

Surface Information and Preparation Data Sheet (SIPDS)
SIPDS No. 3
Concrete and Cementitious Surfaces



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Introduction

This SPIDS covers the preparation requirements as well as issues as they relate to the finishing of exterior and interior concrete and cementitious surfaces for residential and commercial projects. New construction, the requirements for coating weathered and / or old cementitious surfaces and the repainting of existing surfaces are covered in this SIPDS.

It should be read in conjunction with the relevant standards:

Concrete standard NZS 3114:1987; PPCS - Proprietary Plaster Cladding Standard; NZS 4251.1:2007 - Solid Plastering and AS/NZS 2311:2009 "Guide to the Painting of Buildings" and the specification.

Relevant information on the substrate is covered in the **Substrate Information Notes** below. Where appropriate, additional information pertinent to the substrate preparation requirements is included with the specification.

The preparation requirements for various cementitious surfaces are covered in the **Surface Specification (Spec) Sheets**, which are referenced by substrate type.

If the issue encountered or the surface is not covered in this SIPDS; if there is an inconsistency between documents or data sheets; or if you are unsure of the most appropriate and or best preparation methodology or paint system, please contact Resene Technical Services.

Substrate Information Notes

Note 1: Sealants

The application and, where necessary, the reapplication of construction sealants is typically undertaken by a specialist contractor / applicator. Minor crack and gap filling (particularly when it is cosmetic as opposed to structural) is generally undertaken by the painter as part of preparing the surface for painting.

Construction Sealants are not designed to be painted over. In order to perform their primary function and retain long-term elasticity, they normally contain plasticisers. These can migrate through paint systems and discolour the surface and / or cause the surface to become tacky. As a result, dirt and other contaminants will not rain wash off and become difficult to clean. The sealant area can appear unsightly as a result.

Provided flexible waterborne paint or coatings systems are used, this is a generally a cosmetic issue only and will not impact on the structural integrity of the sealant. If harder cross linking coatings are used (which retard the plasticiser migration), there is a risk the sealant will fail at the point where the coating cracks. This is referred to as a notch effect. Over time this can result in the failure of the sealant.

Note 2: Weather tightness responsibility

For new work or where painting or coating is required as part of a building renovation, the responsibility for ensuring that flashings, cappings and construction sealants have been correctly installed is the responsibility of the project's head contractor.

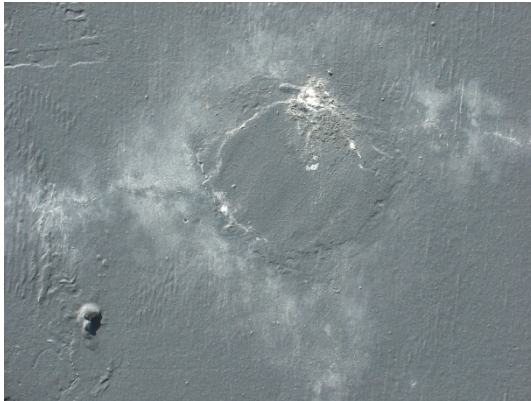
In repaint or recoating or where the contract requires the painting of older weathered surfaces and is not part of a building renovation, the painting contractor should advise the building owner or owner's agent of any deficiencies or failings in the flashings, cappings and sealants that they become aware of.

Unless otherwise required and detailed by the terms of the contract, any repairs and replacement of flashings, cappings and sealants will be considered outside the contract. It is expected, however, that the painting contractor would prepare and prime the substrate before painting if required.

If deficiencies in the flashings, cappings sealants and general water tightness are suspected but the extent and location unknown, it is almost impossible to include when pricing a project and is typically tagged out by those tendering. A PC sum or agreed rate is usually included to cover this eventuality. If this is not the case and the tender or spec covers old cementitious surfaces, a site instruction or note to tenderers should be included. If you are uncertain or require clarification, please contact Resene Technical Services.

Note 3: Efflorescence

Efflorescence is the term used to describe crystalline (or powdery) deposits, usually white in colour, that sometimes form on the surface of brickwork, concrete plasters and other concrete type structures. The photos below are examples of efflorescence on a painted surface (Ref 1) and on masonry (Ref 2). Where a clear coating system is applied to the block, the efflorescence would be more noticeable. It is also almost impossible to remove without removing the clear finish, treating and reapplication of the entire system.



Ref 1



Ref 2

In most cases, efflorescence is the result of calcium hydroxide (lime) from cementitious substrates being carried to the surface by water. This then reacts with carbon dioxide in the air to form insoluble calcium carbonate. Normally efflorescence is only of cosmetic concern although it can ruin the appearance and physically damage paint coatings. See Ref 1 above.

Longer term efflorescence is most often the result of uncontrolled moisture movement caused initially by poor design details and poor construction techniques. Before attempting to remove efflorescence, the source of moisture getting into the substrate should be eliminated.

Ensure:

- Joints and cavities are properly sealed.
- Rainwater run-off is diverted to suitable drainage.
- Physical barriers are in place between brickwork and in situ concrete.
- Tops of parapets have cappings and windows and doors have suitable flashings in place.
- Cavities are well-ventilated.
- Vapour barriers are used to stop uptake of groundwater.

Efflorescence can be removed by physically scrubbing with a stiff brush and careful washing. Water blasting may result in a continuation of the efflorescence as more water may be blasted into the substrate.

Where a clear coating such as Resene XC-700 is specified, efflorescence control techniques **must** be affected to prevent the accumulation of salts behind the coating system. Failure to do so will see the gradual development of white areas underneath the coating in areas where efflorescence is accumulating.

Note 4: Lime staining / leaching

As noted above, lime staining or leaching is similar to efflorescence and is treated in the same manner when painting. The picture below (Ref 3) is an example of lime leachate on an unpainted plaster surface, whilst Ref 4 shows the same onto a painted surface. Concrete is the complex reaction product of aggregates, silica sand and calcium silicates present in cement. Lime is produced during the setting reaction that slowly further reacts with the silica sand to form more cement. This lime production accounts for the high initial alkalinity of concrete and is influenced by the amount of water added, type of aggregate and additives used.

This high alkalinity may saponify (lime burn) many alkyds, PVAs and alkali sensitive paints. It is recommended that concrete is left for 28 days before painting with alkali-resistant paints, such as 100% waterborne finishes; three months for PVAs; and one year for solventborne finishes. Excess lime may migrate to the surface as a milky deposit, efflorescence or lime staining. Resene LimeLock (see [Data Sheet D809](#)) is recommended on all fresh plaster to prevent lime staining. Resene LimeLock (see [Data Sheet D809](#)) is a preparatory coating designed to cure and seal cementitious surfaces by retaining moisture necessary to achieve cure and trapping free lime, minimising downtime between the completion of plastering and commencement of painting.



Ref 3



Ref 4

Note 5: Windblown Salt (contamination)

Windblown salt will deposit onto cementitious surfaces relatively quickly. Most of New Zealand (with the exception of parts of central Otago) is prone to this. The salts are easily flushed off smooth surfaces but can be difficult to remove from cracks and voids, as well as from textured surfaces. Porous surfaces are a particular problem. Salt is water-soluble and will stain and discolour waterborne paint systems.

For new work it is particularly an issue for structures close to the sea (within 1500m), especially if the prevailing wind is on-shore. It is particularly prevalent at the end of a dry summer, when windblown salt has a chance to accumulate without the benefit of rain washing. This is also an issue for sheltered elements of a building or structure, e.g. under eaves.

Salts need to be removed before painting and between coats.

On old weathered cementitious surfaces, we typically recommend the use of Resene Sureseal as this holds back salt staining and helps reinforce friable surfaces.

Note 6: Drummy plaster

Drummy (or areas of unattached) plaster cannot be fixed by coating systems. Areas can be re-attached with specialist resin injection systems, otherwise removal and replacement is recommended.

Note 7: Spalling Concrete / Concrete Cancer

Spalling is the result of the corrosion of reinforcing steel due to either / or a combination of poor concrete design; insufficient concrete cover; aggressive exposure conditions or lack of (or inadequate) coating. New concrete is naturally very alkaline. This high alkalinity actually acts to protect reinforcing steel from corrosion. The effect of weathering of bare concrete is that concrete slowly has its alkaline materials neutralized or washed out of it. In areas of acid rain in highly industrialized countries, the process will be accelerated.

As this happens, the steel will begin to corrode. The use of Chloride based accelerators and the exposure to windblown sea salts exacerbates this corrosion of the steel rebars. Rust is much more voluminous than the base steel and the enormous pressure created produces spalling. When steel rusts, it takes up to 3 times the volume the unrusted steel did. This is difficult when the steel is embedded in concrete but as the steel rusts, it eventually forces the concrete to crack, exposing new reinforcing steel and fresh concrete to the weather. The process repeats itself with the situation continually worsening, hence the nickname Concrete Cancer (Concrete Cancer is a layman's term which is often used by the media, but it has no specific definition universally recognised by building professionals).

Slight rust stains coming out of an otherwise innocent looking concrete surface are often the first symptom of spalling. Such areas must be repaired immediately.

The picture below (Ref 5) is an example of spalling concrete.

Most aggregate used in concrete are inert but some will react with the alkaline component of cement. (Alkali reactive aggregates or ARA.) The reaction product forms a gel, which will absorb water and expand. Huge pressures are generated forming star-like cracks, which allow further water ingress, further alkali degeneration and increasingly corrosive environment for the reinforcing.

A coating system which achieves weather tightness and has low carbon dioxide and chloride ion diffusion offers the best protection against spalling of new and repaired concrete.

There are a number of systems for the repair of spalling concrete. The cracked concrete is removed to expose the corroded rebar, which may be replaced or treated and painted, priming the remaining exposed area and then concreting or filling using epoxy mortars over the hole(s). Primers must be alkali resistant if cementitious fillers are to be used. If damage is extensive or structural, an engineer should be consulted for repair advice.



Ref 5

Note 8: Clear finished concrete, masonry and other cementitious surfaces

The preparation requirements for cementitious surfaces, where a clear finish or water repellent system is specified, are the same as those for a (solid colour) paint system. Preparation to achieve an improved decorative finish on the masonry or concrete, including grinding, is typically outside the scope of the painter's contract. Unless otherwise required by the terms of the contract, a site instruction or note to the specification may be required.

Filling compounds and sealants will need to be carefully selected to match the surface to be clear finished. It is recommended that these are agreed with the specifier or owners agent before commencing.

It is important to ensure the masonry or blockwork has a low moisture content and flashings have been installed and sealants applied correctly before coating to prevent discolouration of the clear finish and trapped efflorescence occurring. Efflorescence control must be effective to prevent the accumulation of salts behind the coating system.

Failure to do so will see the gradual development of white areas underneath the coating in areas where efflorescence is accumulating.

Note 9: Old Bituminous Membranes

Early decorative waterproofing systems for concrete and masonry relied on basecoats of bituminous membranes to ensure a weather tight surface. Typically, these were over coated with a PVA paint (PVA's are polyvinyl acrylates and are the precursors for the modern acrylic technology used in products like Resene X-200).

Typically, multiple coats were required.

These systems are notoriously difficult to overcoat and generally there is failure at the interface between the bitumen layer and the PVA paint, as demonstrated in the photo below (Ref 6):



Ref 6

Resene are not able to guarantee the cohesive or adhesive bonds for the bituminous coating nor previously applied paint systems over the bituminous layer.

