

General

All metals corrode when exposed to the atmosphere. Some metals, such as stainless steel and chromium, form an oxide layer that is very stable and protective, while other metals, such as zinc, corrode to produce a weak non-protective layer.

Most metals belong to an electrochemical series and when in contact, one with another, electrochemical cells are set up, which leads to rapid corrosion of the less noble metal. For example, a copper pipe laid over a zinc roof will lead to rapid corrosion of the zinc and indeed water dripping out of a copper overflow and running over zinc will cause problems. For similar reasons lead flashing and lead nailheads are precluded from use on Zinalume. Other problems may occur when a dissimilar metal, such as steel wool, used for surface preparation may leave small fragments embedded in the surface leading to a corrosion cell. Mild steel nails, and metal shavings from drilling or filing, may also cause rapid corrosion on galvanised roofs.

Zinc is also subject to 'inert catchment' corrosion. Normal rain is slightly acidic having dissolved quantities of carbon dioxide in it. This is mildly reactive to zinc but because of the small amount involved, is not normally a problem. However, where large amounts of rainwater is collected in one spot, such as where water runs over a painted roof then into a galvanised gutter or an unpainted extension, rapid corrosion can occur at that spot.

Surface preparation

Aluminium

Generally the oxidation layer on aluminium is dense, stable and is suitable for painting after careful cleaning to remove other contaminants. Sometimes however, aluminium may be prone to 'filigree' corrosion and/or pitting. In these cases the surface must be abraded to bright metal using fine wet and dry paper. Several chemical preparations are available for cleaning aluminium. Should such a product be used it is imperative that all residues are rinsed off before painting. Very highly polished aluminium can be difficult to adhere to and should be wet sanded to a matt surface. Round off any sharp edges on the aluminium profile to allow better film build. Note: Possible corrosion may occur at mitred joints in aluminium where the cut edges are unprimed. This coating system may not provide protection for these areas.

D89.1 Wash and clean surfaces

Thoroughly wash surface with Resene Roof Wash and Paint Cleaner (see [Data Sheet D88](#)) using a nylon bristle brush or broom. Thoroughly scrub the surface to ensure complete removal of all grease, dirt, dust and other contaminants. Rinse thoroughly with clean water and allow to dry.

D89.2 Wet sand surfaces

Thoroughly wet sand to remove any areas of corrosion. Any pitted areas should be wet sanded to a smooth profile.

Brass and bronze *As for copper*

Refer above for the following surface preparation clauses.

D89.1 Wash and clean surfaces

D89.2 Wet sand surfaces

Non-ferrous metals

Galvanised steel and Zinalume

Referred to in Resene specification sheets:

- 5 Galvanised steel and Zinalume
- 7 Non-ferrous metals

For smoke damaged surfaces see [D86](#)

For repaints see [D87](#)



Copper

Copper may corrode to form red and black copper oxides and green 'verdigris' basic copper carbonate. These corrosion products are relatively stable in themselves but are not a suitable foundation for painting and must be removed. Heavy excess corrosion may be removed by scraping while wet sanding to bright metal finishes. Hydrogen sulphide is particularly aggressive to copper causing rapid corrosion in thermal areas.

Galvanised steel and zinc

Zinc is a reactive material that will corrode to basic zinc carbonate normally and mixed with basic zinc chloride in coastal areas. The form of the corrosion product is not protective. Coating of the metal is recommended as soon as possible and in this case washing with detergent or Resene Emulsifiable Solvent Cleaner (see [Data Sheet D804](#)) is all that is necessary. Even though the surface is cleaned initially, it cannot be overstressed that roofs in particular need washing down prior to each day's painting if there is any danger of windblown salt depositing on the surface. Where corrosion has taken place this must be carefully removed, leaving behind as much of the remaining protective zinc layer as possible. Wet abrasive removal is recommended. Highly polished zinc and galvanised steel may be difficult to adhere to and should be wet sanded to a matt surface.

Refer above for the following surface preparation clause.

D89.1 Wash and clean surfaces

Preparing hot dip galvanised surfaces

Remove grease and oil in accordance with AS 1627.1. Waterblast to remove salt deposits. Allow to dry and proceed with the next operation immediately. Carefully whip blast (sweep blast) the surface to provide a slightly roughened surface profile using clean new non-metallic blasting media. Care must be taken to ensure a minimum amount of zinc is removed during this process (no more than 10 microns). Any areas of white corrosion must be totally removed during this process before painting.

Lead

Lead is a relatively inert material and normally requires only cleaning with detergent or Resene Emulsifiable Solvent Cleaner (see [Data Sheet D804](#)) to prepare it for painting. Lead is a toxic metal and attention must be paid to personal hygiene when handling or working with the material.

Refer above for the following surface preparation clauses.

D89.1 Wash and clean surfaces

D89.2 Wet sand surfaces

Stainless steel

As the name implies this material is generally corrosion free. However some grades in extreme environments may develop some surface rust. This is best removed by abrading with wet and dry sandpaper or for larger jobs by 'brush' blasting.

Refer above for the following surface preparation clauses.

D89.1 Wash and clean surfaces

Zincalume

This blend of aluminium and zinc behaves predictably somewhere between the two. Although it is much more corrosion resistant than zinc, it is still recommended that it is painted as soon as possible after careful cleaning with detergent or Resene Emulsifiable Solvent Cleaner (see [Data Sheet D804](#)).

Refer above for the following surface preparation clauses.

D89.1 Wash and clean surfaces

D89.2 Wet sand surfaces