

Substrate Characteristics

Timber is a dimensionally unstable material that expands and contracts with changing moisture content. The timber surface is eroded by ultra violet light, normally changing to a grey colour leaving cellulose fibres exposed on the surface. Timber also provides a source of nutrient for mould growth. A protective system for timber needs to combat these three sources of aggression; viz. water, ultra violet light and mould.

Surface Preparation

New Work - see [Surface Preparation D82](#) for detailed preparation guidelines.

Repaints - see [Surface Preparation D87](#) for detailed preparation guidelines.

2e 1 Exterior Waterborne

Waterborne paints are most suitable for exterior applications being more durable and flexible than solventborne paints. Resene Wood Primer (see [Data Sheet D40](#)) may be required when a staining type of timber is present. Resene Sureseal (see [Data Sheet D42](#)) is required on hardboard to overcome its inherent porous nature. For better hiding, Resene Acrylic Undercoat (see [Data Sheet D404](#)) tinted to the correct colour may replace one of the topcoats. Optional over bare timber is pretreatment with Resene TimberLock (see [Data Sheet D48](#)) to improve the durability of subsequent coatings.

Generic Specification				Resene Spec No.	Resene One-Line Specification			
Substrate	Environment	Paint Type	Gloss Level		Surface Prep	1st Coat	2nd Coat	3rd Coat
Weather-board etc.	Exterior	Waterborne	Gloss	2e 1.1	D82 & TimberLock D48	NRS: Quick Dry D45 TTS: Wood Primer D40 HO: Sureseal D42	Hi-Glo D31 Acrylic Undercoat D404	Hi-Glo D31
Weather-board etc.	Exterior	Waterborne	Semi-Gloss	2e 1.2	D82 & TimberLock D48	NRS: Quick Dry D45 TTS: Wood Primer D40 HO: Sureseal D42	Sonyx 101 D30 Acrylic Undercoat D404	Sonyx 101 D30
Weather-board etc.	Exterior	Waterborne	Satin	2e 1.3	D82 & TimberLock D48	NRS: Quick Dry D45 TTS: Wood Primer D40 HO: Sureseal D42 SP: Lumbersider D34	Lumbersider D34 Acrylic Undercoat D404	Lumbersider D34

2e 2 Exterior Solventborne

Resene Quick Dry Acrylic Primer Undercoat (see [Data Sheet D45](#)) is the recommended primer for maximum flexibility and durability. Resene Wood Primer may be required when a staining type of timber is present. Resene Sureseal is required on hardboard to overcome its inherent porous nature. For better hiding, Resene Acrylic Undercoat tinted to the correct colour may replace one of the topcoats. Optional over bare timber is pretreatment with Resene TimberLock (see [Data Sheet D48](#)) to improve the durability of subsequent coatings. Semi-gloss and flat solventborne paints do not have the necessary weather resistance for exterior exposure.

Generic Specification				Resene Spec No.	Resene One-Line Specification			
Substrate	Environment	Paint Type	Gloss Level		Surface Prep	1st Coat	2nd Coat	3rd Coat
Weather-board etc.	Exterior	Solventborne	Gloss	2e 2.1	D82 & TimberLock D48	NRS: Quick Dry D45 TTS: Wood Primer D40 HO: Sureseal D42	Acrylic Undercoat D404	Super Gloss D32

Key: HO = Hardboard Only NRS = Normal Recommended System SP = Self Priming TTS = Timber that Stains

Exterior Timbers

Hardboard, Plywood and Weatherboard excluding Cedar, Matai and Totara

For Cedar see [8e](#)

For Matai and Totara see [9e](#)

For Timber Decks, Fences and Pergolas see [4e](#)

For Timber Joinery see [3e](#)

Substrate Characteristics

Timber is a dimensionally unstable material that expands and contracts with changing moisture content. The timber surface is eroded by ultra violet light, normally changing to a grey colour leaving cellulose fibres exposed on the surface. Timber also provides a source of nutrient for mould growth. A protective system for timber needs to combat these three sources of aggression; viz. water, ultra violet light and mould. Reconstituted fibre and particle boards are dimensionally stable but may be very porous and contain waxes that may inhibit the drying of air-drying urethanes.

Surface Preparation

New Work - see [Surface Preparation D82](#) for detailed preparation guidelines.

Repaints - see [Surface Preparation D87](#) for detailed preparation guidelines.