Resene have developed a speciality primer – Resene Roofing Membrane Primer ([Data Sheet D49](#)), which adheres well to the aged bitumen so long as it is prepared well, however typically painting over these systems is a mix of bare bitumen (to which Resene Membrane Primer will adhere to) and old PVA and acrylic paints, where the bond to the bitumen is compromised.

Regardless, it is recommended that light colours are selected and if practical, the old coatings stripped off.

Note 10: GRC – Glass Reinforced Concrete

Glass reinforced concrete is dense and unless well weathered has a glass like surface that most waterborne architectural paint systems have difficulty adhering to. However, the preparation requirements and the recommendation that Resene Concrete Seal 3 in 1 is used to prime or seal before coating, is consistent with (or the same as) precast concrete.

Note 11: Friable Cementitious surfaces

As concrete and other cementitious surfaces including concrete floors age, weather and wear the surface can become friable and poorly bound. Typically, this manifests itself as surface powdering or dusting and if advanced, the surface can appear to crumble. Some cementitious products including panels, boards and tiles, if left uncoated, will become friable relatively quickly (by comparison to solid concrete).

Friable surfaces need to be consolidated with a penetrating coating such as Resene Sureseal or Armourbond before painting. A common sense decision must be taken regarding the necessity of physical removal of the powdering surface, should the depth of powdering be considered to be too much to be consolidated by the application of a coating.

Note 12: Spreading Rates

The spreading rates noted in the data sheets and as part of the preparation and application recommendations are based on the natural spreading rate of the products. The use of differing application methods and tools can result in achieving higher or lower applied rates.

The degree of porosity, particularly of unsealed concrete and plaster, can result in lower applied rates. Additionally, the rates are based on flat, smooth surfaces. Textured and profiled surfaces will obviously require higher applied rates to achieve coverage.

It is the responsibility of the painting contractor to apply paint and coatings to achieve the required film build and ensure an even paint coverage of the surface.

Where weather tightness is required, minimum film builds are typically mandated and sufficient product must be purchased and applied to achieve the spreading rates.

Note 13: Colour

The selection of colour is generally outside of the specification process. Most Resene colour and paint systems have excellent hiding and coverage. Two coats applied over a suitably sealed or primed surface are generally sufficient. However, some colours, notably yellow based hues both pale and strong and some reds may require a third coat or be applied over a white basecoat, to ensure coverage and or the correct colour is achieved.

Additionally, when repainting over a darker shade, a basecoat and / or an additional colour coat may be required to ensure coverage and or the correct colour is achieved.

It is the responsibility of the painting contractor to be aware of the schedule of colours or colour scheme and prepare their quote accordingly. Where the colour scheme has not been released or is changed after the tenders are received, the painting contractor should note this in their tender response.

Note 14: Curing / Drying of Paint Waterborne Finishes

Waterborne paints can take a number of days, even weeks to fully cure. Whilst they can be touch dry after a relatively short time, a couple of hours or overnight, full cure will take longer. Climatic and drying conditions generally will influence the time required, as will the film build the paint system has been applied at. This stands to reason. The thicker the paint film, the longer it will take to dry through (this includes where several 2 to 3 coats of standard paint is applied in 8 to 12 hour period).

Damp, humid conditions will slow the drying of paints and if waterborne can affect the quality of the 'cure' possibly resulting in surfactant leaching (please refer to Note 4 above).

When applying waterborne paints in an interior situation, the rate of loss of water is the critical determining factor for the drying and curing of water borne points. The amount of water that can be held by a given volume of air is known as the relative humidity and is expressed as a percentage and varies with air temperature. When there is a lot of water in the air (high relative humidity), the water in the applied waterborne paint cannot evaporate from the wet film to the atmosphere. This has serious consequences for the formation of the paint film.

Where paint is applied in new, unoccupied homes and buildings, significant quantities of moisture are released as part of the drying / curing process. To facilitate curing to achieve the correct film set up, the water released must be removed from the room space. The practice of closing a building up without allowing for adequate ventilation and drying conditions will affect the quality of the paint finish.

We strongly recommend consideration is given by the building owner / agent in consultation with the painting contractor to using portable extraction fans and heaters (although not gas or diesel heaters as they release additional moisture and will exacerbate the issue).

If solvent enamels or 2 pack paints are applied in cold weather, the drying or curing process is usually delayed until the temperature rises. Until this happens, these coatings remain prone to physical damage by rain, dust or foot traffic, etc. and where practical, should be protected. When the temperatures increase sufficiently, the paint will restart the drying process and are usually unaffected, assuming that the film build of the paint is applied as per the recommendations.

Modern waterborne paints can undergo cross linking to achieve film properties similar to traditional solventborne paints. In the case of Resene waterborne enamel paints, it can take up to a month to achieve full cross linking and final film properties.

Note 15: Repaints

Ideally paint should break down by gradual erosion of the surface leaving a perfectly adhering, etched surface which is ideal for repainting after washing down to remove surface chalking and any dirt and other contaminants. Unfortunately this is not always the case and additional time consuming surface preparation and priming may be required.

The worst case scenario is when the paint system has lost integrity, due to loss of adhesion resulting in flaking, peeling and blistering of the paint. Where any of these breakdowns have occurred, unless specific localised reasons for the failure can be identified, it is wise to assume that the weakness may be prevalent over the whole surface.

The assessment that has to be made is whether the existing system has sufficient adhesion to hold on when subjected to the extra stress and weight of two or three more coats of paint. Stresses are, of course, increased if the new system is darker in colour than the existing system.

Depending upon the prime system requirement at the time of specification, the effective lifetime of a coating system can be defined as the time to loss of film integrity, chalking, colour fade, or functionality such as weather tightness. While the factors are inter-related, it is the formulation composition that is the underlying determinant of system lifetime.

With new work film integrity is not normally an issue. Repaints over many years results in an increasing film build and increased stress on the underlying paint layers. The stress will eventually be manifested as loss of adhesion that is loss of film integrity and, in most cases, it is the original primer that fails.

Many older paints, including red lead primers become hard and brittle with ageing. Acrylic paints are more flexible than cross linking enamel paints and this means they can undergo extensions without film cracking.

Standard acrylic paints are flexible but not elastic, which means that at a certain level of extension the film will break. The extensibility is dependent upon resin features and gloss level. There are coatings formulated using elastomeric acrylic resins that can undergo stretching and return to the non-extended state without film breakage. These tend to be in the high build coatings category.

As the thickness of paint builds up on a substrate, there is a corresponding increase in tension on the underlying paint layers. Modern acrylic paints have excellent adhesion to clean, sound old prepared paints. When delamination occurs, it is usually at the substrate primer interface. There are two distinct types of failure, adhesive (between layers of paint) and cohesive (within a given layer of paint).

Upon inspection of these issues, the new coatings have invariably adhered well to the old coatings but the coatings underneath have lost all there adhesion and flexibility properties, in turn causing them to pull away. When investigating a failure, the best practice is to check what the failure type is and if inter-coat adhesion, which layers are involved. This can easily be seen by checking the back of a flake and comparing it to what

remains where the flake delaminated from. If the failure is cohesive, there is usually evidence of the same paint colour being present on the back of the flake and where the flake peeled from.

Unfortunately in most cases, this issue cannot be easily foreseen and often does not become an issue until the new coatings are applied. This makes identification of who is responsible debatable.

Even when adhesion tests are done on the old coatings, they still may appear sound but because there are so many layers (sometimes up to 300 + microns), they are brittle and their adhesion becomes limited. A common cause of delamination occurs with a change from a pale to a much darker topcoat colour. The extra heat associated with the colour change is the tipping point and delamination is common. Note the use of Cool Colours will help but not completely eliminate heat related issues.

The issue can be avoided by adhesion testing and identifying the age and build-up of existing coatings and fully removing them to a sound substrate suitable for painting. However, this does come at a much higher cost than simply painting over the old paint system, especially when the risks involved with removing lead based paint are added to the cost. It is up to the building owner or agent to make an educated decision of which path they would like to take.

It is better to be forewarned as to the possibility of paint delamination and take additional steps, such as stripping the area's most likely to be affected by heat related issues or selecting a lighter colour than initially planned, than be faced with early failure of the existing coatings.

Test for adhesion

Clean an area of suspect coating and apply a strip of adhesive tape ensuring firm contact by rubbing with a fingernail. Rapidly pull off the tape at 90° angle to the surface. Examine the tape for any detached paint. Where paint flakes come away, a complete strip of the existing paint system is recommended. Adhesion testing should be repeated at multiple sites on a given elevation.

Typical retail adhesive tapes vary widely in their 'stickability'. Please contact Resene for advice on suitable tapes.

Note 16: Application Timeframe

To prevent the primed surface being exposed to damaging UV light and weather, apply topcoats within a maximum time period of 4 weeks after completion of surface preparation. Most primers and sealers are not designed for long term UV exposure and are prone to chalking. If left exposed to weathering too long before top coating, the adhesion of the subsequent coats to the primed surface will be compromised.

Note 17: Form Oils and Release Agents

Form oils and release agents (also known as bond breakers) are used when concrete is poured into a precast mould or used with formwork, which is built on site, rather like greasing a cooking tray before putting a cake mixture in. In-situ concrete is then poured into the form (formwork). Form oils and release agents are usually brush applied or sprayed on (a knapsack or garden sprayer is adequate for this) and made from waxes and oils, such as paraffin wax. Invariably residue will be left on the concrete surface when the moulds or formwork is removed and paint will not stick to this residue. Better Release Agents, such as Resene NoBond, actually react with the surface of the concrete preventing the cure of the very top layer of the concrete in contact with it and leaving a very clean, paintable surface.

While over time natural weathering will remove these waxes and oils, it can take several months to do so. Waterblasting will not itself remove them. Just as you need to use detergent to wash oil and grease off your clothes at home, detergents need to be used to remove formwork residue. In most cases Resene Paint Prep and Housewash (see Data Sheet D812), which contains a detergent, will suffice, however some stubborn wax and oil residues may need a stronger product, such as Resene Emulsifiable Solvent Cleaner, a blended solvent and detergent that can be dissolved in water.

It is important to remove release agents used in the production process prior to painting.



Ref 7



Ref 8

Photo 1(Ref 7) shows the coating flaking away due to a failure to remove the release agent before applying the coating system. The entire building was subsequently stripped and re-coated; photo 2(Ref 8)

Note 18: Custom/Special Colours

Where the specification requires a custom/special colour to be applied, the applicator is required to produce a sample of the colour, to be approved by the owner/specifier prior to commencing painting.

For a custom/special stain colour the sample for approval must be the full stain system, applied as per the Resene datasheet, to the timber to be stained.

SURFACE SPECIFICATION SHEETS

SECTION 1 – Concrete Surfaces

Spec Sheet 3:1/1 - New Concrete Surfaces, including In-situ, Precast and Tilt Slab

Once prepared, concrete presents a good substrate for most paint systems. Typically, new precast (and tilt slab) concrete will have form oils (also referred to as release agents) and / or curing compounds, which will require removal before a paint system is applied. Depending on how smooth the surface is, additional weathering may need to be allowed for, or an adhesion primer / sealer used. If the surface is below specified standard, remedial filling may be required or alternatively a textured (low gloss or flat) coating substituted.

