

Surface Preparation and Paint Systems

In order to have a successful paint system, the surface to which it is applied must be prepared carefully. Shortcuts in surface preparation will inevitably lead to premature paint failure. Such failure causes client dissatisfaction with paint and applicator, denies future business and gives the overall industry a bad reputation for taking shortcuts.

Detailed below are the steps you need to follow in order to have a successful outcome.

The Information is broken into sections for easy reference:

- 1 Timber and Wood Composite. (Interior)**
- 2 Timber. (Exterior)**
- 3 Concrete Block/Plaster**
- 4 Fibre Cement Sheet/Composite Weather Board**
- 5 Plaster/Paper Faced Plaster Board/Wallpaper**
- 6 Roofing Systems**

General Comments:

In order to understand specific conditions see the following:

Cracks:

Moving, generally need to be bought through the paint and allowed to continue to move. Chase out and fill with a flexible sealant in accord with manufacturers instructions. Paint films will not tolerate movement, though some flexible coating systems will within limited amounts, such as: Hi Build Super Flex, Hi Build Blocktex.

Non Moving: If more than 2mm, chase out and fill with an appropriate, suitable crack fill material in accord with manufacturer's instructions.

Spalling/Drummy surfaces:

If any areas greater than 100mm x 100mm or any areas that are loose and likely to fall off, these must be removed and replaced to match existing. Allow any such repairs to cure in accord with manufacturers instructions prior to over coating.

Spalling concrete should be removed back to solid and stable material. Any exposed reinforcing bars, should be thoroughly prepared, (wire brushing, needles etc), to obtain a clean rust free surface. Steel that is eroded more than 20 % of original cross section area, may need to be replaced. Consult a structural engineer if in any doubt

Coat cleaned steel with rust preventative primer, in accord with manufacturer's instructions. Re-plaster to original profile.

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Expansion joints:

Generally these are designed to remain in service and accommodate movement within the structure. Most paints should be brought onto the surface, but not across the flexible sealant. If the sealant is in poor condition, (loose, split or showing its age), remove and clean all internal surfaces. Apply a primer and sealant all in accord with manufacturer's instructions. Allow to cure.

Paint adjacent surfaces with selected Cotec paint and bring out onto the surface. Acrylics may be taken right across the surface as they are flexible.

Prepainted Surfaces:

These require care to ensure all loose, poor quality paint is removed to provide a clean, well adhered surface onto which to paint. Refer to attached **selection guide on surface preparation.**

Acid Washing/Etching:

In general, concrete must be clean, dry and sound before a coating is applied to it. 'Clean' means that there is no foreign matter such as dust, dirt, grease or oil on the concrete. 'Dry' means no free water is present. 'Sound' means there is no laitance or weak surface skin on top of the concrete and that the concrete has no defects to harm the performance of the coating. Acid etching the surface removes the top layer of loosely adhering particles and provides a profile to key into the coating.

Procedure This method below uses Hydrochloric Acid, which works quickly. Other acids such as phosphoric, sulphuric or citric acid can be used.

1. The acid strength ready to use is approximately 10%.
2. If concentrated acid (approximately 33%) has been purchased this must be diluted, using:

2 Parts Water : 1 Part Acid.

CAUTION: Add the acid to water slowly with stirring. Do NOT mix the other way as it may boil and burn eyes and skin.

3. Spread evenly on the concrete by either using a broom, squeegee, a low pressure spray or watering can.

NOTE: Where the acid stays longer on the concrete the colour will darken to a deeper colour. If a clear coating is to be applied on top of the concrete special care must be taken to produce even etching of the surface.

4. When the acid has stopped 'fizzing' the reaction has stopped – maximum 15 – 30 minutes.
5. Water blast to remove any fine dust etc. then allow to dry. Check to see that all dust has been removed.
6. AVOID contact with METALS, especially copper, brass and zinc as the acid will corrode these and can cause discoloration.

