doors.
- Relies on its tough film and semi transparent U.V. blockers to keep damaging (to timber) U.V. light at bay.
- Altex Timbercote performance improves when used over Resene TimberLock and this is our recommended system for a 'natural finish'.
- Usually applied in 5 coats to build up sufficient U.V. resistance and will need regular recoating.

Resene Lumbersider

- Most paint companies offer a satin solid colour (as opposed to transparent) timber finish such as Resene Lumbersider in their woodcare range. It does make sense as typically when it comes to exterior timber there is a choice between staining or painting in low sheen or satin paint - there is not that much difference between the finish of Resene Lumbersider Black and 3 coats of Resene Woodsman Black for example.
- Painting with Resene Lumbersider is an alternative to staining and is included here as a reference however it is not listed as an option in the flowcharts or recommendation section.

Key accessories - Exterior

For staining with Resene Waterborne Woodsman we recommend the PAL Legend brush and for solventborne stains – such as Resene Kwila Timber Stain and Resene Woodsman (solventborne) the PAL Premier Oval brush.

The Legend is the best brush we have identified for waterborne stains (and paints) while the Premier Oval is excellent for solventborne stains and clear finishes – we also recommend these two brushes for interior staining and clear finishes.

Both have an Oval shape to the bristles making them ideal for cutting into corners, an ergonomic and comfortable grip and excellent paint pickup (so the painter doesn't need to dip their brush into the stain or clear finish as often).

These features are important, because selection of the right brushes and application tools will save time and energy, the project will be completed more quickly, and a better, more professional finish will be achieved.

When staining there are two considerations when selecting a brush (or brushes):

1. The size and profile of the object you are staining - an 88mm brush is ideal for wide rusticated Cedar weatherboards but will be too large for a lattice work.
2. Who is doing the staining? Because bigger brushes hold more paint the job will be completed quicker. However, a bigger brush is also heavier, harder to control and more tiring to use. So as a general rule, male painters can handle the larger 88mm or 100mm brushes for staining exterior weatherboards etc., more easily while a smaller easier-to-use brush may be preferred by female painters.

As well as a brush, if you are staining rough sawn vertical fence palings with Resene Waterborne Woodsman you could use a PAL No.2 roller (the 180mm is ideal). If you are staining a deck with Resene Woodsman (solventborne) or Resene Kwila Timber Stain you could use the PAL No.5 (short mohair) or the lambswool deck pad which works well (rather like mopping a timber floor).

New timber, Shadowclad and Plywood

Wash with Resene Timber and Deck Wash to remove any dirt and contaminants. Rinse thoroughly and allow to dry.

Sand if practical to remove any sharp edges and any greyed (U.V. damaged) areas.

Apply Resene Waterborne Woodsman to both sides of the timber or board BEFORE fixing (envelope sealing).

Apply second coat of Resene Waterborne Woodsman after fixing. Consider a third coat for difficult to access areas for increased durability.

Alternatively apply solventborne Resene Woodsman to both sides BEFORE fixing (envelope sealing).

Apply second coat of solventborne Resene Woodsman after fixing. Consider a third coat for difficult to access areas for increased durability.

Also consider using (with Resene Waterborne Woodsman)

1. New timber including Shadowclad and Plywood

- Washing using Resene Timber and Deck Wash will condition the timber allowing the stain to penetrate more easily and deeply into the timber as well as removing any fingerprints, dirt and rain spotting.
- Any surface imperfections should be sanded and sharp edges arrised or rounded. This will ensure better coverage. Remember to sand **with** the grain. (Recommend 120-150 grit garnet paper).
- Coat both sides of the timber or board and any cut ends before fixing. This is known as **envelope sealing** and improves the dimensional stability of the timber, reducing the likelihood of the timber cupping, warping and splitting.
- Some timbers, have hard exposed 'latewood' grain and stains have trouble penetrating the exposed surface. Another coat may be useful after say three to six months. Depending on the colour, stains may need maintenance after two summers but thereafter have improved life because of material build-up. A similar phenomenon occurs with flat sawn and quarter sawn boards. Stains don't penetrate as deeply into parts of flat sawn weatherboards and tend to weather more rapidly (and require restaining sooner). The upper board in the photo below is flat sawn and has weathered much more than the quarter sawn board beneath it.
- As Plywood and some timbers will crack soon after staining or painting, a good practice is to apply a third coat after 6 months or so. While this isn't always practical it will help cover splits and checks that typically develop after staining or painting and will ultimately prolong the life of the coating. Shadowclad, a cladding similar to Plywood has a requirement that paints and stains must have a LRV value greater than 40% unless a Resene Cool Colour alternative has been accepted as an alternative solution (by councils and territorial authority).
- Rough sawn fences can be rolled using a PAL No.1 or No.2 roller or a Nook and Cranny roller, although a brush will be needed for the edges. Professional painters will often spray Resene Woodsman rather than brush and/or roll.

Key accessories	Add ons
Essential to complete the job • Resene Timber and Deck Wash • PAL 63mm-88mm Legend brush for Resene Waterborne Woodsman or PAL Premier Oval brush for solventborne (traditional) Resene Woodsman. • Resene Paint pot (for decanting into) • Masking tape • Painter's gloves • Sandpaper – 120-150 grit garnet • Stirrer	**To make job easier or quicker** • Turps for solventborne Resene Woodsman • Hand cleaner Resene Woodsman has tremendous adhesion and can be difficult to clean off skin (much more so than paint) • A 180mm No.1 or No.2 Roller for Resene Waterborne Woodsman for rough sawn fence palings or No.1 Nook and Cranny roller. • Drop sheet(s) • Short bristle scrubbing brush

Weathered and previously stained timber

Treat moss and mould with Resene Moss & Mould Killer.

Thoroughly scrub with Resene Timber and Deck Wash. Use a short bristled scrubbing brush. Rinse thoroughly.

Apply 2-3 coats of Resene Waterborne Woodsman (3 coats if using Resene Cool Colour).

Alternatively apply 2-3 coats of solventborne Resene Woodsman.

Restaining

Treat moss and mould with Resene Moss & Mould Killer.

Thoroughly scrub with Resene Timber and Deck Wash. Use a short bristled scrubbing brush. Rinse thoroughly.

Apply 1-2 coats of either Resene Waterborne Woodsman or solventborne Resene Woodsman if reapplying the same colour.

Apply 2-3 coats of either Resene Waterborne Woodsman or solventborne Resene Woodsman if surface has weathered badly or if changing colour to a darker stain.

Also consider using (with Resene Waterborne Woodsman)

2. Staining weathered or previously stained timber

- Mould and occasionally moss will be present on both unstained and previously stained but weathered timber and will need to be killed using Resene Moss & Mould Killer. The residue and other contaminants will need to be scrubbed and washed from the surface using Resene Timber and Deck Wash or Resene Paint Prep and Housewash.

- **Do not waterblast** – not only is it likely to be slower and less effective than scrubbing using Resene Timber and Deck Wash it can gouge and badly damage the timber, especially soft woods such as Cedar. Waterblasting can be useful for removing coatings including old clear finishes from hardwoods or for cleaning Kwila decking. The adjoining photo shows the damage a waterblaster has caused these Cedar boards. Compare this to similar boards cleaned using Resene Timber and Deck Wash on page 3.
- In most cases older, well weathered penetrating stains simply need treating for moss and mould followed by thorough scrubbing before applying further coats. If the surface is badly deteriorated it should be sanded with 100-150 grit garnet sandpaper to remove the worst detritus.
- If the stain is peeling and/or flaking it is likely to be a surface forming stain and unfortunately this will probably need to be removed before applying a penetrating stain like Resene Woodsman. If it is in sound condition a further coat of the same can be used – however we do not sell (or recommend) surface forming stains.
- It is not possible to lighten a stain (unless you remove the previous coating or paint) so subsequent coats need to be either the same colour or darker. **Always try a sample or do a test patch when changing the stain colour.**
- Dark stains are also recommended to help disguise discoloured areas common in aged, weathered timber – particularly Cedar. However there is the increased likelihood that the darker colour will cause some timber movement (warping, cupping etc). Use a Resene Cool Colour option if available – this will help but will not completely stop heat related stress on timber.
- Resene Waterborne Woodsman is very tolerant of poorly prepared and weathered timber, which is why we recommend it for old Cedar in particular.

Key accessories

Essential to complete the job

- Resene Moss & Mould Killer
- Resene Timber and Deck Wash
- PAL 63mm-88mm PAL Legend brush for Resene Waterborne Woodsman or PAL Premier Oval brush for solventborne Resene Woodsman.
- Resene Paint pot (for decanting into)
- Masking tape
- Painter's gloves
- Sandpaper – 120-150 grit garnet to arris sharp edges
- Stirrer

Add ons

To make job easier or quicker

- Turps for solventborne Resene Woodsman
- Hand cleaner – Resene Woodsman has tremendous adhesion and can be difficult to clean off skin (much more so than paint).
- Short bristle scrubbing brush
- A 180mm No.1 or No.2 Roller for Waterborne Woodsman for rough sawn fence palings or No.1 Nook and Cranny roller.
- Drop sheet

Hardwood - Kwila decking

Weathered and greyed

- Treat moss and mould using Resene Moss & Mould Killer.
- Wash and scrub using Resene Timber and Deck Wash.

New

- If practical allow to weather for 4-5 weeks.
- Wash using Resene Timber and Deck Wash, rinse thoroughly and allow to dry - see notes.