2e 3/4 Exterior Waterborne/Solventborne

Resene Woodsman (waterborne see [Data Sheet D57a](#), solventborne see [Data Sheet D57](#)) is a penetrating oil stain that does not form a surface film. For dressed timber apply a third coat of Resene Woodsman after three months. Semi-transparent stains are not as durable as fully pigmented systems. Resene Woodsman will require maintenance after two summers.

Exterior and Interior Timber

Stains and Clear Finishes (including floors)

Plywood, Weatherboard and Interior Fibre and Particle Board

For Matai and Totara (including floors) see [9e/i](#)

For Timber Decks, Fences and Pergolas see [4e](#)

For Timber Joinery see [3i](#) (Clear Finish)

Generic Specification				Resene Spec No.	Resene One-Line Specification			
Substrate	Environment	Paint Type	Gloss Level		Surface Prep	1st Coat	2nd Coat	3rd Coat
Weatherboard & Plywood	Exterior	Waterborne	Flat	2e 3.5	D82	Waterborne Woodsman D57a	Waterborne Woodsman D57a	Waterborne Woodsman D57a (after 3 months)
Weatherboard & Plywood	Exterior	Solventborne	Flat	2e 4.5	D82	Woodsman D57	Woodsman D57	Woodsman D57 (after 3 months)

2i 3 Interior Waterborne

For a stained finish use Resene Waterborne Colorwood (see [Data Sheet D50a](#)), reduced if necessary to the desired finish with Resene Waterborne Colorwood Reducing Base. For a natural finish, the colour of the timber is enhanced by the application of Resene Waterborne Colorwood Reducing Base. Follow this with three coats of Resene Aquaclear (see [Data Sheet D59](#)). Ensure sharp edges and rough profiles are rounded before painting to promote good film build. All unsealed cracks and end grains, such as underneath the doors, must be sealed to prevent isolated blistering caused by moisture penetration. Where a really tough surface is required Resene Polythane (see [Data Sheet D53](#)), a solventborne finish, is the best recommendation.

Generic Specification				Resene Spec No.	Resene One-Line Specification					
Substrate	Environment	Paint Type	Gloss Level		Surface Prep	1st Coat	2nd Coat	3rd Coat	4th Coat	5th Coat
Plywood & Particle Board	Interior	Waterborne	Gloss	2i 3.1	D82	SF: Waterborne Colorwood D50a CF: Waterborne Colorwood Reducing Base D50a (optional)	Aquaclear D59	Aquaclear D59	Aquaclear D59	Aquaclear D59
Plywood & Particle Board	Interior	Waterborne	Semi-Gloss	2i 3.2	D82	SF: Waterborne Colorwood D50a CF: Waterborne Colorwood Reducing Base D50a (optional)	Aquaclear D59	Aquaclear D59	Aquaclear D59	Aquaclear D59
Plywood & Particle Board	Interior	Waterborne	Satin	2i 3.3	D82	SF: Waterborne Colorwood D50a CF: Waterborne Colorwood Reducing Base D50a (optional)	Aquaclear D59	Aquaclear D59	Aquaclear D59	Aquaclear D59

Key: CF = Clear Finish SF = Stained Finish

2i 4 Interior Solventborne

For a stained finish use Resene Waterborne Colorwood, reduced if necessary to the desired finish with Resene Waterborne Colorwood Reducing Base. For a natural finish, the colour of the timber is enhanced by the application of Resene Waterborne Colorwood Reducing Base. Follow this with three coats from the Resene Cristal Clear polyurethane range (see [Data Sheet D52](#)). Ensure sharp edges and rough profiles are rounded before painting to promote good film build. All unsealed cracks and end grains, such as under doors, must be sealed to prevent isolated blistering caused by moisture penetration. Where a really tough surface is required Resene Polythane is the best recommendation.

Generic Specification				Resene Spec No.	Resene One-Line Specification				
Substrate	Environment	Paint Type	Gloss Level		Surface Prep	1st Coat	2nd Coat	3rd Coat	4th Coat
Plywood & Particle Board	Interior	Solventborne	Gloss	2i 4.1	D82	SF: Waterborne Colorwood D50a CF: Waterborne Colorwood Reducing Base D50a (optional) HDF: Polythane D53	Poly-Flat D52	Poly-Gloss D52	Poly-Gloss D52
								Polythane D53	Polythane D53
Plywood & Particle Board	Interior	Solventborne	Satin	2i 4.3	D82	SF: Waterborne Colorwood D50a CF: Waterborne Colorwood Reducing Base D50a (optional)	Poly-Flat D52	Poly-Satin D52	Poly-Satin D52
Plywood & Particle Board	Interior	Solventborne	Flat	2i 4.5	D82	SF: Waterborne Colorwood D50a CF: Waterborne Colorwood Reducing Base D50a (optional)	Poly-Flat D52	Poly-Flat D52	Poly-Flat D52