Health and Safety Read the Material Safety Data Sheet (MSDS). Wear gloves and goggles and work in a well ventilated area. If using concentrated acid be 'VERY CAREFUL', wear a plastic apron etc

Removal of Fats/Oils:

Oil or grease presents a problem for any coating as the adhesion to the substrate is affected, leading to subsequent failures such as blistering or de-lamination.

On concrete or porous surfaces the contaminant can penetrate deeply into the surface.

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Procedure

1. Ensure surface is sound, by tapping for hollow areas. These if bad will need to be removed and repaired by re-plastering.
2. (a) Random water spot testing will show oil/grease contamination,
(b) Random spot testing with 10% hydrochloric acid on fresh concrete is also a good test for contamination – Clean concrete will fizz.
3. Bad areas require an industrial cleaner or stripper. (6mm penetration is the effective maximum for this method). Refer to Coating Technologies Limited's technical department for recommendations.

After the treatment, re-test the area for water spotting, to see if all the contaminant has been removed.

4. If it is obvious that the oil/grease is still deep seated in the concrete, the area will need to be removed by one of the following methods:
 - (a) Jackhammer or chisels,
 - (b) Scabblers or scarifiers,
 - (c) Abrasive blasting.

Note: **Acid etching does not remove oil/grease.**

5. Repair the area using a concrete/cement grouting system. Trowel to smooth.
6. Acid wash the total surface. Refer to **Acid Washing/Etching**, above.
7. Wash surface to remove excess acid. Then allow to dry.
8. The surface is ready for application of the coating recommendation.

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SUGGESTED SYSTEMS AND SURFACE TREATMENTS

1 Timber and Wood Composite.

INTERIOR

| General Comments | Location | Surface Preparation | Paint System |
|---|--|--|--|
| | Interior | | |
| <p>Timber is by nature a dimensionally unstable substrate that expands and contracts with changing moisture content. Timber surfaces degrade with exposure to ultra violet light breaking down the lignin and leaving cellulose fibres on the surface. These effects lead to cracking of the timber and subsequently the paint coating and also loss of adhesion of the coating to the surface of the timber.</p> <p>All timber contain resins however some concentrate these in pockets along the grain and these resins can affect the performance of the coating. These effects range from restricting drying or cure, preventing penetration and adhesion to bleeding through the coating.</p> <p>Product made from wood fibres such as MDF and Tri Board suffer similar degradation from ultra violet light but also have an added problem with waxes incorporated in the surface of the board during the manufacturing process to assist with water resistance.</p> <p>This wax can cause patchy loss of gloss, retarded curing of solvent based enamels and de wetting of water based coatings.</p> <p>Many of the resin and wax related problems can be overcome with correctly designed products suitable for the required application and surface preparation by solvent washing.</p> | <p>Doors/ Architraves/ Skirtings/ Window Sills</p> | <p>Repaint Strip all old coating using a paint stripper or sand back to bare timber. If the existing coating is sound with no cracking or flaking sand with 320# paper to completely matt off surface. Fill any imperfections and sand off.</p> <p>New Fill any imperfections, sand off and remove all dust and dirt.</p> | <p>Clear Finish Aquatec Hi Dri Clear Sealer Sand 320 – 400# Aquatec Hi Dri Clear Sealer Sand 320 – 400# Aquatec Hi Dri Clear Top Coat (recommend 2 coats)</p> |
| | | <p>Repaint Remove any loose or flaking paint and hard sand remaining coating. Spot prime any bare areas with wood primer. Fill and sand any imperfections. Completely undercoat and sand smooth.</p> <p>New Completely prime with wood primer. Fill and sand any imperfections. Undercoat and sand smooth.</p> | <p>Pigmented Finish Alkyd Wood Primer Sand 320 – 400# Acrylic Sealer Undercoat Sand 320 – 400# Aquatec Acrylic Enamel (recommend 2 coats)</p> |