- For a natural, oiled finish use Resene Furniture and Decking Oil.
- To enhance and retain the natural colour of Kwila and other hardwoods use Resene Kwila Timber Stain. Allow for a second application after 3-4 months.
- To change colour use 1-2 coats of solventborne Resene Woodsman.

Pine and Macrocarpa decking

Weathered and greyed

- Treat moss and mould using Resene Moss & Mould Killer.
- Wash and scrub using Resene Timber and Deck Wash.

New

- Wash using Resene Timber and Deck Wash to open the timber fibres.

- For a natural oiled finish, recommend Resene Furniture and Decking Oil.
- To colour and protect the timber apply 2 coats of solventborne Resene Woodsman.

3. Timber decking

- Kwila contains a water soluble tannin that rapidly leaches out when wet (rain or if hosed) – the tannin will stain concrete and tiles, which is why furniture manufacturers recommend it is either left to weather on grass or washed off using Resene Timber and Deck Wash (usually takes 2 or 3 washes).
- Resene Kwila Timber Stain helps retain the original colour but the Kwila itself will quickly fade (as the tannin leaches out) and the stain will need a further application after 3-6 months.
- Ideally allow Kwila to weather for 4-6 weeks. Resene Kwila Timber Stain and solventborne Resene Woodsman will be absorbed more readily and last longer.
- While many customers prefer the grey aged look of hardwood timbers – such as Kwila, this doesn't always suit a home's colour scheme. Additionally hardwood timbers do not last forever and after 12-15 years, they will eventually rot where they sit on the deck joists. Staining with Resene Kwila Timber Stain on the underside before fixing the decking timber will help resist rot.
- Sand using 100-120 grit garnet sandpaper to remove any identification markings, oil residues and discoloured areas.
- Brushing is necessary every couple of years to get the stain into the edges and end grain but it is hard on the applicator's back. Rolling and using the deck pad work well, and is much quicker, and easier on the body.
- Pine decks often have the decktread facing upwards, this will wear more quickly and can be prone to splintering.
- Painting with Resene Lumbersider (ideally after applying Resene TimberLock) is also a popular option and customers should be advised of this.
- Resene Kwila Timber Stain was developed to enhance Kwila and other hardwoods and is not suitable for Pine. Use solventborne Resene Woodsman in either **Resene Cedar**, **Resene Cherrywood** or **Resene Dark Oak** if you want your Pine deck to resemble Kwila. **Try testpots and use on off-cuts first.**
- Resene Furniture and Decking Oil is a non film forming transparent oil finish that gives mould and U.V. protection to the timber. It does not offer the same level of protection as a pigmented semi-transparent stain such as Resene Woodsman and will need more frequent maintenance as a result (annual application).
- Resene Lumbersider and Resene Non-Skid Deck and Path, while not stains are also good options for Pine decks.
- **Resene Waterborne Woodsman is not suitable for Pine decks.**

Key accessories

Essential to complete the job

- Resene Moss & Mould Killer (for old and weathered decking)
- Resene Timber and Deck Wash
- 63mm-88mm PAL Premier Oval or Supra brush
- Deck Application Pad and handle and roller tray (if needed)
- Painter's gloves
- Sandpaper – 120-150 grit garnet to remove markings etc in timber
- Stirrer
- Turps for clean up

Add ons

To make job easier or quicker

- Resene Paint pot (for decanting into)
- PAL No.5 (mohair) roller sleeve, tray and handle (an alternative to brushing and/or Deck Pad)
- Hand cleaner

Pine/Macrocarpa (softwoods)

Weathered

- Treat moss and mould using Resene Moss & Mould Killer.
- Scrub using Resene Timber and Deck Wash. Rinse thoroughly.

New

- Saturate with fresh water and allow to weather for 2-3 days - refer notes.

- Apply 2-3 coats of solventborne Resene Woodsman.
- Alternatively apply 1-2 applications of Resene Timber and Furniture Gel.

Kwila/Teak (hardwoods)

Weathered and greyed

- Treat moss and mould using Resene Moss & Mould Killer.
- Scrub using Resene Timber and Deck Wash. Rinse thoroughly.

New

- If practical, allow to weather for 4-5 weeks. Wash using Resene Timber and Deck Wash to open the timber fibres.

- Recommend 1-2 applications of Resene Timber and Furniture Gel.
- Alternatively recommend 1-2 coats either Resene Kwila Timber Stain or Resene Furniture and Decking Oil.

4. Outdoor furniture

- Kwila contains a water soluble tannin which rapidly leaches out when wet (rain or if hosed) - this tannin will stain concrete and tiles, which is why furniture manufacturers recommend it is either left to weather on grass or washed off using Resene Timber and Deck Wash or detergent (it usually takes 2 or 3 washes followed by thorough rinsing with fresh water).
- Resene Kwila Timber Stain helps retain the original colour however Kwila will quickly fade (as the tannin leaches out it loses the rich reddish brown colour) and the stain will need to reapplied after 3-6 months.
- Ideally allow hardwood (Kwila or Teak) furniture to weather for 4-6 weeks. Resene Kwila Timber Stain and other stains will be absorbed more readily and last longer.
- However Pine and Macrocarpa furniture should be washed first using Resene Timber and Deck Wash, rinsed thoroughly and stained before it weathers – ideally within 7 days.
- We recommend Resene Timber and Furniture Gel in Resene Sheer Black or Resene Jarrah Tree or solventborne Resene Woodsman for Pine and other light timbers (Macrocarpa etc) rather than Resene Kwila Timber Stain or alternatively Resene Decking and Furniture Oil. These are designed to enhance the grain of darker timbers, such as Kwila.
- Resene Furniture and Decking Oil is a non film forming transparent oil finish that gives mould and U.V. protection to the timber. It does not offer the same level of protection as a pigmented semi-transparent stain such as Resene Woodsman and will need more frequent maintenance as a result.
- Resene Timber and Furniture Gel needs to be applied directly to the timber and is not designed to be applied over a surface forming stain.
- Resene Deep Clean is the ideal cleaner for canvas seating as it acts as both detergent and mould killer. Recommend the canvas is removed before staining and cleaning especially if Resene Moss & Mould Killer is used on the timber as it will bleach the fabric (see adjoining photos).

Key accessories	Add ons
Essential to complete the job • Resene Moss & Mould Killer (for weathered furniture) • Resene Timber and Deck Wash (if needed – as above) • A 35mm-63mm PAL Premier Oval or Supra brush • Clean lint free cloth for Resene Timber and Furniture Gel • Painter's gloves • Stirrer (for Resene Kwila Timber Stain or Resene Woodsman)	**To make job easier or quicker** • 3M scourer or Scotchbrite pad • Drop sheet • Short bristle scrubbing brush • Resene Deep Clean – to clean and restore canvas (seats etc)

Exterior doors and joinery (including garage doors)

New

Wash using Resene Timber and Deck Wash.

Lightly sand using 150 grit garnet to remove any loose timber fibres and to arris any sharp edges.

Hardwood

Apply 2-3 coats of Resene Kwila Timber Stain or solventborne Resene Woodsman.

Cedar - refer notes

Apply 2-3 coats of Resene Waterborne Woodsman between coats.

Also consider using (with Resene Waterborne Woodsman)

Previously coated - refer notes

Treat moss and mould using Resene Moss & Mould Killer.

Wash and scrub using Resene Timber and Deck Wash.

Lightly sand using 150 grit garnet to remove loose timber fibres and stain residue. Refer to notes if film forming stain or varnish used.

Deteriorated timber and/or failed coatings

Sand to remove previous coating and return to bare timber (consider stripping using Sea 2 Sky - refer appendix.

Refer to exterior varnished

Sound condition

Apply 2-3 coats of Resene Waterborne Woodsman.

5. Exterior stains for doors and joinery (including garage doors)

- For new or uncoated Cedar and other absorbent timbers use an application of Resene TimberLock before applying Resene Woodsman. While this is not our standard recommendation the system performs well on Cedar joinery helping to prevent end grain swelling etc.
- Harder less absorbent timbers, such as Rimu and Eucalyptus are too dense and the use of Resene TimberLock prevents the Resene Woodsman from penetrating into the timber.
- We recommend a third coat of Resene Woodsman is applied for the additional protection it provides particularly against moisture ingress.
- Mould and occasionally moss will be present and will need to be killed using Resene Moss & Mould Killer and the residue and other contaminants scrubbed and washed from the surface using Resene Timber and Deck Wash.
- Older well weathered penetrating stains simply need a good scrub after treating for moss and mould before applying further coats.
- If the stain is peeling and/or flaking it is likely to be a surface forming stain and unfortunately this will probably need to be removed before applying a penetrating stain like Resene Woodsman (waterborne or solventborne).
- It is not possible to lighten a stain (unless you remove the previous coating) so subsequent coats need to be either the same colour or darker.
- Dark stains will help disguise discoloured areas common in aged weathered timber – particularly Cedar. However, there is the likelihood that the darker colour will cause some timber movement (warping, cupping etc) so advise the customer of this. Use Resene Cool Colour options if available – it will help, but not completely stop, heat related stress on timber.
- Stains are not as effective as enamels at preventing moisture getting into the mitres or corners of the joinery – water here will be taken up by the end grain and cause problems. (Swelling, splitting etc). (photo of as mitre)
- Putty can be an issue as it will look different when stained. An option for brown stains is to paint the putty with Resene Lumbersider – BS 3044 Resene Cinnamon and then stain with Resene Waterborne Woodsman). Alternatively it can be left natural as a feature.
- Altex Timbercote marine varnish is an option for joinery and Cedar garage doors that are sheltered from the U.V. light.