Key: For Particle and Fibre Board replace the first coat of Polythane with one coat of Resene Particle Board Sealer (see [Data Sheet D43](#)); replace the first coat of Cristal Clear Poly-Gloss, Poly-Satin or Poly-Flat with one coat of Resene Aquaclear CF = Clear Finish HDF = Heavy Duty Finish SF = Stained Finish

2i 3/4 Interior Waterborne/Solventborne

Dedicated Section for Floors

Thoroughly sand and vacuum to remove all coatings, minor surface imperfections and any loose surface fibres. Surfaces must be completely dry and free from dust, oil, grease and foreign matter. Ensure all old floor polishes are removed, paying particular attention to the gaps in tongue and groove flooring. Stop all nail holes and cracked timber with Linseed Oil Putty or other suitable filler matched to the appropriate colour. All stains in general must be removed as remaining stains will show. The use of oxalic acid is particularly effective for removing iron stains around old nail heads. Particle board and fibre board must be given one full coat of Resene Particle Board Sealer (see [Data Sheet D43](#)), taking care not to overspread. For a really tough finish, Resene Polythane is the best recommendation.

Generic Specification				Resene Spec No.	Resene One-Line Specification					
Substrate	Environment	Paint Type	Gloss Level		Surface Prep	1st Coat	2nd Coat	3rd Coat	4th Coat	5th Coat
Timber Floors	Interior	Waterborne	Gloss	2i 3.1^F	D82	SF: Waterborne Colorwood D50a CF: Aquaclear D59	Aquaclear D59	Aquaclear D59	Aquaclear D59	Aquaclear D59
Timber Floors	Interior	Waterborne	Semi-Gloss	2i 3.2^F	D82	SF: Waterborne Colorwood D50a CF: Aquaclear D59	Aquaclear D59	Aquaclear D59	Aquaclear D59	Aquaclear D59
Timber Floors	Interior	Waterborne	Satin	2i 3.3^F	D82	SF: Waterborne Colorwood D50a CF: Aquaclear D59	Aquaclear D59	Aquaclear D59	Aquaclear D59	Aquaclear D59
Timber Floors	Interior	Solventborne	Gloss	2i 4.1^F	D82	HDF: Polythane D53	Polythane D53	Polythane D53	Polythane D53	-
Timber Floors	Interior	Solventborne	Satin	2i 4.3^F	D82	SF: Waterborne Colorwood D50a CF: HD Poly-Satin D52	HD Poly-Satin D52	HD Poly-Satin D52	HD Poly-Satin D52	HD Poly-Satin D52

Key: For Particle and Fibre Board replace the first coat of Polythane with one coat of Resene Particle Board Sealer; replace the first coat of Cristal Clear Poly-Gloss, Poly-Satin or Poly-Flat with one coat of Resene Aquaclear CF = Clear Finish HDF = Heavy Duty Finish SF = Stained Finish

2i 2 Interior Solventborne

All solventborne, air-drying enamels yellow somewhat in the absence of light, most noticeably in cupboards and behind pictures. Exposure to light bleaches out the yellow. Solventborne paints are harder and more cleanable than standard waterborne paints. Resene Wood Primer may be required when a staining type of timber is present. Resene Sureseal is required on hardboard to overcome its inherent porous nature. Optional over bare timber is pretreatment with Resene TimberLock (see [Data Sheet D48](#)) to improve the water resistance of the total system. For particle and fibre boards Resene Quick Dry Acrylic Primer Undercoat is recommended. For better hiding, Resene Acrylic Undercoat tinted to the correct colour may replace one of the topcoats.