Step 1: Remove residue 'form oil' using Resene Emulsifiable Solvent Cleaner. [Data Sheet D804](#)

Note I: To identify if residual form oils are present, spray water onto the surface. Where the water beads and does not wet the concrete, the affected areas will need treating.

Step 2: Thoroughly wash using Resene Paint Prep and House Wash to remove residual surface contaminants, construction detritus, etc.

Step 3: Wash down thoroughly with fresh water or alternatively, water-blast at pressures up to 3000psi to achieve the same result. Recheck for residual form oils (Refer to Note I above).

Step 4: Rake out cracks greater than 1 millimetre wide, bugholes and damaged areas to remove all loosely bound material.

Fill cracks and holes less than 3mm deep, using Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions. Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them. [Data Sheet D811](#)

Note II: Where significant filling, including remedial plastering is undertaken on Precast or Tilt slab concrete, replace the recommended ConcreteSeal 3 in 1 Sealer with Resene Concrete Primer. Many plasters contain or generate lime and if not sealed with Resene Concrete Primer, or alternatively Resene LimeLock, can discolour and adversely affect the waterborne topcoat system. This step does not require an additional coat of primer and should be read in conjunction with the painting specification for the project.

Note III: Contractually, it is generally the responsibility of the head contractor to ensure the specified concrete standard is achieved before painting. Where remedial work is required (other than minor repair filling) to meet the specified concrete standard, this is considered outside of the painting contract. A site instruction or deviation may need to be issued for the painting contractor to undertake this work or apply a higher build and / or textured coating. This is likely to incur additional cost.

Note IV: Any construction joints requiring repair should be thoroughly raked out and cleaned then filled with a suitable sealant as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a

sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Spec Sheet 3:1A/1 - New Tilt Slab – Polished / Aggregate rich

The appearance of Polished / Aggregate rich concrete once prepared, can be enhanced by the application of a clear coat system. Typically, new precast (and tilt slab) concrete will have form oils (also referred to as release agents) and / or curing compounds, which will require removal before a clear coat system is applied.

Step 1: Remove residue 'form oil' using Resene Emulsifiable Solvent Cleaner. [Data Sheet D804](#)

Note I: To identify if residual form oils are present, spray water onto the surface. Where the water beads and does not wet the concrete, the affected areas will need treating.

Step 2: Thoroughly wash using Resene Paint Prep and House Wash to remove residual surface contaminants, construction detritus, etc.

Step 3: Wash down thoroughly with fresh water or alternatively, water-blast at pressures up to 3000psi to achieve the same result. Recheck for residual form oils (Refer to Note I above).

Note II: Contractually, it is generally the responsibility of the head contractor to ensure the specified concrete standard is achieved before painting. Where remedial work is required (other than minor repair filling) to meet the specified concrete standard, this is considered outside of the painting contract. A site instruction or deviation may need to be issued for the painting contractor to undertake this work or apply a higher build and / or textured coating. This is likely to incur additional cost.

Note III: Any construction joints requiring repair should be thoroughly raked out and cleaned then filled with a suitable sealant as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Spec Sheet 3:1C/1 - New Concrete Surfaces, including In-situ, Precast and Tilt Slab – clear coat

Once prepared, concrete presents a good substrate for most paint systems. Typically, new precast (and tilt slab) concrete will have form oils (also referred to as release agents) and / or curing compounds, which will require removal before a clear coating is applied. Depending on how smooth the surface is, additional weathering may need to be allowed for. If the surface is below specified standard, remedial filling may be required.

Step 1: Remove residue 'form oil' using Resene Emulsifiable Solvent Cleaner. [Data Sheet D804](#)

Note I: To identify if residual form oils are present, spray water onto the surface. Where the water beads and does not wet the concrete, the affected areas will need treating.

Step 2: Thoroughly wash using Resene Paint Prep and House Wash to remove residual surface contaminants, construction detritus, etc.

Step 3: Wash down thoroughly with fresh water or alternatively, water-blast at pressures up to 3000psi to achieve the same result. Recheck for residual form oils (Refer to Note I above).

Step 4: Rake out cracks greater than 1 millimetre wide, bugholes and damaged areas to remove all loosely bound material.
Fill cracks and holes less than 3mm deep, using Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions

Note II: Where significant filling, is undertaken using a pigmented filler/sealant the surface should not be clear coated.

Note III: Contractually, it is generally the responsibility of the head contractor to ensure the specified concrete standard is achieved before painting. Where remedial work is required (other than minor repair filling) to meet the specified concrete standard, this is considered outside of the painting contract. A site instruction or deviation may need to be issued for the painting contractor to undertake this work or apply a higher build and / or textured coating. This is likely to incur additional cost.

Note IV: Any construction joints requiring repair should be thoroughly raked out and cleaned then filled with a suitable sealant as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is coated, the clear coating may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into coating and create a tacky surface.

Spec Sheet 3:1/2 - Weathered Concrete

Older concrete is likely to require mould and any efflorescence treated. There is also likely to be accumulated windblown salts on the surface. These can stain and discolour waterborne paint systems and if the surface is too rough and / or textured, it can be hard to completely flush away. Other stains and compromised concrete including spalled areas will need to be remedied.

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note I: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Thoroughly scrub down with Resene Paint Prep and House Wash in accordance with the data sheet to remove all dirt, dust, grease, any moss and mould residue, chalk, cobwebs and other contaminants. Alternatively, water blast at up to 3000psi. Any areas of efflorescence should be wire brushed to remove the surface contamination and efforts made to determine if leaks are present, which are causing the efflorescence.

[Data Sheet D812](#)

Step 3: Rake out cracks greater than 1 millimetre wide, bugholes and damaged areas to remove all loosely bound material.

Fill cracks and holes less than 3mm deep, using Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions. Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them.

[Data Sheet D811](#)

Step 4: Apply a full coat of the Resene Sureseal, as per the painting specification.

[Data Sheet D42](#)

Note II: Any construction joints requiring repair should be thoroughly raked out and cleaned, then filled with a suitable sealant, as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant, as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Note III: Treat spalled, drummy and compromised concrete as per **Spec Sheet 3:1A/2**. For additional information, refer to **Surface Information Note 7: Spalling Concrete / Concrete Cancer**.

If you are uncertain on how to proceed or require clarification, contact Resene Technical Services.

Spec Sheet 3:1A/2 - Repair of Spalled, Drummy and Compromised Concrete and Plasters

Spalling concrete and plaster is caused by reinforcing steel rods and / or mesh expanding as they oxidise (rust) and forcing the concrete off. Drummy and compromised plaster is typically the result of cohesive failure of the plaster. Failing concrete and plasters will need to be 'hacked' out, any rusted steel treated and surface made good for cosmetic and practical purposes.

While spalled concrete and drummy plastered areas may be suspected or visible, the extent and location may not be known until preparation work begins. It is therefore almost impossible to include when pricing a project and is typically tagged out by those pricing. A PC sum or agreed rate is usually included to cover this eventuality. If this is not the case and the tender or spec covers old concrete and plaster, a site instruction or note to tenderers should be included to cover this eventuality.

Some concretes may show specific failure due to the environment that they are used in (e.g. lactic acid exposure in milking sheds). Such issues need specialised products specified. Contact Resene Technical Services if this is the case or if you require clarification.

Step 1: Carefully remove all damaged and suspect concrete back to sound concrete.

Badly corroded reinforcing steel should be cut out and replaced. Any exposed and sound reinforcing steel should have the concrete around its base chipped out until un-corroded steel is exposed.

Step 2: The newly exposed concrete and steel should be thoroughly water-blasted to remove all salts and any other contaminants.

Step 3: The reinforcing steel should then be thoroughly wire brushed or power-tool cleaned to remove as much rust as is practicable. Immediately spot prime with Armourcote 221 to achieve a dry film build of 75 microns. Allow to dry for 48 hours. [Data Sheet RA36](#)

Step 4: Apply a sealer coat of Resene Concrete Primer to all faces of damaged concrete. Allow to dry for 4 hours. [Data Sheet D405](#)

Step 5: Repair damaged areas by plastering over with Resene Construction Systems Ltd Multistop FRP Bedding Compound. Trowel the filling compound into the holes and finish flush to surrounding concrete.

Step 6: As soon as is practicable apply a sealer coat of Resene LimeLock to repaired areas. [Data Sheet D809](#)

Note 1: In bad cases where massive concrete cracking is occurring or where a structure is close to the sea, we advise that an expert structural engineer is consulted. Our advice that follows assumes no major structural damage has been done.

Spec Sheet 3:1/3 - Previously Painted Concrete

Well painted, painted exterior concrete will be in reasonable condition with possibly some moss and mould on the surface as well as salt, dirt and other contaminants and detritus. The degree of failure of the previously applied coatings will ultimately determine the amount of time and cost spent on preparing the surface (see also the notes above).

Where the paint surface has badly deteriorated, more extensive preparation, including possibly complete removal of the coating may be required.

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note 1: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Thoroughly scrub down using a solution of Resene Paint Prep and Housewash diluted and applied to data sheet, rinse with copious amounts of water or low pressure water blast to remove all surface chalking, dirt, detritus, moss and mould residue, cobwebs and other contaminants. [Data Sheet D812](#)

Step 3: Thoroughly scrape and sand to remove all loose and flaking paint and to provide a good key for subsequent coats. Thoroughly scrape and sand to remove all loose and flaking paint and to provide a good key for subsequent coats. Ensure all areas of flaked paint are thoroughly sanded to a feathered edge. Remove all sanding dust. Waterblasting is an alternative to washing, particularly where large areas of flaking paint require removal. Any areas of efflorescence should be wire brushed, to remove the surface contamination and efforts made to determine if leaks are present, which are causing the efflorescence.

Step 4: Any surface rust stains from fixings, etc, should be spot primed with Resene GP Metal Primer. Ideally, remove and replace or remedy the source of any rust staining. Any rust which appears to be emanating from within the concrete, should be seen as a sign of incipient spalling and its owner / specifiers attention must be drawn to it. [Data Sheet D411](#)

Step 5: Spot prime all concrete and cracks and any areas of efflorescence (prepare these areas by through wire brushing) with Resene Sureseal. [Data Sheet D42](#)

Step 6: Rake out cracks greater than 1 millimetre wide, holes and voids and any damaged areas to remove all loosely bound material.

Fill minor cracks and holes (less than 3mm deep), using Resene Ezy-Fill GP or similar, or alternatively and for larger voids, use Resene Construction Systems Ltd Multistop FRP Bedding Compound (must only be applied to bare concrete). Fill and prime as required by the relevant manufacturer's instructions. Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them. Spot prime filled edges as per the painting specification. [Data Sheet D811](#)

Note II: Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Note III: Treat spalled, drummy and compromised concrete as per **Spec Sheet 3:1A/2**. For additional information, refer to **Surface Information Note 7: Spalling Concrete / Concrete Cancer**.

If you are uncertain on how to proceed or require clarification, contact Resene Technical Services.

Note IV: Where paint coatings need to be stripped, high pressure water blasting can be used or alternatively chemical stripping. For advice please contact Resene Technical Services.