Key accessories

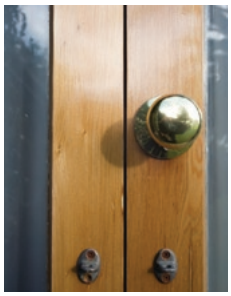
Essential to complete the job

- Resene Moss & Mould Killer
- Resene Timber and Deck Wash
- PAL 63mm-88mm PAL Legend brush for Resene Waterborne Woodsman or PAL Premier Oval brush for Resene TimberLock and/or solventborne Resene Woodsman
- Resene Paint pot (for decanting into)
- Masking tape
- Painter's gloves
- Sandpaper – 120-150 grit garnet to arris sharp edges
- Stirrer
- Putty

Add ons

To make job easier or quicker

- Drop sheet
- Dusting brush
- Short bristle scrubbing brush



Exterior timber varnishes

New or timber that has been stripped

Wash with Resene Timber and Deck Wash, rinse and allow to dry.

Sand using 220 grit zinc stearate to remove any surface imperfections and to arris any sharp edges. Wipe the surface with a tack rag to remove all sanding residue from the timber surface.

Treat using Resene TimberLock preservative.
Allow 24 hours to dry.

Recommend

Stained

Apply Resene Waterborne Colorwood and allow 24 hours to dry.

Natural

Apply 5 coats of Altex Timbercote Marine Varnish, BEFORE applying the final coat. Lightly sand to remove nibs and imperfections using 220 grit zinc stearate sandpaper. Wipe using a tack rag.

Old, already varnished

Treat any moss and mould with Resene Moss & Mould Killer.

Wash thoroughly to remove any contaminants.

Sand throughly using 220 grit zinc stearate to degloss the old varnish, if there are flaked or U.V. damaged areas. Strong consideration should be given to completely stripping back to bare timber - refer notes.

Apply 2 coats of Altex Timbercote Marine Varnish.

6. Varnished (front) doors and joinery

- Many of our customers will want to 'varnish' their front doors and their exterior joinery, such as French doors – however, exterior varnishes or clear finishes have a very chequered history in Australia and New Zealand.
- The problem is not the varnish or polyurethane, it is that they are not effective at preventing U.V. light from passing through the clear surface and attacking the timber beneath. Remember U.V. light attacks timber resulting in the top layer of the timber becoming weakened and greyed. Also any break or split in the film will allow moisture to get in and mould to grow
- We recommend a first coat of Resene TimberLock is applied for a 'natural look' before varnishing but our preference is for Resene Waterborne Colorwood to be applied as well – The darker the colour the better, as pigments (or the colour) in Resene Waterborne Colorwood resist U.V. light.
  While both Resene Waterborne Colorwood and Resene TimberLock penetrate the timber they can be used together without affecting the other.
- We recommend Altex Timbercote Marine Gloss and you will need to apply at least 5 coats for a new door or if it has been stripped back to bare timber.
- If the old varnish surface has deteriorated it should be stripped back to bare wood and treated as if it were new.
- **Most boaties will apply 5 to 7 coats of Marine or Spa Varnish to the brightwork (exposed timber) of their boats and sand and apply a maintenance coat annually.**
- The door will require recoating every couple of summers depending on how exposed it is.
- Remember to ensure the edges of the door are well sealed.
- Any stopping should be done after the first coat of varnish, using plastic wood or coloured putty matched to the timber.
- This system is not suitable for Totara or Matai.
- Standard clear finishes can be used on wooden eaves, as they are not exposed to direct U.V. light. (Although eventually they will deteriorate as reflected U.V. light from windows etc takes its toll). Apply a coat of Resene TimberLock (for hardwoods) or Resene Waterborne Colorwood first, followed by at least 3 coats of Resene Qristal Poly-Satin or Poly-Gloss or Resene Aquaclear. For a higher performing system Altex Timbercote or Resene Uracryl Clear with U.V. blockers could be recommended.

Key accessories

Essential to complete the job

- Resene Moss & Mould Killer
- Resene Timber and Deck Wash or Resene Paint Prep and Housewash
- PAL 50mm or 63mm Premier Oval brush
- Resene Paint pot (for decanting into)
- Masking tape
- Painter's gloves
- Sandpaper – 120-220 grit zinc stearate to arris edges and prep timber and/or coatings
- Tack cloth, to remove sanding residue (important if using zinc stearate sandpaper)
- Putty and/or coloured wood filler and putty knife
- Stirrer
- Turps

Add ons

To make job easier or quicker

- Drop sheet
- Short bristle scrubbing brush
- Dusting brush
- Paint stripper and scraper if needed

Interior stains and clear finishes

Resene Qristal - Poly-Flat, Poly-Satin and Poly-Gloss

- The Resene Qristal range of interior clear finishes are traditional single pack polyurethanes and as the names indicate are available in 3 gloss levels - flat, satin (which is roughly the same gloss level as Resene Lumbersider) and high gloss.
- Ideal as a clear finish (polyurethane or varnish) over most timbers and veneers.
- Suitable for joinery and most furniture but not considered tough and flexible enough for flooring.
- Can be applied direct to the timber surface or over a stain or oil.
- Resene Qristal Poly-Satin is the most popular finish.
- It will cast a yellowish tone to timbers so is less suitable for MDF and Pine, where Resene Aquaclear should be preferred.

Resene Aquaclear - Satin and Gloss

- Resene Aquaclear is a waterborne polyurethane and is as durable and tough as traditional polyurethanes (varnishes) such as the Resene Qristal Polyurethane range.
- It will not yellow (like Resene Qristal Clear) and is water white or clear, making it ideal for MDF and pale timbers such as Pine and Macrocarpa.
- Is suitable for most interior timber surfaces and can be used as a floor finish where the customer is prepared to accept a reduction in durability in return for the ease of a waterborne system with low VOCs (Volatile Organic Content) and odour.
- Has Environmental Choice approval. (It was the first clear finish to achieve EC).

Resene Polythane Moisture Cured Polyurethane (for flooring)

- Resene Polythane is an extremely hard clear finish developed for flooring and timber where a harder surface is needed - bar tops etc.
- Optimised for flooring with excellent mar and scratch resistance as well as flexibility to cope with impact (from stilettos etc) without star cracking, which is a common feature of conventional 2 pack clear flooring systems.
- Fast drying and can be walked on (carefully and in socks) after 24 hours, although full cure takes another 7 to 10 days. Cure rate increases with higher temperatures and humidity.

Resene Waterborne Colorwood - Interior Woodstain

- Resene Waterborne Colorwood is a waterborne stain that is applied directly to timber and particle board.
- Available in natural timber shades as well as bright colours. Colours can be diluted (reduced) using Resene Waterborne Colorwood Reducing Base.
- Resene Waterborne Colorwood 'Rock Salt' is ideal for blonding or 'white washing' timber.
- While it is usually over coated it can be used on uncoated or interior rough sawn beams etc (an alternative is Resene Waterborne Woodsman).
- Often called a wiping stain or wood dye.
- Can be used outside under U.V. stabilised clears including Altex Timbercote or Resene Uracryl.

Resene Danska Teak Oil

- Resene Danska Teak Oil is a traditional oil designed to enhance the grain of hardwoods - including Teak, Rimu and beech.
- Highly refined oil and more effective at enhancing timber than linseed and pale boiled linseed oils.
- Typically applied by brush or a clean cloth, wiping any excess off.
- Needs to be over coated with either Resene Qristal Clear or Resene Aquaclear (after 24 hours drying) or Resene Polythane (after 48 hours drying).
- Cannot be used on Totara or Matai as they retard the drying.

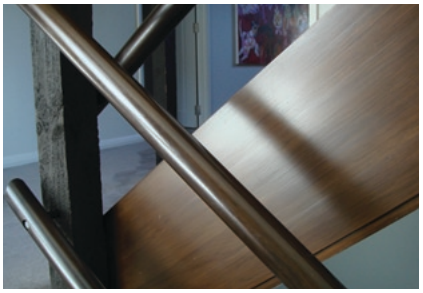
Key accessories - Interior

The key decision to make when applying a stain or clear is what brush to select. While the same issues apply to selecting a brush for exterior use there are additional considerations to take into account:

Firstly, when applying a clear finish inside, the expectations of what the finished result will look like are much higher. So the best brush to achieve the best finish is recommended. For waterborne stains and clears – Resene Waterborne Colorwood and Resene Aquaclear we recommend the PAL Legend brush and for solventborne we recommend the PAL Premier Oval.

As a rule smaller brushes (including angled cutting in brushes) such as the 35mm, 50mm and 63mm sizes should be recommended as the areas and objects (bookshelves, cabinets etc) that are stained and clear finished inside are smaller and often more intricate.

When using Resene Polythane it is recommended that the PAL Strong Solvents roller sleeve is used for each coat. We sell and recommend Resene Polythane Brush Cleaner but it is very difficult to effectively clean rollers and any remaining residue will contaminate and ruin the next coat of Resene Polythane. It is relatively simple to clean brushes after using Resene Polythane however.



Interior clear timber finishes

New

Sand using 220 grit zinc stearate to remove any surface imperfections and wipe with a tack cloth to remove all sanding residues.

Stained or oiled finish

To enhance the colour and grain use Resene Waterborne Colorwood or Resene Danska Teak Oil - refer notes.