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2 Timber EXTERIOR

| General Comments | Location | Surface Preparation | Paint System |
|---|---|--|--|
| | Exterior | | |
| <p>See comments on INTERIOR section.</p> <p>Coating of timber for the exterior environment is fraught with danger, not the least of which is the effect of water gaining access to the timber through the coating. This occurs when the movement of the timber is more than the coating can cope with and cracks appear. Once water can get to the timber substrate the cellulose structure acts as little straws and allows the water to move along under the coating causing loss of adhesion.</p> <p>Pigmented coatings are good for restricting the effect of ultra violet on timber.</p> <p>Clear coating of exterior timber should only be done if the owner is fully aware that whatever system is employed it will ultimately fail, generally sooner than later. Clear systems will fail far more quickly than pigmented.</p> | <p>CLEAR COATING</p> <p>Doors/Joinery</p> <p>Weatherboards</p> | <p>Not Recommended. If attempted strip all old coating off. Hard sand and use a system with 2 sealer coats and a minimum of 2 full top coats. Preferably based on a 2 pack Polyurethane product.</p> | <p>Clear Finish.</p> <p>Not recommended. Consult CTL Ltd for options and advice.</p> |
| | <p>PIGMENTED COATING</p> | <p>Repaint</p> <p>Remove any loose or flaking paint. Treat any moss or mould growth. Hard sand with 240# paper to completely matt off the surface. Spot prime any bare areas. Fill and sand any imperfections. Completely undercoat and sand smooth. Apply 2 coats of top coat.</p> <p>New</p> <p>Completely prime with wood primer. Fill and sand any imperfections. Completely undercoat and sand smooth. Apply 2 coats of top coat.</p> | <p>Pigmented Finish.</p> <p>Alkyd Wood Primer</p> <p>Alkyd Enamel Undercoat</p> <p>Alkyd Enamel Finish</p> <p>Alkyd Enamel Finish (above is solvent based system)</p> <p>OR</p> <p>Alkyd Wood Primer</p> <p>Acrylic Sealer Undercoat</p> <p>100% Acrylic Gloss/Low Sheen/Velvet</p> <p>100% Acrylic Gloss/Low Sheen/Velvet</p> |

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4 Fibre Cement Sheet/Composite Weather Board EXTERIOR