Note V: Before beginning any surface preparation, tests should be done to verify the adhesion of the existing system ensure the old paint does not contain lead. Paint flakes with layers older than 1970 are likely to have lead in them. If lead based paints are identified on this job, then the OSH Guidelines <https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/> for the Management of Lead-based Paint must be read and followed. Where these guidelines are in conflict with any part of this specification, the guidelines must take precedence. Flakes of lead paints and any sanding dust need to be carefully managed and disposed of.

SECTION 2 – Masonry, Concrete Block

Spec Sheet 3:2/1 - New Masonry, Concrete Block, Brick

Masonry, concrete block and brick (when painted) generally require weather proofing when used as part of a buildings' cladding system. Additionally, pointing should be slightly concave away from the blocks edges in order for water to run off easily and not pool in recesses.

Step 1: Thoroughly clean to remove any surface contaminants, construction detritus and loosely bound material.

Step 2: Fill cracks and holes less than 3mm deep, using Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions. Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them.

[Data Sheet D811](#)

Note I: Whether the blocks are stacked or staggered or have been ground for decorative effect, all pointing should be undertaken so the surface is slightly concave with no obvious gaps or breaks. Contractually, it is generally the responsibility of the head contractor to ensure the specified masonry standard is achieved before painting. Where remedial work is required (other than minor repair filling) to meet the required standard, this is considered outside of the painting contract. A site instruction or deviation may need to be issued for the painting contractor to undertake this work. This is likely to incur additional cost.

Note II: Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Spec Sheet 3:2C/1 - New Masonry, Concrete Block, Brick – clear coat

Masonry, concrete block and brick (when painted) generally require weather proofing when used as part of a buildings' cladding system. Additionally, pointing should be slightly concave and away from the blocks edges in order for water to run off easily and not pool in recesses.

Step 1: Thoroughly clean to remove any surface contaminants, construction detritus and loosely bound material.

Step 2: Fill cracks and holes less than 3mm deep, using Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions.

Note I: Whether the blocks are stacked or staggered or have been ground for decorative effect, all pointing should be undertaken so the surface is slightly concave with no obvious gaps or breaks. Contractually, it is generally the responsibility of the head contractor to ensure the specified masonry standard is achieved before painting. Where remedial work is required (other than minor repair filling) to meet the required standard, this is considered outside of the painting contract. A site instruction or deviation may need to be issued for the painting contractor to undertake this work. This is likely to incur additional cost.

Note II: Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is coated, the clear coating may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into coating and create a tacky surface.

Note III: Where significant filling, is undertaken using a pigmented filler/sealant the surface should not be clear coated.

Spec Sheet 3:2/2 - Weathered Unpainted Masonry / Block Surfaces

Older unpainted masonry and concrete blocks are likely to require mould and any efflorescence treated. There is also likely to be accumulated windblown salts on the surface. Surface salt will stain and discolour waterborne paint systems and as the surface of unpainted masonry is typically rough, they can be hard to completely flush away. Other stains and any compromised pointing or blockwork will need to be remedied.

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note I: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Thoroughly scrub down with Resene Paint Prep and House Wash, in accordance with the data sheet to remove all dirt, dust, grease, any moss and mould residue, chalk, cobwebs and other contaminants. Alternatively, water blast at up to 3000psi. Any areas of efflorescence should be wire brushed to remove the surface contamination.

[Data Sheet D812](#)

Step 3: Rake out cracks greater than 1 millimetre wide, bugholes and damaged areas to remove all loosely bound material.

Fill cracks and holes less than 3mm deep, using Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions. Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them.

[Data Sheet D811](#)

Step 4: Apply a full coat of the Resene Sureseal as per the painting specification. [Data Sheet D42](#)

Note II: Any construction joints requiring repair should be thoroughly raked out and cleaned then filled with a suitable sealant as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Spec Sheet 3:2/3 - Previously Painted Masonry / Block Surfaces

Generally, painted exterior masonry and concrete block will be in reasonable condition with some moss and mould on the surface as well as salt, dirt and other contaminants and detritus. The degree of failure of the previously applied coatings will ultimately determine the amount of time and cost spent on preparing the surface (see also the notes above).

Where the paint surface has badly deteriorated, more extensive preparation, including possibly complete removal of the coating, may be required.

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note I: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Thoroughly scrub down using a solution of Resene Paint Prep and House Wash and water to remove all surface chalking, dirt, detritus, moss and mould residue, cobwebs and other contaminants. Use as directed on the label. [Data Sheet D812](#)

Step 3: Thoroughly scrape and sand to remove all loose and flaking paint and to provide a good key for subsequent coats. Water blasting is an alternative to washing, particularly where large areas of flaking paint require removal. Any areas of efflorescence should be wire brushed to remove the surface contamination.

Step 4: Any rust stains from fixings etc. should be spot primed with Resene GP Metal Primer. Ideally remove and replace or remedy the source of any rust staining. [Data Sheet D411](#)

Step 5: Spot prime all exposed masonry, cracks, any filled areas and areas of efflorescence with Resene Sureseal. [Data Sheet D42](#)

Step 6: Rake out cracks greater than 1 millimetre wide, holes and voids and any damaged areas to remove all loosely bound material.

Fill minor cracks and holes (less than 3mm deep) using Resene Ezy-Fill GP or similar or alternatively and for larger voids use Resene Construction Systems Ltd Multistop FRP Bedding Compound (must only be applied to bare masonry/block). Fill and prime as required by the relevant manufacturer's instructions. Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them. Spot prime filled edges as per the painting specification. [Data Sheet D811](#)

Note II: Any construction joints requiring repair should be thoroughly raked out and cleaned, then filled with a suitable sealant as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

SECTION 3 – Plaster and Rendered Finishes

Spec Sheet 3:3/1 - New Exterior Plaster and Rendered Finishes

There are a number of proprietary and specialist plasters and renders available for use on exterior cladding. However, they have the same coating, painting and preparation requirements. It is important to ensure the manufacturer's instructions and industry best practice is followed.

Lime, which can migrate from plaster and render finishes, can discolour and damage paint and coating systems unless sealed. Even modern acrylic plaster formulations can be affected.

Some hairline cracking is a feature of plasters and renders and, provided is not endemic and symptomatic of failing or unsound plaster, is best coated using a high build coating such as Resene X-200 membrane.

Step 1: Thoroughly clean to remove any surface contaminants, construction detritus and loosely bound material.

Step 2: Rake out cracks greater than 1 millimetre wide, voids and damaged areas to remove all loosely bound material.

Fill cracks and holes less than 3mm deep using Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions. Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them.

[Data Sheet D811](#)

Step 3: Apply a full coat of the Resene LimeLock as per the painting specification.

[Data Sheet D809](#)

Note I: Water is required to fully cure plasters (hydraulic cure). Modern acrylic modified plasters, which can be applied as thin plasters, lose water quickly and do not achieve full hydraulic cure. Resene LimeLock applied as soon as the plaster is touch dry, acts as a curing membrane as water in the plaster mix is trapped within the plaster layer and available for hydraulic curing. The application of LimeLock also allows painting be undertaken sooner than would normally be the case if the plaster was left to cure without the LimeLock.

Note II: Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Note III: Step 3 does not require an additional coat of primer or sealer and should be read in conjunction with the painting specification for the project.

Spec Sheet 3:3/2 - Weathered Plaster and Render

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note I: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Thoroughly scrub down with Resene Paint Prep and House Wash in accordance with the data sheet to remove all dirt, dust, grease, any moss and mould residue, chalk, cobwebs and other contaminants. Alternatively, waterblast at up to 3000psi. Any areas of efflorescence should be wire brushed to remove the surface contamination.

[Data Sheet D812](#)

Step 3: Rake out cracks greater than 1 millimetre wide, voids and damaged areas to remove all loosely bound material.

Fill cracks and holes less than 3mm deep using Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions.

Step 4: Apply a full coat of the Resene Sureseal as per the painting specification. [Data Sheet D42](#)

Step 5: Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them. [Data Sheet D811](#)

Note II: Any construction joints requiring repair should be thoroughly raked out and cleaned then filled with a suitable sealant as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Note III: Drummy and otherwise compromised plaster is typically the result of cohesive failure of the plaster. Failing plasters will need to be 'hacked' out and surface made good for cosmetic and practical purposes.

While drummy plastered areas may be suspected or identified, the extent and location may not be known until preparation work begins. It is therefore almost impossible to include when pricing a project and is typically tagged out by those pricing. A PC sum or agreed rate is usually included to cover this eventuality. If this is not the case and the tender or spec covers old plaster, a site instruction or note to tenderers should be included to cover this eventuality.

Note IV: Step 3 does not require an additional coat of primer or sealer and should be read in conjunction with the painting specification for the project.

Spec Sheet 3:3/3 - Previously Painted Plaster and Render

Generally, painted plasters and renders will be in reasonable condition with some moss and mould on the surface as well as salt, dirt and other contaminants and detritus. The degree of failure of the previously applied coatings will ultimately determine the amount of time and cost spent on preparing the surface (see also the notes above).

Where the paint surface has badly deteriorated, more extensive preparation, including possibly complete removal of the coating may be required. This is likely if the initial paint system was a limewash or similar style of coating. These are typically poorly bound and present a poor base for future paint systems.

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note I: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Thoroughly scrub down using a solution of Resene Paint Prep and House Wash and water to remove all surface chalking, dirt, detritus, moss and mould residue, cobwebs and other contaminants. Use as directed on the label. [Data Sheet D812](#)

Step 3: Thoroughly scrape and sand to remove all loose and flaking paint to provide a good key for subsequent coats. Water blasting is an alternative to washing, particularly where large areas of flaking paint require removal. Any areas of efflorescence should be wire brushed to remove the surface contamination.

Step 4: Any rust stains from fixings etc. should be spot primed with Resene GP Metal Primer. Ideally remove and replace or remedy the source of any rust staining. [Data Sheet D411](#)

Step 5: Spot prime all exposed concrete and cracks and any areas of efflorescence with Resene Sureseal. [Data Sheet D42](#)

Step 6: Rake out cracks greater than 1 millimetre wide, holes and voids and any damaged areas to remove all loosely bound material.

Fill minor cracks and holes (less than 3mm deep) using Resene Ezy-Fill GP or similar, or alternatively and for larger voids, use Resene Construction Systems Ltd Multistop FRP Bedding Compound (must only be applied to bare plaster/render). Fill and prime as required by the relevant manufacturer's instructions. Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them. Spot prime filled edges as per the painting specification. [Data Sheet D811](#)

Note II: Any construction joints requiring repair should be thoroughly raked out and cleaned, then filled with a suitable sealant as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Note III: Drummy and otherwise compromised plaster is typically the result of cohesive failure of the plaster. Failing plasters will need to be 'hacked' out and surface made good for cosmetic and practical purposes.

While drummy plastered areas may be suspected or identified, the extent and location may not be known until preparation work begins. It is therefore almost impossible to include when pricing a project and is typically tagged out by those pricing. A PC sum or agreed rate is usually included to cover this eventuality. If this is not the case and the tender or spec covers old plaster, a site instruction or note to tenderers should be included to cover this eventuality.

SECTION 4 – Fibre Cement Panels including Titan Board, Villaboard, Linea.