Generic Specification				Resene Spec No.	Resene One-Line Specification			
Substrate	Environ- Type	Paint Level	Gloss		Surface Prep	1st Coat	2nd Coat	3rd Coat
Hardboard etc.	Interior	Solventborne	Gloss	2i 2.1	D82 & TimberLock D48	NRS: Quick Dry D45 TTS: Wood Primer D40 HO: Sureseal D42 POV: WB Smooth S.S. D47a	Acrylic Undercoat D404	Super Gloss D32
Hardboard etc.	Interior	Solventborne	Semi- Gloss			2i 2.2		
Hardboard etc.	Interior	Solventborne	Flat	2i 2.5	D82 & TimberLock D48		NRS: Quick Dry D45 TTS: Wood Primer D40 HO: Sureseal D42 POV: WB Smooth S.S. D47a	Flatcote D306 Acrylic Undercoat D404

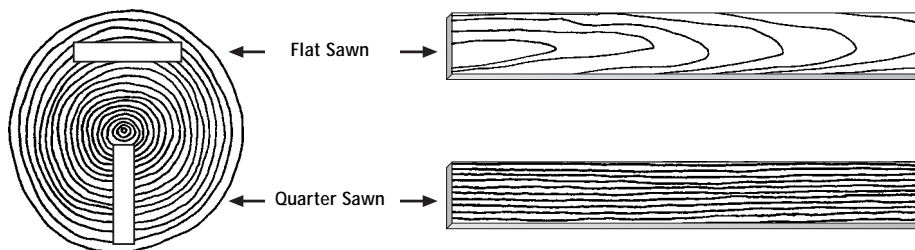
Key: HO = Hardboard Only NRS = Normal Recommended System (including particle and fibre boards) POV = Painting Over Varnish SP = Self Priming TTS = Timber That Stains

the paint the professionals use

access specification information online at www.resene.co.nz (NZ) or www.resene.com.au (AUST)
minimise the effect of your project on the environment - see www.resene.co.nz/paintwise.htm

Timbers in General

Within any species of timber, the durability of any single piece will vary depending on where it is taken from the tree and how it is cut. As a simple rule, quarter sawn timber is much more durable than flat sawn.



With flat sawn weatherboards and planks, the bark-side will tend to split and crack more than the centre-side.

Timbers vary in their ability to resist weathering. This relates to paint performance, particularly over timbers that have been exposed to the weather. Although Resene recommends sanding timber that has been exposed for more than one week, this is somewhat conservative in order to avoid the worst case scenario. There is a simple rule of thumb - the denser the timber, the greater its weather resistance. The one week restriction applies to Cedar, Pine is satisfactory for three weeks and other timbers fit into this scale according to their relative density.

Hardwood and Softwood

These are purely botanical terms, which in fact bear no relationship to the relative hardness of the timber, for example, Balsawood is strictly speaking a hardwood. Hardwood is the product of broad-leaved trees and contains a complicated and distinctive pattern of vessels or pores, which are much larger in cross section than the surrounding fibres. A good example is Eucalyptus.

Softwood is the timber from conifers of which Pine is the best example. This wood does not have pores but consists of tracheids, which are rather uniform in appearance.

Sapwood is the band of outer layers just under the bark. As the tree grows the sapwood converts to heartwood, which is usually darker in colour. In most trees, especially those with dark heartwood, the sapwood is easily identified by its lighter colour. Due to the presence of nutrient materials in sapwood, such as sugars and starches, it is more prone to attack by decay and fungi. This can be overcome to some extent by treating with a preservative, a process far more difficult to achieve in the heartwood because of the dense cells.

Similar species have different degrees of durability and natural resistance to attack by fungus and insects. Timber may last for thousands of years if appropriate protection is given from the four destroyers of timber; weathering, fire, decay and insects.

Typical Timber Characteristics

Bison, Chip, Composite, Fibre, HDF, Particle and Strand Board

All of these reconstituted wood products share the benefit of uniform strength in all directions and the predictability this brings. The requirement to include waxes to improve water resistance may lead to problems of drying with auto oxidatively curing systems. Waterborne systems, moisture-cured coatings and two pack urethanes are therefore recommended.

California Redwood

A timber similar to Western Red Cedar with similar stability, durability and strength. Like Western Red Cedar it has a strong tendency to stain waterborne paint systems.

Timber Guide

Exterior and Interior



Douglas Fir (Oregon Pine)

A softwood with an almost white sapwood and pinkish-brown heartwood. Its most striking feature is the very prominent, evenly spaced growth rings. For this reason it generally does not accept paint very well, although penetrating stains are not considered problematic. It is used for light framing, roof trusses and exposed beams.

Erima

A pale greyish to yellow-brown colour with slightly interlocked grain and a moderately coarse texture. Erima is used for mouldings, panelling and skirting and the treated grades are suitable for weatherboards. The timber takes coatings very satisfactorily.