| General Comments | Location | Surface Preparation | |
|--|--------------------------|--|--|
| | Exterior | | |
| <p>Fibre Cement composite sheeting is highly water absorbent as such needs to be well coated to give adequate protection from water.</p> <p>This applies equally to the inside faces as the material is also able to absorb moisture from the air and move as humidity changes leading to bowing of the sheet and cracking of joints.</p> <p>Newer "ceramic" filled boards are much more stable and less susceptible to moisture.</p> <p>Coating of fibre cement sheet can be achieved by applying textured coatings via trowel or hopper gun then top coating with an Acrylic, using a Fibre reinforced membrane hi build coating system or simply applying 2/3 coats of Acrylic.</p> <p>In all cases applying a sealer coat to both sides of the sheeting will greatly enhance to overall performance of the system.</p> <p>Fibre reinforced membrane (Hi Build Blocktex) systems are high film build coatings that have the ability to cope with hair line cracking and movement under the coating without rupturing.</p> <p>These coatings impart a slight texture to the finish to help mask jointing and other surface imperfections.</p> <p>However they must be applied to the manufacturer's specifications to achieve correct performance.</p> <p>Always paint using a 100% Acrylic or Silicon Resin Emulsion paint as these have been proven to have the best performance on cement based substrates.</p> <p>If a paint coating is required to fully water proof or cope with expected hairline cracking in walls then use the appropriate Silicon Resin Emulsion (Siltec) sealer and topcoat or Fibre Reinforced Membrane (Blocktex) system to CTL Ltd specification.</p> | PIGMENTED COATING | <p>Repaint Remove any loose or flaking paint by water blasting or mechanical abrasion. Treat any moss or mould growth. Repair and cracked jointing with an approved system. Repair any damaged areas with a suitable modified cement plaster. Allow to fully cure. Surfaces must be clean, dry and dust free.</p> <p>New Ensure all jointing and fixing is done to the sheet manufactures specification. For maximum adhesion and performance of the system a sealer coat of solvent based Masonry Sealer or water based Bonding Sealer should be applied.</p> <p>Textures; Trowel or spray on the required texture using Superflex Texture Fine/Medium/Course</p> <p>Fibre Reinforced Membranes Use Hi Build Blocktex in place of standard Acrylic. Minimum of 2 coats (recommend 3) required. Blocktex imparts a slight texture to the surface to help mask trowel marks or other imperfections. Can be tinted and used as a top coat.</p> | <p>100% Acrylic Sealer Undercoat</p> <p>100% Acrylic Gloss/Semi Gloss/Low Sheen/Velvet</p> <p>100% Acrylic Gloss/Semi Gloss/Low Sheen/Velvet</p> <p>or</p> <p>Solvent based Masonry Sealer (if required or for maximum adhesion).</p> <p>100% Acrylic Gloss/Semi Gloss/Low Sheen/Velvet</p> <p>100% Acrylic Gloss/Semi Gloss/Low Sheen/Velvet</p> <p>note</p> <p>(if not using Masonry Sealer then 3 coats of 100% Acrylic is recommended)</p> <p>Superflex and Blocktex should be over coated with 100% Acrylic Low Sheen/Semi Gloss or Velvet.</p> |

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5 Plaster/Paper Faced Plaster Board/Wallpaper INTERIOR

| General Comments | Location | Surface Preparation | |
|---|--------------------------|--|--|
| | Interior | | |
| <p>Internal wall and ceiling linings are made using a plaster or similar core with an outer layer of paper.</p> <p>Paper is derived from wood fibre and the manufacturing process may leave them bleached or unbleached and with or without additives to improve quality and the surface performance.</p> <p>Wall linings tend to use unbleached with no surface treatment and as such are an excellent surface to paint. The paint can be applied directly to the paper in both water based or solvent based products.</p> <p>There are some circumstances where an oil based sealer will need to be applied first; Where the lining has been left exposed to sunlight for some length of time and the paper has darkened considerably due to the action of UV light on the lignins in the wood fibre. If a water based paint is used directly on this staining can occur.</p> <p>Raised fibres from sanding, particularly close to the plaster jointing areas that have been sanded. Water based paints can cause the fibres to swell even more. However with newer high build water based sealers it is possible to cover the fibres with a sufficient thickness of sealer to allow for successful sanding of the whole surface and an excellent finish.</p> | PIGMENTED COATING | <p>Repaint Remove any loose or flaking paint by mechanical abrasion. Treat any moss or mould growth. Repair and cracked jointing with an approved system. Repair any damaged areas with a suitable plaster. Allow to fully cure. Surfaces must be clean, dry and dust free.</p> <p>New Ensure all jointing and fixing is done to the sheet manufactures specification. Ensure all surfaces are clean and free from dust, dirt and Grease.</p> <p>For maximum adhesion and performance of the system a sealer coat of Easyseal Sealer should be applied to a thickness of between 80 and 200 microns. Applying at higher film thickness will assist in hiding imperfections and allow sanding to a smoother surface.</p> <p>Easyseal Sealer can be applied directly to the wall lining and any surrounding wood work.</p> | <p>100% Acrylic Sealer Undercoat</p> <p>100% Acrylic Gloss/Semi Gloss/Low Sheen/Velvet</p> <p>100% Acrylic Gloss/Semi Gloss/Low Sheen/Velvet</p> <hr/> <p>Easyseal Hi Build Sealer</p> <p>100% Acrylic Gloss/Semi Gloss/Low Sheen/Velvet</p> <p>100% Acrylic Gloss/Semi Gloss/Low Sheen/Velvet</p> <hr/> <p>Wet areas such as bathrooms, or high wear/frequently washed surfaces in kitchens and laundries should use Hi Opacity Sealer Undercoat and Aquatec water based enamel.</p> |

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6 Roofing Systems

Metal Roofs

Decramastic Roofs

Concrete Roofs

With all roofs to ensure a long lasting finish in an exposed environment, thorough preparation is necessary. The procedures are logical and straightforward.