Spec Sheet 3:4/1 - New Fibre Cement Panels including Titan Board, Villaboard

Fibre cement has been used as a building material and cladding system for many years. Painting fibre cement is generally straight forward. Panels used as soffits present few issues. There are a number of proprietary brands available in the New Zealand and Australian markets; however, as a rule the preparation and painting requirements do not differ.

Linea weatherboards is covered in a separate section below and is repeated in **Timber SIPDS No 2**.

Depending on the fixing method used panels, some boards may require screw and nail heads to be filled and sanded before painting. Usually this, and any subsequent sanding (to flat smooth surface), is required for face fixed fibre cement panels, such as compressed sheet and Villaboard. Unless otherwise documented or specified, this and the application of construction sealants are undertaken by the panel fixers or the head contract.

For compressed sheet panels, epoxy filling and fairing compounds such as Nuplex Fairing Cream are recommended for the filling of screw holes (as shown in photo below – Ref 7).



Ref 7

The filling compound manufacturer's product instructions should be followed.

Where panels such as James Hardie Monotec are specified, a seamless joint filling system will be required. If this is the case, contact Resene Construction Systems for information on their propriety system or Resene Technical Services.

Step 1: Thoroughly clean to remove any surface contaminants, construction detritus and loosely bound material.

Step 2: Fill any voids, holes, etc, using Resene Ezy-Fill GP Filler. Sand to achieve a smooth, even finish over the panel. Where holes from the fixing screws required filling and this element is part of the painting contract, an approved construction filler or fairing compound should be used and the manufacturer's recommendations for preparing and priming followed.

Step 3: Apply a full coat of the recommended primer as per the painting specification.

Note I: Step 3 does not require an additional coat of primer or sealer and should be read in conjunction with the painting specification for the project. The cladding supplier may

have specific recommendations for envelope sealing of boards and / or minimum dry film builds of an applied coating system.

Spec Sheet 3:4C/1 - New Fibre Cement Panels including Titan Board, Villaboard – clear coat

Fibre cement has been used as a building material and cladding system for many years. Clear coating fibre cement is generally straight forward. Panels used as soffits present few issues. There are a number of proprietary brands available in the New Zealand and Australian markets; however, as a rule the preparation and painting requirements do not differ.

Linea weatherboards is covered in a separate section below and is repeated in **Timber SIPDS No 2**.

Depending on the fixing method used panels, some boards may require screw and nail heads to be filled and sanded before painting. Usually this, and any subsequent sanding (to flat smooth surface), is required for face fixed fibre cement panels, such as compressed sheet and Villaboard. Unless otherwise documented or specified, this and the application of construction sealants are undertaken by the panel fixers or the head contract.

For compressed sheet panels face, epoxy filling and fairing compounds must be of a colour to match the substrate.

The filling compound manufacturer's product instructions should be followed.

Where panels such as James Hardie Monotec are specified, a seamless joint filling system will be required. If this is the case, contact Resene Construction Systems for information on their propriety system or Resene Technical Services.

We do not recommend clear coating seamless jointed systems.

Step 1: Thoroughly clean to remove any surface contaminants, construction detritus and loosely bound material.

Note I: The cladding supplier may have specific recommendations for envelope sealing of boards and / or minimum dry film builds of an applied coating system.

Note II: Existing cladding installed prior to 1970 will more than likely contain asbestos fibres, clear coating is not recommended.

Spec Sheet 3:4/2 - Weathered Fibre Cement Panels

Generally, painting over a weathered fibre cement surface is straightforward. There will be mould, moss and possibly lichen growth on the surface and windblown salts and other contaminants on the surface. Care will be needed if water blasting, as some older panels may become weakened and friable with age.

Earlier panels were manufactured using asbestos reinforcement and care must be taken during preparation to ensure the asbestos fibres do not become airborne. This is of particular concern when painting or coating old weathered fibre cement or preparing old previously painted panels and boards. If you are unsure or require advice, please contact Resene Technical Services or refer to the Health and Safety at Work (Asbestos) Regulations 2016 or obtain a copy of the New Zealand Demolition and Asbestos Association publication New Zealand guidelines for the management and removal of asbestos available from the WorkSafe NZ website.

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note I: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Thoroughly scrub down with Resene Paint Prep and House Wash in accordance with the data sheet to remove all dirt, dust, grease, any moss and mould residue, chalk, cobwebs and other contaminants. Alternatively, water blast at up to 2500psi. [Data Sheet D812](#)

Step 3: Apply a full coat of the Resene Sureseal as per the painting specification. [Data Sheet D42](#)

Step 4: Fill minor cracks and holes (less than 3mm deep) using Resene Ezy-Fill GP or similar, or alternatively and for larger voids, use Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions. Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them.

[Data Sheet D811](#)

Note II: Any construction joints requiring repair should be thoroughly raked out and cleaned, then filled with a suitable sealant as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Note III: Step 3 does not require an additional coat of primer or sealer and should be read in conjunction with the painting specification for the project.

Note IV: Contact Resene Technical Services if the panels or boards were manufactured before 1983, as they are likely to contain asbestos.

Spec Sheet 3:4/3 - Previously Painted Fibre Cement Panels

Generally, painted fibre cement panels and boards will be in reasonable condition with some moss and mould and possibly lichen on the surface as well as salt, dirt and other contaminants and detritus. The degree of failure of the previously applied coatings will ultimately determine the amount of time and cost spent on preparing the surface (see also the notes above).

Where the paint surface has badly deteriorated, more extensive preparation, including possibly complete removal of the coating may be required. This is likely if the initial paint system was a limewash or similar style of coating. These are typically poorly bound and present a poor base for future paint systems.

Earlier panels were manufactured using asbestos reinforcement and care must be taken during preparation to ensure the asbestos fibres do not become airborne. This is of particular concern when painting or coating old weathered fibre cement or preparing old previously painted panels and boards. If you are unsure or require advice, please contact Resene Technical Services or refer to the Health and Safety at Work (Asbestos) Regulations 2016 or obtain a copy of the New Zealand Demolition and Asbestos Association publication New Zealand guidelines for the management and removal of asbestos available from the WorkSafe NZ website.

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note 1: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Thoroughly scrub down using a solution of Resene Paint Prep and House Wash and water to remove all surface chalking, dirt, detritus, moss and mould residue, cobwebs and other contaminants. Use as directed on the label. [Data Sheet D812](#)

Step 3: Thoroughly scrape and sand to remove all loose and flaking paint and to provide a good key for subsequent coats. Water blasting is an alternative to washing particularly where large areas of flaking paint require removal.

Step 4: Any rust stains from fixings, etc., should be spot primed with Resene GP Metal Primer. Ideally remove and replace or remedy the source of any rust staining. [Data Sheet D411](#)

Step 5: Fill minor cracks and holes (less than 3mm deep) using Resene Ezy-Fill GP or similar, or alternatively and for larger voids, use Resene Construction Systems Ltd Multistop FRP Bedding Compound (must only be applied to bare fibre cement). Fill and prime as required by the relevant manufacturer's instructions. Cracks measuring less than 1mm should have Resene X-200 or Resene Brushable Crack Filler brushed into them. [Data Sheet D811](#)

Step 6: Spot prime all exposed fibre cement and filled areas with Resene Sureseal. [Data Sheet D42](#)

Note II: Any construction joints requiring repair should be thoroughly raked out and cleaned then filled with a suitable sealant as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Note III: Contact Resene Technical Services if the panels or boards were manufactured before 1983, as they are likely to contain asbestos.

Spec Sheet 3:4A/1 - New Linea Weatherboards and Fibre Cement Timber Substitutes

While clearly not timber, fibre cement and particularly Linea weatherboards, are a commonly specified timber substitute and Linea weatherboards, in particular, are widely used. They have been included in the timber section, as many specifiers would use search for weatherboards rather than cement board – this section is repeated in **Timber SIPDS No 2**.

Painting new fibre cement is usually straight forward. The main requirement is that to correctly screw holes and cut edge details will need to be carefully primed and filled.

Step 1: Thoroughly scrub down with Resene Paint Prep and House Wash to remove all dirt, detritus and other contaminants. Rinse thoroughly with clean water.

[Data Sheet D812](#)

Step 2: Apply a full coat of Resene Concrete Primer as per the paint specification.

[Data Sheet D405](#)

Step 3: Fill all nail holes and gaps with Resene Easy Fill GP or similar product applied in accordance with manufacturer's instructions. Spot prime filled areas (after 24-hour dry) with Resene Concrete Primer.

[Data Sheet D405](#)

Note I: Step 2 does not require an additional coat of primer and should be read in conjunction with the painting specification for the project.

Note II: Where strong, deep colours, including blacks, or variants thereof, are used on products like Linea Weatherboard, Linea Oblique Weatherboard or Stria Cladding etc., it is recommended that a lower gloss paint finish is selected e.g. Resene Lumbersider. The more subdued gloss level of Resene Lumbersider minimises the visual impact of any surface imperfections/variations better than the semi-gloss of Resene Sonyx 101 and the high gloss of Resene Hi-Glos. It is strongly recommended that when using dark or deep colours that, if available, the Resene Cool Colour version of the colour is used.

Spec Sheet 3:4A/3 - Re-painting Linea Weatherboards and Fibre Cement Timber Substitutes

In general, repainting Linea and other fibre cement weatherboards and timber substitutes is straightforward. The substrate is inert so has little, if any movement and shrinkage, and is a good substrate to apply and reapply paint to. In most respects, it is similar to repainting a traditional timber weatherboard.

Again, as for new Linea, this section is repeated in the Surface information and Preparation data sheet.

Where the paint surface has badly deteriorated, more extensive preparation, including possibly complete removal of the coating may be required. Refer also to **Surface Information Note 15 - Repaints**.

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note I: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Thoroughly scrub down using a solution of Resene Paint Prep and House Wash and water to remove all surface chalking, dirt, detritus, moss and mould residue, cobwebs and other contaminants. Use as directed on the label. [Data Sheet D812](#)

Step 3: Thoroughly scrape and sand to remove all loose and flaking paint and to provide a good key for subsequent coats. Ensure all areas of flaked paint are thoroughly sanded to a feathered edge. Ensure any sharp edges are arrised to a rounded profile

Step 4: Remove or punch in any rusty nails and replace with galvanised or stainless steel nails as is appropriate. Any exposed nail heads unable to be replaced, should be punched and spot primed with Resene GP Metal Primer if practicable and filled with Linseed oil putty. Any rust stains should be spot primed using Resene GP Metal Primer. [Data Sheet D411](#)

Step 5: Spot prime all sanded or flaked areas (including nail holes) with Resene Concrete Primer. [Data Sheet D405](#)

Step 6: Fill all nail holes, damaged areas or splits with Resene Ezy-Fill GP Filler or similar, in accordance with manufacturer's instructions. Spot prime filled areas with the specified primer as used previously.

Note II: Some of the older, pre-1983 fibre cement boards (and panels) contained asbestos and this needs to be treated with extreme caution. If you suspect Asbestos is present, please contain Resene Technical Services.

Note III: Where strong, deep colours, including blacks, or variants thereof, are used on products like Linea Weatherboard, Linea Oblique Weatherboard or Stria Cladding etc., it is recommended that a lower gloss paint finish is selected e.g. Resene Lumbersider. The more subdued gloss level of Resene Lumbersider minimises the visual impact of any surface imperfections/variations better than the semi-gloss of Resene Sonyx 101 and the

high gloss of Resene Hi-Glos. It is strongly recommended that when using dark or deep colours that, if available, the Resene Cool Colour version of the colour is used.