Natural finish

Old, clear finished

Wash using mild detergent or Resene Interior Paintwork Cleaner to remove any surface contaminants, residues etc.

Sand using 220 grit zinc stearate to remove any flaked or peeled areas and to provide a key for subsequent coats. Wipe with a tack cloth to remove sanding residues. Note: if completely stripped treat as per new.

Apply a first coat of your selected system - Resene Qristal Poly-Flat or Resene Aquaclear gloss - as a seal coat BEFORE filling - refer notes.

Fill any timber splits and nail or screw holes. See notes.

Waterborne

Recommend 2-3 coats of Resene Aquaclear in satin, semi-gloss and gloss.

Solventborne

Apply 2-3 coats of Resene Qristal Polyurethane in flat, satin or gloss.

Heavy duty for table tops, vanity and bath surrounds

Recommend Resene Polythane or the Resene Uracryl system.

7. Interior timber clear finishes (polyurethaning/varnishing)

- Resene Qristal Polyurethanes impart a yellow tone to timber so are suited to timbers with a yellow, orange or red undertone – such as Cedar, Rimu, Eucalyptus and Jarrah (see below) while Resene Aquaclear is water white and doesn't accentuate the natural undertone of timber to the same degree, so is more suited to white (or pale) timbers such as Pine, Macrocarpa and Oak as well as composite boards – MDF and particle and strand board.
- Resene Waterborne Colorwood is best applied in thin films by brush, before wiping with a clean lint free cloth – working the stain into the timber (or particle board), if the colour is too light build the colour up with a second application.
- Resene Danska Teak Oil will accentuate the grain in most hardwoods and is best used under Resene Qristal Polyurethane.
- If a waterborne and environmentally preferable system is desired (compared to Resene Danska Teak Oil and Resene Qristal Clear), we recommend Resene Waterborne Colorwood in either half or quarter strength Resene Red Beech or Resene Oregon before applying Resene Aquaclear.
- Fill nail and screw holes with either a premixed coloured filler such as Coloured Wood Filler or putty mixed with Resene MPS Stainers.
- The resins in Totara and Matai affect the drying of traditional polyurethanes including Resene Qristal Clear (but not Resene Polythane) and need to be sealed with a coat of Resene Aquaclear if using Resene Qristal Clear, or simply continue using Resene Aquaclear.
- Jarrah has a magnificent reddish brown undertone, however over time it loses its redness but retains the less striking brown undertone. To overcome this Jarrah is often stained with a Jarrah stain (it is sometimes referred to as a dye) or Resene Waterborne Colorwood in full or half strength Resene Meranti.
- Professional painters and furniture restorers will sometimes add a small amount of tint or stainers (usually Resene MPS Stainers) to polyurethanes such as Resene Aquaclear and Resene Qristal Clear. While this will not stain timber like Resene Waterborne Colorwood it helps eliminate any patchiness when used over a stain and can rejuvenate faded or bleached timbers – including aged Rimu etc. We don't have formulas as such, but as a rule no more than a couple of mls (1 to 1.5 units per litre) is added. Also a small amount of Resene Waterborne Colorwood can be added to Resene Aquaclear to deepen and even out any patchiness in the stain.
- If you want a wax finish or a suitable base for a wax (to be applied over), you can use 1 or 2 coats of Resene Qristal Poly-Flat as a base or alternatively if you want it to look waxed but without the hassle of waxing then simply continue with an extra coat or two of Resene Qristal Polyflat as it has a very similar look to a wax finish.

  Note: A wax finish is very difficult to clean off or strip if you wish to apply a polyurethane or paint system at a later date as neither system will stick to any wax residue. This is also the reason we recommend timber floors are sanded back to bare timber when recoating as wax based cleaning products will contaminate the surface.

Key accessories

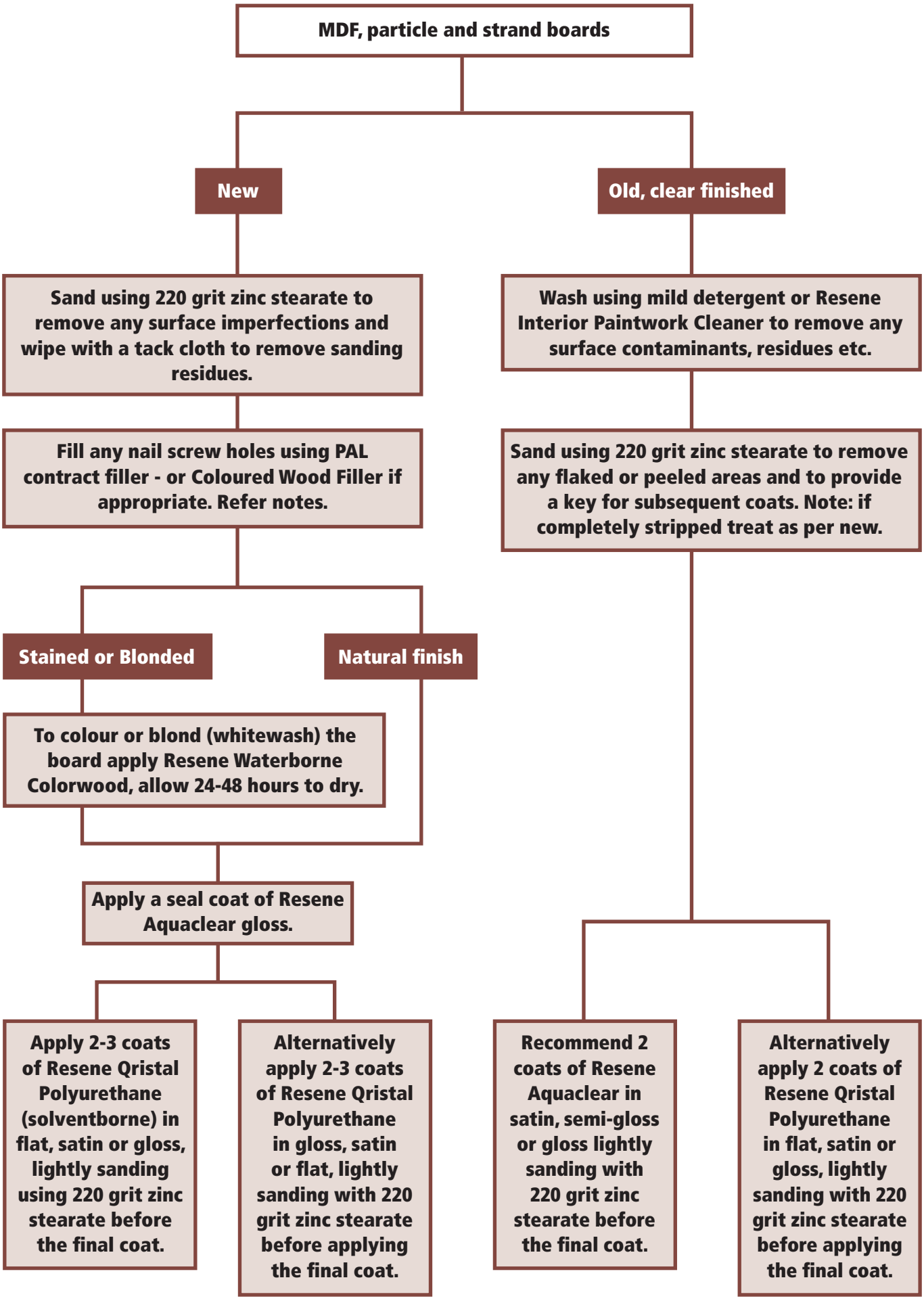
Essential to complete the job

- 35mm-63mm PAL Legend brush for waterbased or PAL Premier Oval for solventborne – the brush size will depend on the project
- Putty and/or Coloured Wood Filler
- Resene Paint pot or pots (for decanting into)
- Masking tape
- Painters or latex gloves if using Resene Waterborne Colorwood
- Sandpaper
- 120-150 grit garnet for initial sanding
- 220-400 grit zinc stearate for fine finishing and sanding between coats
- Tack cloth (to remove sanding residue (important if using zinc stearate sandpaper)
- Stirrer if using Resene Waterborne Colorwood
- Clean lint free cloth(s) for wiping Resene Waterborne Colorwood (old Tee Shirts are ideal)
- Turps if using Resene Qristal Polyurethane

Add ons

To make job easier or quicker

- Resene Hot Weather Additive for Resene Waterborne Colorwood and Resene Aquaclear
- Drop sheet
- Dusting brush


MDF, particle and strand boards
New
Old, clear finished
Sand using 220 grit zinc stearate to remove any surface imperfections and wipe with a tack cloth to remove sanding residues.
Wash using mild detergent or Resene Interior Paintwork Cleaner to remove any surface contaminants, residues etc.
Fill any nail screw holes using PAL contract filler - or Coloured Wood Filler if appropriate. Refer notes.
Sand using 220 grit zinc stearate to remove any flaked or peeled areas and to provide a key for subsequent coats. Note: if completely stripped treat as per new.
Stained or Blonded
Natural finish
To colour or blond (whitewash) the board apply Resene Waterborne Colorwood, allow 24-48 hours to dry.
Apply a seal coat of Resene Aquaclear gloss.
Apply 2-3 coats of Resene Qristal Polyurethane (solventborne) in flat, satin or gloss, lightly sanding using 220 grit zinc stearate before the final coat.
Alternatively apply 2-3 coats of Resene Qristal Polyurethane in gloss, satin or flat, lightly sanding with 220 grit zinc stearate before applying the final coat.
Recommend 2 coats of Resene Aquaclear in satin, semi-gloss or gloss lightly sanding with 220 grit zinc stearate before the final coat.
Alternatively apply 2 coats of Resene Qristal Polyurethane in flat, satin or gloss, lightly sanding with 220 grit zinc stearate before applying the final coat.