Metal Roofs

Carry out a through examination of the roof areas. Look for areas that are subject to corrosion, check fastenings and flashings for effectiveness.

Replace any defective areas or badly corroded. Is the roof subject to sea or environmental attack, such as from flue discharge, salt spray etc.

If in doubt about the situation seek professional advice as metal surfaces can be tricky to deal to correctly.

Generally our recommended system is built around Rust Kill for areas subject to existing rust, Galv-Prime as a corrosion reducer and adhesion promoter, followed by 100 % Acrylic HB Roof Paint.

ALL SURAFCES: Before applying Rust Kill ensure surfaces are free of dust, dirt, moss, by washing with water detergent mix and/or algaecide, rinse well and allow to dry thoroughly.

GALVANISED IRON: Galvanised iron sheets that are lapped must be coated in the lap areas to stop corrosion.

NEW: All new Galvanised iron has an oil/grease coating from roll forming and it must be removed before coating. This can be done by leaving roof exposed to the elements for 3 months, before painting or by using a suitable "roof wash" solution. Wash as above.

OLD: Showing signs of corrosion in valleys, laps etc .Wash all areas as above.

Areas of rust must be wire brushed, to remove loose rust etc. Apply a coat of Rust Kill, to convert any remaining rust. Wash area thoroughly and allow to dry.

Apply 1 coat Galvanised Iron Primer, within 4 hrs max drying at 20°C, apply 2 coats of 100% Cotec HB Acrylic Roof paint.

NB. IF 2 coats Galvanised Iron Primer used, then 1 coat 100% Acrylic may be used
Chemically treat any mould present.

ALUMINIUM/BRONZE: Remove all grease/oil. Apply directly, 1-2 coats of Galvanised Iron Primer.

STEEL/IRON: Remove all grease/oil. Wire brush all surface rust. Apply "Rust Kill" if appropriate then 1-2 coats Galvanised Iron Primer.

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Decramastic Roofs

These roofs should be treated as with metal roofs above, however in many cases they may require re "texturing" to replace the aggregate that has been lost due to weathering.

Once the roof has been cleaned and any rust areas successfully treated, then with the 100% HB Roof Paint, you can rebuild the lost aggregate. Do this by applying the first coat of 100% HB Roof Paint in selected colour to a small area and while wet sprinkle on the aggregate and allow to dry. When dry, sweep off excess. If insufficient profile of aggregate reapply more 100% HB Roof paint and repeat procedure. When satisfied with texture and having removed excess aggregate, apply one last coat of 100% HB Roof Paint or 100% Low Sheen, in selected colour, to fill out the profile and lock in place the newly applied aggregate. Remove any loose aggregate from gutters, down pipes etc.

Concrete Tiles

Carry out a thorough examination of the roof areas, including tiles and flashings.

Make sure all are working effectively. Look for areas that are subject to breakage, deterioration or are missing. Check fastenings for splits and for effectiveness. Replace any defective areas or that are badly corroded.

(Metal flashings treat as for metals above).

Repair any damaged tiles or replace as necessary.

Before applying any paint, ensure surfaces are free of dust, dirt, moss, by washing with water detergent mix and/or algaecide, rinse well and allow to dry thoroughly.

To clean, dry, moss free surfaces apply 2 coats of either 100% Acrylic High Build Roof Paint or 100% Low Sheen.

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