Spec Sheet 3:4B/3 - Fibre Cement Cladding and Roofing containing ASBESTOS

Before 1983, most fibrous cement in use in New Zealand contained asbestos. Fibrolite was reinforced with asbestos only. While James Hardies Hardiflex™ was reinforced with 4% asbestos and 4% wood fibre. Fibre cement products were used extensively for wall claddings on houses, garages etc., and also for corrugated roofing (the most common brand name being Super 6 roofing). Unless the exact age of the cladding/roofing can be established beyond doubt the assumption must apply that the material contains asbestos. These products pose a health hazard if care is not taken in surface preparation prior to painting or if just cleaning down.

Asbestosis is a chronic condition affecting the lungs and is caused by the inhalation and retention of asbestos fibres which results in scarring of lung tissue. Asbestosis is linked to almost all of the known types of asbestos fibres. Sufferers may experience severe shortness of breath and are at an increased risk of malignances including lung cancer. It usually occurs after high intensity and/or long term exposure and is regarded as an occupational; lung disease.

See WorkSafe web site <https://worksafe.govt.nz/topic-and-industry/asbestos/> for more details

Removal and/or disposal of asbestos containing materials (or just cleaning down of them) may require special permission and /or a license. Contact your local Council offices to determine your obligations under their bylaws. Also refer to the Health and Safety at Work (Asbestos) Regulations 2016 or obtain a copy of the New Zealand Demolition and Asbestos Association publication New Zealand guidelines for the management and removal of asbestos available from the WorkSafe NZ website.

Release of free asbestos fibres into the environment as a result of surface preparation or cleaning must be avoided at all times.

The following procedures must be followed during the preparation and or cleaning of asbestos containing fibre cement cladding and roofing as part of any painting operation

- Do not water blast asbestos containing claddings or roofing
- Keep the surface and any detritus / debris damp.
- Do not use power tools except for removal of fixing screws
- Do not break the sheets into smaller sections, either when removing or disposing of. Wherever possible remove the complete sheet.
- Wear personal protection equipment including disposable overalls and a suitable dust respirator
- Collect and contain all debris washed off the substrate and maintaining in a wet state in a sealed container
- Restrict access to personal other than those directly associated with preparation
- Remove all asbestos containing material from site for disposal at a refuse site approved by the local authority

We strongly recommend that base line testing of air and ground samples is undertaken to establish if there is asbestos contamination prior to work commencing. Local authorities will need to be involved in decisions on sampling sites for a given location as some local bodies will require confirmation that there is no site or air contamination arising from preparation and subsequent painting operations

- Step 1:** Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.
- Note 1:** For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)
- Step 2:** Apply a liberal wash of Resene Paint Prep and House Wash to the surface with a nylon bristle brush or broom and thoroughly scrub while ensuring that the surface remains wet at all times. Collect and contain wash off using filters placed either on the ground or at down pipe connections. The surface must remain damp while preparation work is under taken. Additionally do not allow debris to dry out and immediately place filters into tightly sealed heavy duty plastic bags for disposal [Data Sheet D812](#)
- Step 3:** Allow to the surface to dry out and then apply by roller or brush a saturation coat of Resene Sureseal to bare areas. The surface will be highly porous and will require significantly higher volumes of Resene Sureseal to saturate the surface (typically an applicate rate 4 to 6 square metres per litre, based on a flat surface). [Data Sheet D42](#)

SECTION 5 – Exterior Concrete Decks, Patios and Porches

Spec Sheet 3:5/1 - New Exterior Concrete Decks Patios and Porches

Exterior concrete decking, patios, porch areas and paths are easily coated or painted. Systems include high build water tight membranes, usually applied to prevent moisture ingress into living spaces below and low build decorative paint systems. Additionally, there may be a slip resistance requirement for the coating system.

Design considerations are critical however; sufficient fall must be incorporated into the design to allow water runoff (and to avoid water ponding). Preparation of the concrete surfaces needs to be of a high standard, as the potential for the coating to adhesively fail at the interface with the concrete is higher for trafficable surfaces than horizontal wall areas.

New exterior concrete decks, patios porch areas are likely to have dirt, dust and construction detritus, which will need removing before diamond grinding. The floor will need to be cured and have stable moisture content. Any oil or grease stains should be removed before diamond grinding, as the process can embed contaminants into the concrete.

Diamond grinding (or captive shot blasted where used) is usually outside of the painting or coating contract for new work. Where the contract requires the painting contractor to include it in their tender, the specifier will need to include this requirement as a site instruction or as deviation issued to the painting contractor for them to undertake this work.

Step 1: Ensure the surface is clean. Any oil or grease or other contaminants will need to be removed before diamond grinding. Thoroughly scrub down these areas with Resene Altex P40 Cleaner. Thoroughly wash clean with copious quantities of clean water. Do not let concrete dry out until all cleaning residue is removed.

Step 2: Diamond Grind or Captive Shot Blast to achieve a slightly roughened, toothy finish to the concrete to provide a good key for adhesion. The floor should resemble P180 grit sandpaper in texture. Thoroughly rake out any holes or cracks to produce a sound base for filling.

Note 1: Acid etching is an alternative to diamond grinding and captive shot blasting and is suitable for paint finishes rather than clear finished concrete.

Step 3: Wash using a mild detergent to remove any residual dust and detritus, rinse thoroughly. Once dry, vacuum to remove any remaining dust.

Step 4: Fill any holes or cracks with Epox-O-Bond Epoxy Filler or similar as per label directions. We recommend holes are over filled, then power sanded back to a smooth finish when the filler has cured for 24 hours. Remove all sanding dust and detritus. [Data Sheet D808](#)

- Note II:** Ensure surfaces are thoroughly dry before painting. Test method ASTM D4263 is recommended. Tape a 45cm square plastic sheet to concrete and leave for 16 hours. Observe underside for presence or absence of moisture.
- Note III:** Check representative areas of the floor for dust and debris by applying heavy black adhesive tape to the floor and removing it with a sharp yank. The presence of any material on the back of the tape indicates further preparation is needed.
- Note IV:** Where a clear finish is specified, care should be taken to ensure the colour of the filler and / or sealants used closely match the surrounding concrete.
- Note V:** There needs to be sufficient fall provided on the deck, porch or patio so that water does not pond on the surface. Where water tightness issues exist, sealants and appropriate side coving need to be provided for. This is generally outside of the scope of a painting contract. If this is not already provided for within the contract documentation, a specific site instruction or natives to tenderers may be required.
- Note VI:** Once the surface is thoroughly clean, ensure it is not re-contaminated by dirty footwear etc.

Spec Sheet 3:5/2 - Weathered (unpainted) Exterior Concrete Decks Patios and Porches

The decision to apply a coating system to an old concrete deck, porch or patio area is typically made for cosmetic or practical reasons if water ingress is an issue. The old concrete is likely to have moss and mould, and possibly lichen present as well as dirt, dust and possibly oil or grease stains which will need removing.

Preparation of the surface, particularly if it is trafficable, is an important consideration.

Diamond grinding (or captive shot blasted where used) is usually outside of the painting or coating contract for new work and also if the concrete floor is coated as part of a wider renovation project. It is practical however, for the contract to require the painting contractor to include it in their tender for projects, where the floor coating is a significant element of the work. While the painter is likely to subcontract the diamond grinding, they ultimately take on the responsibility for preparing and coating the floor.

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note I: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Ensure the surface is clean. Any oil or grease or other contaminants will need to be removed before diamond grinding. Thoroughly scrub down these areas with Resene Altex P40 Cleaner. Thoroughly wash clean with copious quantities of clean water. Do not let concrete dry out until all cleaning residue is removed.

Step 3: Diamond grind or captive shot blast to achieve a slightly roughened, toothy finish to the concrete to provide a good key for adhesion. The floor should resemble P180 grit sandpaper in texture. Thoroughly rake out any holes or cracks to produce a sound base for filling.

Note II: Acid etching is an alternative to diamond grinding and captive shot blasting, and is suitable for paint finishes rather than clear finished concrete.

Step 3: Wash using a mild detergent to remove any residual dust and detritus; rinse thoroughly. Once dry, vacuum to remove any remaining dust; a wet and dry vacuum system could be used also.

Step 4: Fill any holes or cracks with Epox-O-Bond Epoxy Filler or similar as per label directions. We recommend holes are over filled, then power sanded back to a smooth finish when the filler has cured for 24 hours. Remove sanding dust and detritus. [Data Sheet D808](#)

Note III: Ensure surfaces are thoroughly dry before painting. Test method ASTM D4263 is recommended. Tape a 45cm square plastic sheet to concrete and leave for 16 hours. Observe underside for presence or absence of moisture.

- Note IV:** Check representative areas of the floor for dust and debris by applying heavy black adhesive tape to the floor and removing it with a sharp yank. The presence of any material on the back of the tape indicates further preparation is needed.
- Note V:** Where a clear finish is specified, care should be taken to ensure the colour of the filler and / or sealants used closely match the surrounding concrete.
- Note VI:** Concrete that has been badly contaminated with oil may not be easily prepared for acceptance of new paint. Lubricating oils can travel well into a concrete surface and be impossible to clean out. In this situation, nothing short of physically removing the surface of the concrete 3-5mm deep and resurfacing will solve the problem. This specification assumes oil contamination problems are only on the surface
- Note VII:** There needs to be sufficient fall provided on the deck, porch or patio so that water does not pond on the surface. Where water tightness issues exist, sealants and appropriate side coving need to be provided for. This is generally outside of the scope of a painting contract. If this is not already provided for within the contract documentation, a specific site instruction or natives to tenderers may be required.
- Note VIII:** Once the surface is thoroughly clean, ensure it is not re-contaminated by dirty footwear, etc.

Spec Sheet 3:5/3 - Previously Painted Exterior Concrete Decks Patios and Porches

Generally, painted concrete decks, patios and porch areas will be in reasonable condition with some moss and mould, and possibly lichen on the surface, as well as salt, dirt and other contaminants and detritus. The degree of failure of the previously applied coatings will ultimately determine the amount of time and cost spent on preparing the surface (see also the Substrate Information Note 14).

Where the paint surface has badly deteriorated, more extensive preparation, including possibly complete removal of the coating may be required. This is likely if water ingress has been an issue or if the previously applied coating was applied to an unstable concrete.

Step 1: Treat moss and mould with Resene Moss & Mould Killer; use as directed on the label.

Note I: For heavy infestations, an additional application(s) may be needed. [Data Sheet D80](#)

Step 2: Thoroughly scrub down using a solution of Resene Paint Prep and House Wash and water to remove all surface chalking, dirt, detritus, moss and mould residue, cobwebs and other contaminants. Use as directed on the label. [Data Sheet D812](#)

Step 3: Thoroughly scrape and sand to remove all loose and flaking paint and to provide a good key for subsequent coats. Water blasting is an alternative to washing, particularly where large areas of flaking paint require removal.

Step 4: Any rust stains from fixings, etc., should be spot primed with Resene GP Metal Primer. Ideally remove and replace or remedy the source of any rust staining.