8. Interior clear finishes – MDF, particle and strand boards

- There are a number of different types of composite board available – however most including MDF (medium density fibreboard) are designed for painting over rather than clear finishing. Strand or particle boards have larger wood chips in different shades and even wood types and look good clear finished or stained with Resene Waterborne Colorwood. (MDF uses fine wood pulp – and looks more like porridge).
- The yellowish tone Resene Qristal Clear (and Resene Polythane) imparts doesn't suit most composite boards so recommend Resene Aquaclear. If the customer insists on using Resene Qristal Clear then they will need to seal the board with a coat of Resene Aquaclear gloss first. If using Resene Polythane (for its additional toughness and moisture resistance) seal with Resene Particle Board Sealer.

- Resene Waterborne Colorwood is best brush applied in thin films, before wiping with a clean lint free cloth – working the stain into the surface. If the colour is too light build the colour up with a second application.
- Fill nail and screw holes with either a premixed coloured filler such as Coloured Wood Filler or putty mixed with Resene MPS Stainers. Ideally after sealing or the first coat has been applied.
- Particle board is often used in schools for its impact resistance. However its use can be an issue if a fire rating is required (school corridors for example).
- Resene do not have a clear finish that will provide the required ratings for these areas, with many specifiers wrongly assuming that because Resene Aquaclear is waterborne it will comply. Resene Aquaclear is a water soluble polyurethane, not very different to Resene Qristal Clear in terms of performance and how it would behave in a fire.
- **If a fire rating is required please refer to our technical helpline.**

Key accessories

Essential to complete the job

- 35mm-63mm Legend brush for waterbased or Premier Oval for solventborne – the brush size will depend on the project
- Putty or Coloured filler
- Resene Paint pot (for decanting into)
- Masking tape
- Painter's gloves
- 220-400 grit zinc stearate sandpaper for fine finishing and sanding between coats
- Tack cloth (to remove sanding residue)
- Stirrer if using Resene Waterborne Colorwood
- Clean lint free cloth(s) for wiping Resene Waterborne Colorwood (old t-shirts are ideal)
- Turps if using Resene Qristal Polyurethane

Add ons

To make job easier or quicker

- Resene Hot Weather Additive for Resene Waterborne Colorwood
- Drop sheet
- Dusting brush

Appendix

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Why is there an issue with surface forming stains in Australia and New Zealand?

Architects memo no. 77: September 2004: Timberrr!!

Wood is certainly one of our most beautiful building materials and one which inspires quite strong emotions. People talk of it as a 'living' material that needs care and nourishment and it evokes all sorts of warm fuzzy feelings.

To the cynical chemist however, wood is a very imperfect material, with its composition varying dramatically, not only species to species but within the same tree and even the same stick! It is a mixture of cellulose, hemicellulose, lignin, wood sugars and variously gums, anti-oxidants, natural dyes and Uncle Tom Cobbly and all - of which only cellulose has any real exterior durability. Many of the constituents will dissolve in water, or at least swell in the presence of water and also provide a great source of nutrients for moulds and fungi.

Yeah, yeah, I know - it is still a lovely material! That's why such a lot of effort is put into trying to preserve its warmth and good looks.

In the interior environment - free from the twin aggressors, water and U.V. radiation - this is a reasonably facile task and a wide range of stains, sealers, oils, waxes and varnishes are available to provide colour, finish and cleanability.

Outside is quite a different story. Any piece of timber exposed to the elements will quickly lose its natural colouring and its soluble sugars. The hemicellulose and lignin go next leaving exposed cellulose fibres on the surface. The rate of degradation is inversely proportional to the density of the timber with light woods such as Cedar eroding the fastest.

If this occurs in an arid climate the cellulose fibres take on a pleasant silvery grey appearance with the exposed fibres protecting the rest of the timber beneath. In humid, temperate environments, such as are found in New Zealand and Australia, mould and fungi thrive on such a surface and regular applications of fungicidal wash are needed to achieve a pleasant appearance.

Trying to maintain timber in a pristine condition outside is a major challenge and one which is rarely met.

It is tempting to use varnishes to achieve this but the clarity that enhances the grain so beautifully also lets through a portion of the damaging U.V. light. This radiation damages the sensitive wood surface beneath the film until the first signs of degradation, a slight colour change on the timber surface, herald the beginning of the end.

Even though the paint technologist has some very powerful U.V. absorbers at their disposal, including nano-pigmentation, Nature, with time on her side, always wins.

If it could be arranged that at the same moment that the timber surface started degrading the varnish could be made to fall away completely, all would be well. The reality is patchy peeling occurs, which makes preparing a new uniform surface a nightmare.

Only the boaties, who are prepared to sand down and re-coat every season, can successfully use such systems.

If such film-forming materials are not a practical answer, how about non film-forming penetrative materials?

Penetrative materials can and do perform a very valuable role with an ability to carry into the timber useful stabilising chemicals such as fungicides, U.V. absorbers and water-repellents. Because they do not form significant surface films, there is no danger of the dreaded sunburnt peeling that makes film former degradation such a disaster.

The major drawback with such systems is that, because they penetrate into the timber there is little to no protection on the surface. With well formulated products in this class you can get 'Defence in Depth' but need to titivate the surface regularly.

It is something of a misconception that vegetable oils, such as linseed, 'nourish' the timber. Being an excellent food source for fungi and mould, the only things that they nourish are these surface defacing 'greebies'.

Between the fully film forming varnishes and the fully penetrating preservatives there is a large fertile area for coating chemists to ply their craft. The result will always be a compromise between surface protection and ease of maintenance; U.V. protection and clarity of grain; fungal protection and environmental impact.

In such an area of compromise one will always find a 'snake oil' merchant with a better, revolutionary solution.

Blonding (Whitewashing)

An effective way of lightening or adding character to a dark timber such as Cedar, to lighten timber, or help mask the yellowing of timber like Pine, is to apply a wash of 'white' to the timber surface before clear finishing.

Traditionally these washes or solutions are made using a dilution of standard paints (often heavily pigmented undercoat would be diluted with turps to a water like consistency).

Today we simply recommend Resene Waterborne Colorwood '**Rock Salt**' as an ideal blonding base although it may need diluting with either water and/or Resene Hot Weather Additive to achieve the perfect consistency.

Brushing and wiping off the excess will leave the white pigment on the surface and create a blonded or white washed look.

For an antique look use a low sheen or a flat clear polythene finish rather than a high gloss.

Whitewashing or blonding are used on timber floors and furniture.

Strand board and cork tiles can look striking when blonded.

Because Resene Aquaclear is non yellowing it should be preferred to Resene Qristal Clear as a clear finish over blonded (whitewashed) timber.

While Resene Aquaclear is suitable for flooring, it isn't as hardwearing as Resene Polythane, however polurethanes like Resene Qristal Clear will yellow more. So if a harder wearing system is required recommend Resene Uracryl Clear.

Resene doesn't offer an exterior whitewash (at least for exposed surfaces). We do however have our limed colours on the Exterior wood stains chart (tinted into Resene Waterborne Woodsman) that offer a similar look.

Colour

Colour, combined with innovation and quality and going forward sustainability are the essential pillars of the Resene brand and are our promise to our customers. So it is logical that we extended this approach to our woodcare offer.

The colour choice for both interior and exterior stains is impressive and the introduction of waterborne technologies combined with our high strength and very durable (automotive grade) tinters means we have been able to offer a wider range of colours than others.

As well as the traditional browns and forest greens we have introduced limed shades, which have a whitewashed look to them and 'brights' to our range of exterior timber stains.

The 'brights' in particularly are impressive and add an extra dimension to our exterior timber stain offer. The brights are essentially matched to dark, strong 'solid' colours from the Resene Multi-finish range such as Resene Midnight Express and were introduced as a result of designer requests for something unique.

Typically they are used as a counter to muted tones such as Resene Stonewall or Resene Napa on plaster or to add colour to Plywood. Many kindergartens and schools are better and more colourful environments for our children as a result.

We have used the same concepts for Resene Waterborne Colorwood which also has colours that are suitable for blonding or whitewashing.

Most Resene Waterborne Woodsman colours have been matched in Resene Waterborne Colorwood and vice versa.

End grain sealing

The end grain of timber will easily absorb moisture and water (at a rate many times more than that of a flat edge).

Remember a tree takes up water and nutrients from the ground and using a process called capillary action, takes it through its trunk and branches to its leaves and fruit. The fibres that make up a tree's trunk and branches are hollowed out like straws.

Sealing the end grain prevents this occurring and is important – particularly for cut sections as the timber can swell and distort. It also helps prevent rot.

Sealing simply means staining the ends when cutting weatherboards etc.

Factory (OEM) finishes

There are many different types of clear finishes used on furniture and precoated flooring – most are factory applied usually by spray (or by curtain coating a form of spray application for panels where they are passed under a shower or curtain of paint). They utilise different technologies including U.V. cured and powder coating as well as more traditional coating systems such as acid cats (like Resene's ArmourCat system) and nitro cellulose paints, which are very dangerous to manufacture.

Resene and our sister company Resene Automotive and Performance Coatings manufacture and sell a number of products and systems for these markets.