Fijian Kauri

A medium density softwood that is established as a commercial alternative for New Zealand Kauri. Displays very similar appearance and working properties.

Jarrah

A dark purplish-red timber that is very dense, hard and durable. The texture is fairly coarse and requires filling for the finest finishing. When used as decking, it does not initially accept penetrating stains due to its density. Acceptance improves on weathering.

Kauri (New Zealand)

Light brown sapwood, reddish brown heartwood with a characteristic 'speckle'. An outstanding all round timber that finishes easily and beautifully.

Kwila

Kwila is native to New Guinea, Fiji and Queensland. Sapwood is yellow but the heartwood is dark brown. Heartwood is very durable and is favoured for power poles, wharf and bridge construction, boat keels, decking and sleepers. Kwila will accept paint and may be painted with either waterborne or solventborne systems. Its coarse open grain does not lend itself to varnishing unless the grain is filled.

Larch

A medium density softwood with an attractive yellow-brown colour. The growth rings are very prominent and it may contain many small tight knots. Used for framing, fencing and occasionally the heartwood is used for feature cladding. The very dense latewood may result in early paint failures and the timber is slightly corrosive to steel.

Light Organic Solvent Preservation (LOSP) Treated Timber

LOSP is an excellent and convenient method of preserving timber. Its greatest asset is that it can be successfully used on formed and cut timber and joinery ensuring that no timber is exposed that has not had contact with the preservative. Timber delivered to site may contain some residual solvent, which must be allowed to evaporate before painting. Fillet stacking out of direct weather is an appropriate method and the timber should not be coated until it is completely free from solvent odours.

Macrocarpa (Monterey Aspen)

Whitish sapwood, yellowish-brown heartwood with the pleasant characteristic smell of cypresses. The timber has a fine and even texture. A high grade timber, useful for a wide variety of applications including boat building, furniture, framing and cladding. Takes paint coatings reasonably well but the presence of natural resins may lead to patchy acceptance of stains.

Mahogany

Warm orange-brown timber with an attractive interlocking grain. Primarily used for high quality furniture and panelling. Has a coarse texture, which requires filling to produce a smooth finish. Takes standard varnishes well.



Matai

Narrow white, non durable sapwood, with a yellow-brown heartwood that darkens to a deep red-brown on exposure to air. A magnificent timber traditionally used for exterior joinery and interior flooring. Takes paint and clear finishes very well, although the natural extractives severely hinder the curing of solventborne finishes. Waterborne systems or moisture-cured coatings and two pack urethanes are therefore recommended.

Oak (European)

A mellow golden brown colour with a straight grain. This timber is known for its strength and durability. Its somewhat coarse texture may require filling to achieve the finest finish. The natural tannins may slow the dry of solventborne finishes and cause corrosion in steel fixings.

Pinus Radiata

An excellent all round timber, which when well cured, produces very few finishing problems. Knots will tend to shrink, loosen and exude resin. Premature coating of some treated timbers before the treatment has become fully fixed may lead to staining problems.

Rewa Rewa

The heartwood of Rewa Rewa is dark red to purple-brown. Timber cut from Rewa Rewa is tough, hardwearing and is easy to work with. The sapwood of the timber is very susceptible to attack by borer. Its most popular use is for craft woodwork.

Rimu

Reddish brown, streaked heartwood, uniform pale brown sapwood, with a distinct lighter intermediate zone capturing some interesting colour effects. Widely used for framing, cladding and fine furniture. Rimu finishes beautifully with either pigmented or clear finishes.

Sapele

A useful substitute for Mahogany, has similar colour and grain but a finer texture. Produces a superb finish.

Totara

The heartwood of Totara is an even reddish-brown with indistinct growth rings and a very straight grain. Although very durable and easy to work with, it may show brittleness across the grain. As well as playing a central role in Maori culture, Totara was seen as the ideal material for fencing and exterior joinery. The same constituents that naturally preserve the timber also affect the curing of solventborne finishes. Waterborne paints or moisture-cured coatings are therefore recommended.

Western Red Cedar (Imported)

A dark brown to salmon-pink timber; lightweight, knot-free, stable and durable with a somewhat coarse texture. The surface will erode under natural weathering fairly quickly to leave a stable mat of cellulose fibres on the surface. Cedar is used extensively for exterior joinery, interior cladding and interior panelling. It takes paints and varnishes well but may cause staining of waterborne paints and corrosion of steel nails.