Step 5: Spot prime all exposed concrete with Resene Sureseal. [Data Sheet D42](#)

Step 6: Fill any holes or cracks with Epox-O-Bond Epoxy Filler or similar as per label directions. We recommend holes are over filled, then power sanded back to a smooth finish when the filler has cured for 24 hours. Remove sanding dust and detritus. [Data Sheet D808](#)

Note II: Any construction joints requiring repair should be thoroughly raked out and cleaned, then filled with a suitable sealant as per sealant manufacturer's directions. Construction joints should be filled with a suitable sealant as per sealant manufacturer's directions. If a sealant is painted over, the paint may crack with movement and any cracks may transmit into the sealant with the risk of creating a leaking joint. Some sealants may also exude plasticiser into paint and create a tacky surface.

Note III: There needs to be sufficient fall provided on the deck, porch or patio so that water does not pond on the surface. Where water tightness issues exist, sealants and appropriate side coving need to be provided for. This is generally outside of the scope of a painting contract. If this is not already provided for within the contract documentation, a specific site instruction or natives to tenderers may be required.

Note IV: Once the surface is thoroughly clean, ensure it is not re-contaminated by dirty footwear, etc.

Spec Sheet 3:5/4 – Clear finished concrete paving, pavers, driveways

Exterior concrete areas used for low use vehicle and foot traffic such as residential driveways and paved areas, for example paving around BBQ and pool areas, can be clear coated or finished to improve the look, finish and improve resistance to staining and marking. The process is relatively straightforward to undertake.

Typically the concrete surface is either floated to a smooth uniform finish (including coloured concrete and pavers) or acid etched to expose and highlight the stone aggregate.

There is a difference in the pre-treatment of exposed stone aggregate pavers and concrete to that recommended for floated, smooth concrete (including pavers), Resene Solventborne Aquapel is recommended for the later but has poor adhesion to stone aggregate.

Acid etching is used to remove laitance and weak friable concrete fines from the concrete surface and also to expose the stone aggregate in concrete with a composition developed for this purpose. It is not usually required for new concrete pavers.

For standard concrete, acid etching will help create a profile suitable for the application of a clear coating. The acid residue must be thoroughly flushed from the surface before coating.

Step 1: Any oil or grease or other contaminants will need to be removed. Thoroughly scrub down these areas with Resene Heavy Duty Paint prep and Oil Remover or Altex P40 Cleaner. Thoroughly wash clean with copious quantities of clean water. Do not let concrete dry out until all cleaning residue is removed. [Data Sheet D816](#)

Step 2: If acid etching is used ensure residue from acid etching is flushed from the surface using clean water, waterblast at 3000psi to remove any dirt, dust and detritus

Note I: Where a clear finish is specified, care should be taken to ensure the colour of the filler and / or sealants (check with the sealant manufacturer's data sheets to verify if the sealant can be coated over) used closely match the surrounding concrete.

Note II: Once the surface is thoroughly clean, ensure it is not re-contaminated by dirty footwear etc.

SECTION 6 – Interior Concrete Walls and Ceilings

Spec Sheet 3:6/1 - New Interior Concrete Walls and Ceilings

Painting or clear finishing interior concrete, masonry and cementitious walls and /or ceilings is straightforward, provided the exterior walls are weathertight and in the case of clear finishes, unstained. In most residential and commercial situations, the expected wear and tear for walls and ceilings is substantially lower than for flooring. The required preparation is therefore to lower standard.

Water ingress is a potential issue for interior walls, particularly walls without an external barrier or cavity. Resene Aquapel a clear silicone siloxane treatment for cementitious surfaces. When applied to the surface before a clear coating, it will help resist moisture moving through to the interior surface. Where this is likely to be an issue, Resene solventborne Aquapel should be specified as a first coat. A site instruction or deviation may need to be issued for the painting contractor to undertake this work. This is likely to incur additional cost.

Uncoated concrete and masonry can 'dust' and become powdery over time. A painted or clear finish helps prevent this and helps with on-going maintenance and cleaning.

Diamond grinding is frequently specified for cementitious surfaces, usually concrete block and masonry walls, to highlight the aggregate and smooth the surface. This is considered to be outside of the painting contract for new work. A site instruction or deviation may need to be issued for the painting contractor to undertake this work.

The selection of filling material, including colours, where an option for surface cracks and voids needs to be undertaken with care if clear finishes (such as Resene Concrete Clear) are specified. Solventborne clear finishes and sealers can darken the look of concrete – this is often referred to as a 'wet look'. Waterborne clears and sealers do not penetrate as far into the surface and darken the surface less as a result.

Step 1: Thoroughly wash down to ensure a clean dust free surface free from contaminants.

Step 2: Fill any holes or cracks with suitable filler. If paint, as opposed to clear finish, is specified, use Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions. We recommend holes are over filled, then power sanded back to a smooth finish when the filler has cured for 24 hours.

Note 1: Efflorescence is caused by water getting into concrete, usually via cracks in an exterior wall. The source of the water causing the efflorescence needs to be found and eliminated before repainting. Affected areas should also be allowed to dry out thoroughly before repainting.

Note II: Where it is determined that Resene Aquapel is required, apply a saturation coat of Resene Solventborne Aquapel at the spreading rate of 2-3 square metres per litre for masonry and concrete blocks, and 7-8 square metres per litre for plaster and concrete. A site instruction or note to the painting specification will be required to specify the Aquapel treatment. [Data Sheet D65](#)

Applicators should be requested to contact the local specification writer within Resene, with the surface area to be treated so that quantities can be advised and followed up on.

Spec Sheet 3:6/2 - Old Unpainted Concrete Walls and Ceilings

Generally, the same preparation and coating systems are employed and specified for new and for old concrete and masonry walls and ceilings. Any efflorescence and oil marks and other contaminants will need to be removed and in any water ingress rectified.

Water ingress is a potential issue for interior walls, particularly walls without an external barrier or cavity. Resene Aquapel is a clear silicone siloxane treatment for cementitious surfaces, when applied to the surface before clear coating and will help resist moisture moving through to the interior surface. Where this is likely to be an issue, Resene solventborne Aquapel should be specified as a first coat. A site instruction or deviation may need to be issued for the painting contractor to undertake this work. This is likely to incur additional cost.

Step 1: If any areas of moss or mould infestation exist, then treat them with Resene Moss & Mould Killer. Typically walls, other than wet areas, are unlikely to have mould or mildew present.

[Data Sheet D80](#)

Step 2: Thoroughly wash down to ensure a clean dust free surface free from contaminants.

Step 3: Thoroughly scrub down any areas that are badly contaminated with oil or grease with Resene Altex P40 Cleaner. Thoroughly wash clean with copious quantities of clean water. Do not let concrete dry out until all cleaning residue removed.

Step 4: Thoroughly sand with 180 grit paper to remove any areas of efflorescence. If the surface is textured, then efflorescence should be removed by use of a stiff bristle brush.

Step 5: Fill any holes or cracks with suitable filler(s). If paint, as opposed to a clear finish, is specified use Resene Construction Systems Ltd Multistop FRP Bedding Compound. Fill and prime as required by the relevant manufacturer's instructions. We recommend holes are slightly over filled, then power sanded back to a smooth finish when the filler has cured for 24 hours.

Note I: Efflorescence is caused by water getting into concrete usually via cracks in an exterior wall. The source of the water causing the efflorescence needs to be found and eliminated before repainting. Affected areas should also be allowed to dry out thoroughly before repainting.

Note II: Where it is determined that Resene Aquapel is required, apply a saturation coat of Resene Solventborne Aquapel at the spreading rate of 2-3 square metres per litre for masonry and concrete block, and 7-8 square metres per litre for plaster and concrete. A site instruction or note to the painting specification will be required to specify the Aquapel treatment.

[Data Sheet D65](#)

Applicators should be requested to contact the local specification writer within Resene with the surface area to be treated, so that quantities can be advised and followed up on.

Spec Sheet 3:6/3 - Previously Painted Concrete Walls and Ceilings

Previously painted concrete walls and ceilings are generally straightforward to repaint, provided the concrete or cementitious surface, as well as the existing paint system, is sound. Where efflorescence is present (refer also to Substrate Information Note No 3), it is likely to be the result of moisture or water ingress usually through a crack or failure in the exterior concrete.

Typically however, the surfaces will require minor patching and gap filling after cleaning down. How the walls (and ceilings) are cleaned will be determined by the presence and nature of contaminants like oil, grease and soap residue on the surface or if cleaners, particularly those containing silicone, have been used. In the majority of interior repaints, cleaning to remove dust, dirt, and flaking paint is all that is required.

It is likely that some older walls and ceilings, usually in bathrooms and kitchen areas, will be painted in a solventborne enamel system. These walls will need a thorough sanding to de-gloss the surface and provide a key for the new paint to adhere to. We recommend sanding paints that are hard and glossy before over coating. If there is significant delamination or failure of the old coating, particularly if an enamel or alkyd paint system was used, then it is likely to be the result of saponification, where the alkaline cementitious surface reacts with alkyd paint system and weakens the paint, ultimately resulting in failure. The old coating will need to be removed, usually by scraping and sanding if this is the case.

There may also be mould growth present in some situations.

If unsure about the preparation requirements or if the surface is porous or embrittled (usually with age), contact the Resene Technical Services.

Step 1: If any areas of moss or mould infestation exist, then treat them with Resene Moss & Mould Killer. Typically walls, other than wet areas, are unlikely to have mould or mildew present. If there is, it is likely to be mildew and it can be removed with a wipe of concentrated moss and mould killer on a damp cloth. [Data Sheet D80](#)

Step 2: Thoroughly wash using Resene Interior Paint Cleaner to remove dirt, dust and other surface contaminants. If there is grease and oils on the surface, usually in cooking preparation areas or around sinks, etc, wipe down using a sugar soap mix. The surface will need to be thoroughly rinsed to remove any residue, which will stain and discolour the topcoat system.

Step 3: Thoroughly scrape and sand to remove all loose and flaking paint and any areas of efflorescence to provide a good key for painting. Thoroughly sand areas of flaking paint to a feathered edge.

Step 4: Seal repaired areas and any areas of bare substrate with Resene Sureseal. [Data Sheet D42](#)

Step 5: Fill all cracks or holes with Resene Ezy-Fill GP or PAL Contract Filler applied according to the manufacturer's instructions. Once dry, sand smooth.

- Note I:** Efflorescence is caused by water getting into concrete usually via cracks in an exterior wall. The source of the water causing the efflorescence needs to be found and eliminated before repainting. As part of this specification, external walls must be made weather tight. Affected areas should also be allowed to dry out thoroughly before repainting. If the surface is textured, then efflorescence should be removed by use of a stiff bristle brush.
- Note II:** If any water-staining is visible on a wall or ceiling, then it is advisable to seal that entire surface with a full coat of Resene Sureseal applied at the spreading rate of 12 square metres per litre. Any water-soluble stains and marks, such as pen marks, etc, can either be sealed using Resene Sureseal or Resene StainLock. [Data Sheet D42/D408](#)

SECTION 7 – Concrete Floors

Spec Sheet 3:7/1 - New Concrete Floors

Regardless of the system selected to either coat or clear finish a concrete floor, a high level of surface preparation is required to ensure its long term integrity and performance. When concrete floors are floated to produce a smooth even surface, the process brings concrete and cement 'fines' to the surface. Fines are comparatively small and are not bound well to the rest of the concrete. They represent a weak point and, unless removed, will inevitably result in the failure of the coating system.