The useful thing to note is that most can be recoated should the need arise by thoroughly sanding the surface and applying either Resene Qristal Clear or Resene Aquaclear although it is always advisable to test an area first.

Fillers

Linseed oil putty is the traditional filler used to fill exterior and interior nail holes and split timber before staining or clear finishing.

It is easily mixed with small quantities of tinter or Resene MPS Stainers (basically tinter in a squeeze bottle) and will 'absorb' some of the stain when used exterior.

Additionally traditional linseed oil putty has been joined by synthetic coloured wood fillers – usually available in a choice of colours designed to replicate commonly available timbers.

At Resene we sell the Red Devil range of Coloured Wood Fillers.

Typically commercial painters, furniture makers and floor finishers will have a range of putty colours mixed together to match the different colours within the timber. Often the differences can be quite subtle and it is a measure of the painter or wood finishers skill as to how well holes and problems are filled to match the surrounding timber.

Even DIY users are best advised to purchase a couple of different colours when buying the Coloured Wood Filler and create their own intermixes.

Simply start with the lightest shade, take roughly the amount needed and add the darker filler bit by bit. Use a putty knife on a hard smooth surface to 'blend the two'. Add more if dealing with shade variances, set aside portions as you go and add more of the dark filler until you have enough shades to match the variations in the timber.

As mentioned earlier most professional painters would use Resene MPS Stainers and mix these with traditional putty. The only issue here is that a DIY customer is unlikely to need much and will essentially end up with a lot left over. This is why the premixed fillers represent better value and are recommended.

If a customer is using Resene Waterborne Colorwood they can mix some with Linseed oil putty to change the colour.

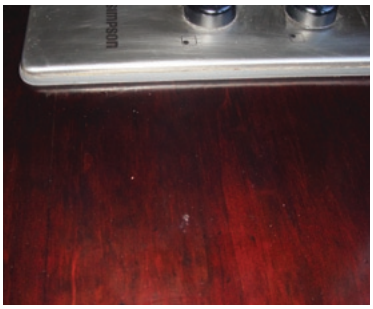
Interior

Resene Uracryl is often used as an interior clear finish on surfaces ranging from concrete bench tops and diamond ground concrete floors to timber floors.

Its advantage over Resene Polythane is that it is 'water white' and non-yellowing and available in choice of gloss levels (flat to high gloss).

It is not as mar resistant as Resene Polythane but has the same safety issues. It doesn't need U.V. blockers added if used inside.

Again it is best to check with our technical department if you wish to specify or recommend its use.



One consideration if using the flat, satin or semi-gloss versions of Resene Uracryl (Uracryl 405, 404, 402), you will first need to seal the surface with the Resene Uracryl 403 – high gloss.

If the substrate is absorbent or has porous areas (sanding disc cuts in timber for example) then the resin of the lower gloss Resene Uracryls is absorbed too quickly into the substrate leaving the flatting agents (which are used to reduce the gloss level) on the surface. These will appear milky and will need sanding to remove.

Lapmarks

Lapmarks occur when fresh stain is applied over a section that has already dried.

They often occur when painters try and stain too many weatherboards at a time and are unable to maintain the stain's wet edge. The lapmark is essentially that part of a weatherboard or piece of timber that has received more coats than the surrounding areas.

It is more noticeable when a light stain in used or if only one coat is applied as is often the case when using an interior stain such as Resene Waterborne Colorwood.

It is less of an issue with dark stains or if three coats are used as the extra coverage (or obliteration) will help disguise the issue.

However even then as the stain weathers the lapmarks can become more obvious.

To overcome lapmarks stain one or two boards at a time moving along each weatherboard to the end of the board or to a natural break (such as a downpipe) before stopping. Always stain (or paint) in the same direction, returning to the start point each time. Work from the top down.

Preparing interior timber

When preparing timber surfaces before clear finishing, be they a waterborne or solventborne polyurethane, or 2 pack products like Resene Uracryl, it is important to properly sand the surface, both before application and between coats.

Bare timber surfaces are best sanded with garnet sandpaper. Garnet is a very hard natural mineral and is particularly effective for smooth timber because the abrasive grains are rounded rather than angular and therefore do not 'rupture' or 'cut' the wood fibres, which have a tendency to 'stand up' as end grain when sealers are first applied.

Garnett papers are mostly red, yellow or brown coloured and the rolls are clearly marked.

Grades between 120 (rougher) to 240 grit are generally used for timber.

Always sand along the natural grain of timbers.

Sanding across the grain leaves scratches that are extremely difficult to remove.

After sanding, dust must be removed - painter's 'duster' brushes, vacuums and tack rags are effective.

Tack rags are particularly useful to remove sanding dust between each coat.

Once a surface has been sealed the best sandpaper to use is zinc stearate or aluminium oxide, which are angular (rather than rounded like garnet) and ideal for cutting the coating to a flat smooth surface.

Fine grades from 220-420 grit are usual, the finer sandpapers are used for preparing the surface before applying the final coating.

Always sand along the timber's grain. Read the product instructions on the polyurethane as the sanding and recoat times vary from product to product.

Sanding before application and before applying the final coat of clear are the two critical stages needed to achieve a smooth lustrous finish.

Resene Cool Colours

Many of our dark wood stains, such as Resene Crowshead are available in a Resene Cool Colour option and are denoted on the Resene Exterior timber stains chart with the '**cc**' logo.

Any colour or stain that is formulated using black (**B**) tinter can be reformulated using the Resene Cool Colour black tinter – obviously it is sensible to focus on deep colours rather than light or pale shades.

The solar light spectrum includes about 46% infra-red heat radiation (along with visible and ultraviolet light). The Resene Cool Colour technology reflects infra-red heat rather than absorbing it as standard colours will.

Resene Cool Colours absorb less infra-red heat while the colour is essentially unchanged or the same as the standard colour (with the exception of jet or pure blacks due to the slight brown undertone of the cool black tinter).

The Resene Cool Colour black tinter has a different strength (to standard **B** or black tinter) so we need different tint formulas.

Resene Uracryl – 2 pack Acrylic Urethane

Resene Uracryl is an extremely versatile coating. Mostly it is sold as a high performance pigmented (coloured) coating for steel and concrete. As it is very U.V. resistant (much more so than an acrylic like Resene Lumbersider), it is tough and comparatively easy to use.

It is available in all the colours in the Resene Total Colour System and importantly for the woodcare market as a clear finish (Gloss, Semi-Gloss, Satin and Flat).

We frequently recommend Resene Uracryl Clear with special U.V. blockers added (this process has to be undertaken by a lab technician) as an alternative to marine varnishes for joinery (front doors etc) and under eaves. Its performance is enhanced by applying it over Resene TimberLock and/or Resene Waterborne Colorwood (as used on the outdoor furniture in the adjoining photo).

It is ideal if a semi-gloss or low sheen finish is requested. However please note that the U.V. blockers need to be added by a lab technician, usually based in one of our labs.

If it is requested or you believe that there is an opportunity to either specify or recommend its use you should first check with our technical department.

Resene Waterborne Colorwood

Resene Waterborne Colorwood was originally introduced in the early 1970s and was a solventborne dye with all colours premixed. In 2002 the formula was changed to a waterborne version and while some colours contain special semi-transparent tinters and remain premixed the majority are now tinted using the Resene Total Colour System tinters.

We have recently reduced the strength of many Resene Waterborne Colorwood colours to make it easier to use.

So how do you apply Resene Waterborne Colorwood?

This depends greatly on the surface that it's being applied to and the desired finish.

A semi-transparent finish especially when used on smooth surfaces like interior timber is best achieved by building the colour up with multiple coats. Incidentally this is also the best approach when using Resene Paint Effects Medium. Resene Waterborne Colorwood is usually brushed onto the surface before working the Resene Waterborne Colorwood into the timber (or particle board) using clean rags - before wiping the excess from the timber surface.

The longer the stain is left on the surface the darker the stain will become. However as it will still need to be worked into the timber with the clean cloth it can't be left too long before wiping or brushing the next section. If it dries before this happens it will appear patchy and/or have obvious lapmarks.

It is better to build the colour up with a second or even third application of Resene Waterborne Colorwood. On rough sawn beams etc Resene Waterborne Colorwood can be applied directly without the need to wipe the excess off.

Resene Waterborne Colorwood colours can be changed or lightened by mixing with the Resene Waterborne Colorwood tint base. Resene Hot Weather Additive and clean water can be added in warm conditions.

Also if staining porous surfaces including hardwood floors and particle board it is a good idea to dampen them as you go with a 'mist' or spray of clean water.

The photos above show a piece of particle board being stained, including applying a fine mist of water to reduce the substrates absorbency. The photos are self explanatory. Typically a clear finish such as Resene Aquaclear would be applied once the stain was fully dry.

Safety

Resene Polythane and Resene Uracryl both contain strong aromatic solvents and isocyanates. Paints can contain a number of different chemical forms of the reactive isocyanate and the potential hazards of exposure do vary with the chemical form of the isocyanate in the paint. However all isocyanate containing paints are potentially hazardous materials and recognition of this must be taken into account during mixing, application, and disposal of isocyanate containing products.

Exposure to isocyanates will produce a variety of symptoms which may include watering of the eyes, dryness of the throat, tightness of the chest (and sometimes breathing difficulty) and headaches. After prolonged exposure some individuals may become sensitised and develop an asthmatic attack. Once sensitised any exposure to isocyanates will result in an asthma attack. Occasionally skin contact may result in dermatitis.