The best recommendation to achieve this remains diamond grinding. Alternatives, such as captive shot blasting and acid etching can be used but have limitations.

Washing to remove residual fines and dust, even if vacuuming, is recommended to ensure a clean slightly profiled surface is achieved.

Additionally, most floors will have a curing membrane applied. The layer must be removed prior to painting. Acid etching will not achieve this, whilst diamond grinding and captive shot blasting will.

Where the concrete floor is friable and paint or coating, rather than clear finish is specified, a concrete consolidator will be required to improve the density of the concrete and the overall performance of the system.

Even new concrete floors are likely to have dirt, dust and construction detritus which will need removing before diamond grinding. The floor will need to be cured and have stable moisture content. Any oil or grease stains should be removed before diamond grinding, as the process can embed contaminants into the concrete.

Diamond grinding (or captive shot blasted where used) is usually outside of the painting or coating contract for new work. Where the contract requires the painting contractor to include it in their tender, the specifier will need to include this requirement as a site instruction or as deviation issued to the painting contractor for them to undertake this work.

Step 1: Ensure the surface is clean. Any oil or grease or other contaminants will need to be removed before diamond grinding. Thoroughly scrub down these areas with Resene Altex P40 Cleaner. Thoroughly wash clean with copious quantities of clean water. Do not let concrete dry out until all cleaning residue is removed.

Step 2: Diamond grind or captive shot blast to achieve a slightly roughened, toothy finish to the concrete to provide a good key for adhesion. The floor should resemble P180 grit sandpaper in texture. Thoroughly rake out any holes or cracks to produce a sound base for filling.

Step 3: Wash using a mild detergent to remove any residual dust and detritus, rinse thoroughly. Wet and dry vacuum to remove any remaining dust.

- Step 4:** Fill any holes or cracks with Epox-O-Bond Epoxy Filler or similar as per label directions. We recommend holes are over filled, then power sanded back to a smooth finish when the filler has cured for 24 hours. [Data Sheet D808](#)
- Note I:** Where a clear finish is specified, care should be taken to ensure the colour of the filler and / or sealants used closely match the surrounding concrete.
- Note II:** Ensure surfaces are thoroughly dry before painting. Test method ASTM D4263 is recommended. Tape a 45cm square plastic sheet to concrete and leave for 16 hours. Observe underside for presence or absence of moisture.
- Note III:** Check representative areas of the floor for dust and debris by applying heavy black adhesive tape to the floor and removing it with a sharp yank. The presence of any material on the back of the tape indicates further preparation is needed.
- Note IV:** Once the surface is thoroughly clean, ensure it is not re-contaminated by dirty footwear etc.

Spec Sheet 3:7/2 - Old Unpainted Concrete Floors

The decision to apply a coating system, either clear finish or coloured, to an old concrete floor is typically made for cosmetic or practical reasons. The floor may have been covered (with carpet or vinyl for example) or when a change of use requires a more cleanable surface. The old floors are likely to have dirt, dust and oil or grease stains which will need removing before diamond grinding.

Oils, lubricants and grease should be removed before diamond grinding, as the process can embed contaminants into the concrete. In the worst cases (a mechanics workshop for example), complete removal is almost impossible and an acceptance that this can compromise the adhesion of the coating system is needed. The contamination on the floor shown in photo below (Ref 8) will be almost impossible to fully remove. It is likely to compromise any coating subsequently applied to it.



Ref 8

Diamond grinding (or captive shot blasted where used) is usually outside of the painting or coating contract for new work and also if the concrete floor is coated as part of a wider renovation project. It is practical however, for the contract to require the painting contractor to include it in their tender for projects where the floor coating is a significant element of the work. While the painter is likely to subcontract the diamond grinding, they ultimately take on the responsibility for preparing and coating the floor.

- Step 1:** Ensure the surface is clean. Any oil or grease or other contaminants will need to be removed before diamond grinding. Thoroughly scrub down these areas with Resene Altex P40 Cleaner. Thoroughly wash clean with copious quantities of clean water. Do not let concrete dry out until all cleaning residue is removed.
- Step 2:** Diamond grind or captive shot blast to achieve a slightly roughened, toothy finish to the concrete to provide a good key for adhesion. The floor should resemble P180 grit sandpaper in texture. Thoroughly rake out any holes or cracks to produce a sound base for filling.
- Step 3:** Wash using a mild detergent to remove any residual dust and detritus, rinse thoroughly. Wet and dry vacuum to remove any remaining dust.
- Step 4:** Fill any holes or cracks with Epox-O-Bond Epoxy Filler or similar as per label directions. We recommend holes are over filled, then power sanded back to a smooth finish when the filler has cured for 24 hours. [Data Sheet D808](#)

- Note I:** Where a clear finish is specified, care should be taken to ensure the colour of the filler and / or sealants used closely match the surrounding concrete.
- Note II:** Ensure surfaces are thoroughly dry before painting. Test method ASTM D4263 is recommended. Tape a 45cm square plastic sheet to concrete and leave for 16 hours. Observe underside for presence or absence of moisture.
- Note III:** Check representative areas of the floor for dust and debris by applying heavy black adhesive tape to the floor and removing it with a sharp yank. The presence of any material on the back of the tape indicates further preparation is needed.
- Note IV:** Once the surface is thoroughly clean, ensure it is not re-contaminated by dirty footwear, etc.
- Note V:** Concrete that has been badly contaminated with oil may not be easily prepared for acceptance of new paint. Lubricating oils can travel well into a concrete surface and be impossible to clean out. In this situation, nothing short of physically removing the surface of the concrete 3-5mm deep and resurfacing will solve the problem. This specification assumes oil contamination problems are only on the surface

Spec Sheet 3:7/3 - Previously Painted or Clear Finished Concrete Floors

Recoating either a previously painted or clear finished concrete floor requires an assessment of the overall condition of the existing finish. Particularly, the degree of flaking or delamination of the coating and nature of any surface contamination that may be present, usually from silicone based cleaners.

Ultimately, it may be more practical and efficient to sand the surface and apply the new coating system.

Most concrete floor coating systems and clear finishes are designed to be over coated, however surface preparation needs to be of a high standard.

Step 1: Ensure the surface is clean. Any oil or grease or other contaminants will need to be removed before sanding. If cleaning solutions have been used on the floor, particularly if silicone based, thoroughly scrub using Resene Altex P40 Cleaner. Thoroughly wash to remove all cleaning residue.

Step 2: Thoroughly scrape and sand to remove all loose and flaking paint or clear finish ensure areas of flaking paint are sanded to a feathered edge. Thoroughly sand the floor area using 180 grit sandpaper to provide a good key for the new coatings. Ensure the floor is dust and contaminate free.

Step 3: Fill any holes or cracks with Epox-O-Bond Epoxy Filler or similar as per label directions. We recommend holes are over filled, then power sanded back to a smooth finish when the filler has cured for 24 hours. [Data Sheet D808](#)

Note I: Where a clear finish is specified, care should be taken to ensure the colour of the filler and / or sealants used closely match the surrounding concrete.

Note II: Once the surface is thoroughly clean, ensure it is not re-contaminated by dirty footwear, etc.

Note III: Concrete that has been badly contaminated with oil may not be easily prepared for acceptance of new paint. Lubricating oils can travel well into a concrete surface and be impossible to clean out. In this situation, nothing short of physically removing the surface of the concrete 3-5mm deep and resurfacing will solve the problem. This specification assumes oil contamination problems are only on the surface.

Glossary

Apron flashing	A near flat or sloping flashing with a vertical upstand, used at junctions between roofs and walls
Building element	Any structural and non-structural component and assembly incorporated into or associated with a building. Included are fixtures, services, drains, permanent mechanical installations for access, glazing, partitions, ceilings and temporary supports.
Capping	A flashing formed to cover the exposed top of a balustrade or parapet. Also known as a coping.
Cladding	An exterior weathertight system used to prevent water entry into the building. COMMENT: Includes any supporting substrate and, if applicable, weathertight coatings or membranes.
Cladding system	The weathertight enclosure of a building, including claddings and their fixings, windows, doors and all penetrations, flashings, seals, joints and junctions.
Concrete	A combination of graded aggregates, cement, water, sand and admixtures manufactured in accordance with NZS 3104.
Concrete masonry	Construction using concrete masonry blocks manufactured using cement and aggregates in accordance with AS/NZS 4455, which are reinforced and either fully or partially filled with grout in accordance with NZS 4210. This definition excludes aerated concreted blocks.
Control joint	A joint designed to prevent damage by accommodating movement. See also Expansion joint .
Damp-proof Course (DPC)	A narrow strip (generally up to 300 mm wide) of durable vapour barrier placed between building elements to prevent the passage of moisture from one element to another.
Damp-proof Membrane (DPM)	A sheet material or coating, as specified in section 7.4, used to prevent water ingress from the ground into the concrete.
Drip edge	Horizontal edge formed from plaster, metal profile or PVC profile to deflect water away from the cladding system.
EIFS (Exterior Insulation and Finish System)	A polystyrene sheet-based weatherproof finish system that uses mesh reinforced polymer modified cement-based or polymer-based plaster base coats and a protective top coating.
Expansion joint	A joint designed to prevent damage by accommodating movement. See also Control joint .
Flashing	A component, formed from a rigid or flexible waterproof material that drains or deflects water away from the cladding system and from junctions.
In situ concrete construction	Construction where concrete is cast into formwork on site into its final position.

Masonry veneer	A skin of concrete masonry or burned clay masonry or natural stone of a maximum mass of 220 kg/m ² , which is attached to and laterally supported by a structural wall.
Membrane	A pliable sheet like waterproofing layer, applied as a fluid or as a sheet.
Plaster	Mixture of dry mineral materials including cement and polymers as required that when mixed with water sets hard.
Polymer plaster	Mixture of wet mineral and polymer material that sets hard on exposure to air.
Precast concrete construction	Construction where prefabricated concrete elements are assembled on site into their final position.
Render	A term synonymous with plaster.
Screed	A layer of thin plaster or concrete as a floor topping.
Waterproof and waterproofing	The complete and total resistance of a building element to the ingress of any water in either liquid or vapour state.
Waterproof membrane	A membrane impervious to water which is placed to prevent the passage of water and water vapour through a concrete or concrete masonry element.
Weathertightness and weathertight	<p>Terms used to describe the resistance of a building to the weather. Weathertightness is a state where water is prevented from entering and accumulating behind the cladding in amounts that can cause undue dampness or damage to the building elements.</p> <p>COMMENT: A weathertight building, even under severe weather conditions, is expected to limit moisture ingress to inconsequential amounts, insufficient to cause undue dampness inside buildings or damage to building elements. Moisture that may occasionally enter is able to harmlessly escape or evaporate.</p>
Weatherproof	A term synonymous with weathertight and usually referring to a component of a weathertight system. In general, this document uses the terms 'weathertight' and 'weathertightness' in preference.
Weathertight coating	A multi-coat liquid applied coating system applied to exterior walls to make them weathertight.