Isocyanates are present in Resene Polythane and reaction of atmospheric moisture with the isocyanate cures the applied paint film. An isocyanate is also in the hardener component of Resene Uracryl finishes and this reacts with the base upon mixing to initiate the cure mechanism. The isocyanate type and level differs between Resene Polythane and mixed Resene Uracryl paints.

When isocyanate containing paints are brushed or rolled it is unlikely to be a problem from exposure to the isocyanate. Spray application of isocyanate containing paints does present a health hazard as the fine atomised paint particles known as aerosols are easily inhaled and if sprayed without suitable protection nose, throat, lung and eye exposure results. Approved protection (air fed respirator or hood) must always be used for spray application of isocyanate containing paints and spray application should only be undertaken in a certified spray booth.

The strong smell associated with Resene Polythane and Resene Uracryl is a blend of aromatic solvents. Exposure to solvents – especially medium to long term can cause solvent toxicity issues and is dangerous to the user. In extreme cases in areas (tanks for example) without ventilation, people have died as they have been overcome by the solvents and suffocate.

Resene Polythane or Resene Uracryl can be applied by a commercial painter of a sensible DIY customer safely when sensible precautions and care are taken.

The following basic precautions must be followed:

1. When mixing or stirring Resene Polythane or 2 pack products, wear clothing that covers and protects your body – the arms in particular.
2. Wear correct safety gloves when mixing and when pouring a hardener into the base.
3. Wear safety glasses or mask to prevent splashes on the face or eyes.
4. Ensure there is good ventilation with plenty of air movement – both during mixing, application and once applied to ensure the coatings cure correctly.

5. Use a carbon filter mask and ensure a fresh filter is installed before using. (We sell these in our Resene ColorShops or they are available from outlets such on NZ Safety).

NOTE: A dust mask is not suitable!

6. Do **NOT** spray Resene Polythane or Resene Uracryl unless it is done wearing suitable personal protection and in a certified spray booth. (Consult Resene Safety Data Sheets (SDSs) for direction or the OSH Approved Code of Practice for the Safe Use of Isocyanates, this document can be downloaded from the OSH website).
7. Carefully read the instructions on the can and if in doubt contact our technical helpline.

In a nutshell it is the solvents, and to a lesser degree the isocyanates, that are the main cause for concern for DIY and most commercial applicators. Isocyanates are only really an issue if the products are sprayed.

Selling Resene Cool Colours

Changing from a standard colour to a Resene Cool Colour makes a lot sense but there is a danger that it will be seen as a complete cure or a fix for all heat related problems.

It will help but won't prevent heat related issues completely.

The following advice is worth remembering if you are considering using Resene Cool Colours.

There is approximately a 10% premium over standard pricing for Resene Cool Colours. Also, please note and remember the following:

1. *'...the use of Resene Cool Colour technology in Resene Waterborne Woodsman will not completely prevent cracking, cupping and warping of timber but will significantly reduce these and other heat related stresses...'*
2. *'...for colours with a lot of black in them we are able to take the standard black tinter out and replace it with a Resene Cool Colour black tinter. How much black is in the colour will dictate the extent to which heat absorption will be reduced...'*

See the Resene Cool Colours brochure for more information.

Snake Oil timber treatments

The term Snake Oil is often used to describe the many miracle medicines and treatments peddled in America during the 18th and early 19th century. These were times when there was no laws to protect consumers and when cigarette smoking was promoted for its health benefits - even going so far as to claim smoking improved breathing.

These miracle 'elixirs' and 'potions' would 'apparently' cure almost any ailment and it seems the most common ingredient was snake oil (quite what snake oil is remains a mystery!).

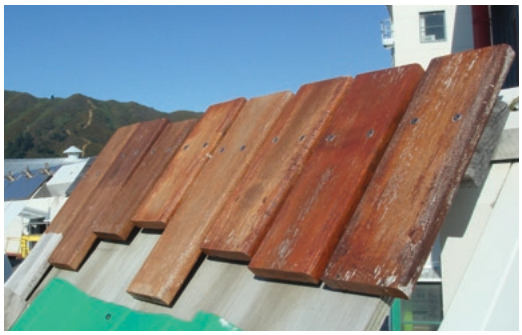
Today the term snake oil is used to describe any product that makes extravagant or unproven claims about it's performance. We use it to describe some of the treatments promoted for timber – particularly Cedar in New Zealand and to a lesser degree Australia.

People have been 'oiling' timber for centuries in the belief that the process fed and nourished the timber. The belief has become ingrained in our psyche and the actual benefits are rarely

challenged. For example it is almost a 'rite of passage' for school boys, just as it was in their father's day, to religiously apply linseed oil to their cricket bats.

The trouble is that linseed and similar vegetable oils are nutrients for mould and apart from an initial 'wetting' and water shedding effect as the oil is absorbed into the timber it offers little in terms of preserving the timber – unless you actually want mould on your timber.

At Resene one of the roles of our Technical team is to compare our products and systems against similar products in the marketplace.



One of the most effective tests is simply to place the samples on an exposure rack such as the one in the adjoining photo. Exposure racks face north and are angled at 45°. This exposure testing subject the panels to an increased level of U.V. exposure (roughly twice that of vertical exposure) and is an excellent test of a stain or paints claims – especially when compared to proven products like Resene Woodsman.

Staining vs painting

A full paint system – (primer plus 2-3 topcoats) will significantly outperform a penetrating stain in terms of durability and its life to 'first maintenance' (how long between recoating). From an application perspective however applying a paint system to timber weatherboards etc is more demanding in terms of time, preparation and the skill needed to achieve a 'professional finish' – particularly for high gloss paints and enamels (both acrylic and traditional).

Staining by comparison is more straightforward. And once contaminants, including moss and mould, have been removed a woodstain is easier to apply (the only real issue is the need to avoid lapmarks) and is more tolerant of poor surfaces and surface preparation (including weathered, and greyed timber).

Typically stains will not last as long and will require restaining more frequently than a paint finish. However they are very simple to reapply with little surface preparation needed.

Note: dark timber stain colours and the application of a third coat will extend the life significantly

Logically the decision to stain or paint the exterior of a home or building should be made at the design stage – typically when the choice of timber is made (either for the cladding or for features such as pergolas, sunshades etc).

For example cladding a home in Cedar costs more than Pine or Macrocarpa and one of the main reasons it is chosen is its attractive grain, so logically if Cedar is selected for the weatherboards of a home then it would be a waste to paint it (with say Resene Lumbersider) and it is more likely to be stained or left to weather (grey).

However Cedar doesn't weather consistently in humid, wet climates which includes most of New Zealand (Cedar is not used much in Australia).

As a result homeowners often make the decision to either stain or paint it. While painting is an option, especially if a longer life system is needed say for homes where access to second and third levels is difficult and expensive, it is much more time consuming and problematic while staining with Resene Woodsman (either waterborne or solventborne) is much easier as it can be applied to weathered greyed Cedar without the need for extensive sanding or pretreating with Resene TimberLock.

Stains and exterior timber treatments

The objective of coating exterior timber was almost always for practical and preservative reasons.

The need to protect and waterproof early boats and the materials used in the boatbuilding (both timber and coatings) were the precursor for many of the paints and stains used today.

Boats, be they simple canoes or sea voyaging ships required protection. Leaks were sealed with natural gums and resins and naturally occurring pitches and tars. The sea-going hulls attracted marine termites and weed growth and a coating of tar was applied to them– pictures of sailing ships almost always depict them with black hulls.

Over time, as well as for their preservative properties people wanted coatings to be decorative and stains were developed that enhanced the appearance of timbers – particularly to duplicate the appearance of expensive timbers by colouring cheaper alternatives with pigmented stains.

Early NZ history mirrors practical and useful coatings.

The Maori people used reddish coatings, based on bird fats and whale and shark oils mixed with particular red clays typical of Taranaki volcanic earth and much evidence shows that the tribes traded the pigment over large areas of the country. Fascia boards on meeting houses as well as canoes and carvings were carefully coated and decorated with feathers and weavings.

Captain Cook beached the 'Endeavour' at Ship's Cove in the Marlborough Sounds for careening the underwater areas of the ship. After sailing around the world the barnacles and weeds were removed from the ship by melting the tarred surfaces with small brush fires alongside the hull. Blocks of bitumen (as part of the ship's stores) were heated and a hot new coating applied before putting the Endeavour back to sea.

The early settlers used creosote a by product of coal tars, to protect timbers on their wooden houses, and also as an animal antiseptic (which it is still sold for). Creosote has had a long history as an exterior treatment in New Zealand and was particularly useful as a timber preservative.

The early settlers in Northland also recovered and sold Kauri gum, which was used in the manufacture of quality varnishes, for a great deal of money, and for some time the value of Kauri gum exported to world markets was second only to gold in value to the developing colony.

The draining of the Taeri Plains, parts of Southland and the Manawatu led to a very large trade in Flax – the stripped fibre was valuable for making ropes, sailcloth and woolsacks and strangely enough formed the basis of carpet backing.

Linseed oil, obtained by crushing the seeds of flax bushes has long been used for the manufacture of paints, and indeed is synonymous with the 'oil based' descriptor, and while it performs very well when protected (by pigments) from ultraviolet light, has the inherent disadvantage of rapidly oxidising on exposure to sunlight and has little value as an exterior stain. However there is always some extravagant statement promoted in regards to oil stains – 'organic' (which it certainly is) or 'natural' and alleging to 'feed the timber' (which it doesn't).

What linseed oil does is support mould growth, oxidise rapidly on exposure to sunlight (chalk) and is also slightly reactive to moisture, turning opaque or whitening.

Other vegetable and animal oils – such as tung oil, canuba, walnut and fish oils have similar limitations which is why paint chemists developed penetrating stains, which do not form any surface film so cannot crack or peel with age but simply need occasional recoating to retain their efficiencies.

The effectiveness of linseed oil based stains could be increased when U.V. light was blocked or partially blocked by adding pigments of iron oxides (red and brown), carbon (black) and chromium oxide (green) and gave rise to simple stains, usually with names to suggest enhancements of the substrates: brown stains (Cedar), redder stains (Redwood) greener stains (fern) etc etc., but eventually the effective life was compromised either by the linseed oil drying as a film (and failing) or the U.V. oxidation of the oil.

By comparison the creosote stain penetrated timbers and was an excellent U.V. blocker so performed magnificently in the early days of staining.

Timber yellowing with age

The yellowing of pale timbers – particularly Pine is typically the result of either the timber itself yellowing and/or the clear finish (polyurethane) yellowing.

Most of the resins used in single pack polyurethanes such as Resene Qristal Clear and Resene 'HD' Poly-Satin as well as moisture cured polyurethanes such as Resene Polythane will yellow over time – some more rapidly than others.

To get an idea of how they look, simply open a can of Resene Qristal Clear, the depth of colour in the can has a decidedly yellow hue to it.

This gets worse over time and often the combination of the polyurethane and the timber yellowing can be a disappointment.

However, there are some options available.

Use Resene Waterborne Colorwood in Resene Egg White or Resene Rocksalt as a blonding base for Pine and other timbers before polyurethaning and use Resene Aquaclear or Resene Uracryl as the topcoats as they do not yellow with age.

Alternatively simply use Resene Aquaclear directly (or Resene Uracryl where a more hardwearing surface is required).

Varnishes

Varnishes are best thought of as paints without any pigmentation or colour added – therefore whatever the base, be it oil or acrylic, they will be clear or semi-translucent.

Varnishes have a long history of enhancing and protecting timber (also for decorating cane and rattan and as a protective overlay for paint effects).

With the exception of small features, such as sheltered doorways, or the 'brightwork' of ships, varnishes, whether clear or tinted are only used on interior surfaces.

'Oil based' clears are traditionally based on alkyd resins, typically linseed oil with resin additives. Much of New Zealand's early development was based on the recovery of Kauri gum which was a valuable and sought after component of high quality varnishes.

The aesthetic properties of varnishes have always been complex – not only must the surface look right – it has to always feel right and a great deal of skill was needed by early tradesmen to prepare and apply varnishes. Remember painters used to prepare the majority of their own coatings and colours and were highly regarded as craftsmen and were members of a guild.

Varnish brushes evolved that had flat ferrules, particularly for 'laying off' the coating – and the painters were expected to wear starched overalls (to reduce dust levels) when undertaking finishing work.

Waxes and talc were incorporated (and still are) to improve the tactile properties of the film because much of the varnishes' aesthetics are derived when it is touched.

'Spirit' based varnishes are made from shellac mixed with methylated spirits – a wood alcohol. Shellac, which is sold in our Resene ColorShops, is made from the insects which feed on the sap of the lac tree – native to India.

Orange shellac is sold in broken sheet form and mixed with methylated spirits as required. The coating is useful for sealing difficult stains and resin bleeds in timber, particularly adjacent to knots – hence the trade descriptor – Knotting. This material is also used as French polish where thin coats are laboriously applied by hand rubbing to build up a deeply lustrous finish – formerly associated with expensive furniture and objects such as pianos etc.

Today synthetic alternatives abound and lacquers are based on volatile solvents such as amylacetate (that pear smell) acetone and nitro cellulose with extremely rapid drying times useful for production runs where time is critical.

There are other useful clears such as 2 part chemically reactive clears (Resene Uracryl) which are extremely tough and moisture cured polyurethanes (Resene Polythane) arguably the best wearing coating for flooring, but these types of materials are based on volatile and smelly solvents that require care when using and excellent ventilation.

Modern, clear, waterborne, acrylic, resin systems are similar to varnishes in that their resin component are almost the same as paints, but without any pigmentation.

These coatings have the advantages of being particularly easy to apply and are, just like their paint cousins, quick drying so jobs can be completed easily and quickly.

Acrylic clears are non yellowing and this property is very different from oil based coatings such as Resene Qristal clears – where the alkyd resins yellow over time, and darken the appearance of most timbers.

Why is there an issue with surface forming stains in Australia and New Zealand?

To begin to answer this it is important to understand how surface forming stains are designed to work and how they differ from penetrating stains like Resene Woodsman. As their description implies, surface forming stains form a layer or surface on the timber and rely on the toughness of the resin and special blockers to resist U.V. and moisture – the U.V. blockers are usually transparent iron oxides which prevent U.V. light passing through the clear (or lightly tinted) film and the attacking timber surface.

The top layer of timber becomes unstable when exposed to U.V. light and greys off. The grey timber is simply deteriorated timber fibres which are weakened and poorly bound to the fibres beneath. The photos shown here are examples of surface forming stains failing. The top photo is of interest as the surface forming stain was used above Plywood boards stained at the same time with Resene Waterborne Woodsman which is in excellent condition.

We often get flakes of stain (and paint for that matter) with the grey, weathered layer stuck to the back indicating a lack of or poor surface preparation.

Transparent iron oxides have a slight orange tinge to them and are effective at blocking U.V. light - providing there is enough present. We use them extensively in our Woodcare products including Resene Woodsman and Resene TimberLock. They are also used in many sunscreens and sun blocks.

When used in surface forming transparent finishes they rely on film build (at least 3 coats) to work.

The problem is that Australia and particularly New Zealand have very high U.V. levels (ultraviolet) approximately 40% higher than central Europe and most of the United States. Secondly we apply a lot of stains and transparent finishes on to Cedar, particularly rough sawn and rusticated weatherboards.

Cedar is an excellent timber to use in building construction. It is lightweight inherently durable and stable, but it is easily damaged by U.V. light far more so than Pine for example.

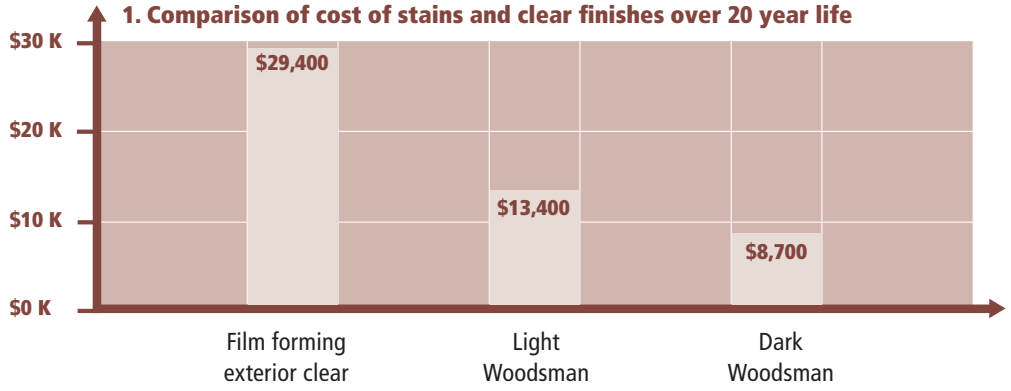
Clear surface forming products that rely on layers of transparent iron oxides to resist U.V. attack will eventually allow enough through to damage the film, usually after 3-4 years and often sooner if North facing.

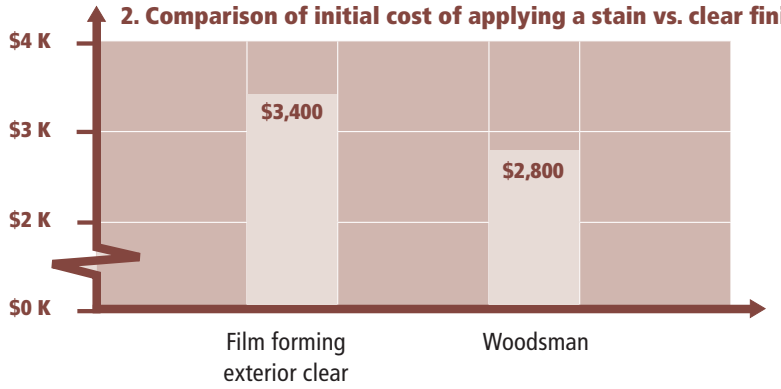
The problem is that while it is a very simple matter to apply a rejuvenating coat of Resene Woodsman it is not a simple matter to redo a surface forming stain that has started to flake and peel, which is how they fail!

Firstly many substrates are hard to prepare, for example rough sawn Cedar is very difficult to sand and if there are any flaked areas then once further coats are applied, it will appear patchy - with sound areas having 4-5 coats while repaired flaked areas will have only 2 or 3.

This will be unsightly and is one reason why many customers ultimately need or decide to strip or remove the clear coatings. Very few people who have stripped a clear coating ever reapply it – most choosing a penetrating stain or on rough sawn Cedar, a solid paint finish like Resene Lumbersider.

The following chart was developed to show the comparisons between staining with a penetrating stain and surface forming stain and between using a dark colour and light coloured Resene Woodsman stain.





	Cost per annum	Cost per m^2 per annum
Film forming exterior finishes	$1,470.00	$9.80
Light colour Woodsman	$672.00	$4.50
Dark colour Woodsman	$435.00	$2.90

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