

Painting over Powder or Coil Coatings

4.3

What is Powder Coating?

A powder coating is a 100% solids **thermoset** coating that is electrostatically charged and applied as a dry powder to a base metal (and other substrates such as medium density fibreboard). The powder-coated metal is then passed through an oven where the powder particles melt and coalesce on the substrate to form a hard, smooth, tightly adhering, continuous film. In many cases there is also a chemical curing reaction which contributes to the coating properties. The powder coated metal products are used for architectural elements such as windows and doors, handrails, balustrades, light poles and fencing.

Dulux[®] Powder Coatings manufactures a broad range of powder coatings in a variety of resin technologies, including polyesters and fluoropolymers to suit virtually every situation.



What is Coil Coating?

A coil coating is a **thermoset** coating applied to continuous metal sheet (typically steel or Zinalume[®], but may also be aluminium, etc.), which is then passed through an oven where the coating is heat cured. The coated sheet steel is then roll-formed to produce the various profiles that are seen on roofing, fencing, etc. Well-known examples of coil-coated products include Colorbond[®] and Colorsteel[®]. These products are used for cladding, decorative effects or as roofing, fencing guttering, etc. The roll-forming process may sometimes leave some residual lubricant on the sheet surface.

Coil-coated steel sheeting is painted on either or both front and back surface with various combinations of factory applied thermosetting anticorrosive primer and backing coats and topcoated with any of a range of technologies including polyesters, silicon modified polyesters, acrylics and fluoropolymers.

What Are The Issues Regarding Painting of Powder and Coil Coatings?

Both powder coatings and coil coatings are very smooth and chemically inert; they display **excellent dirt shedding properties** and may create problems for recoat paint **adhesion**. They provide neither a mechanical nor chemical key for the new coating. Therefore, both thorough surface preparation, including creating a profile to **increase bond area**, and choice of primer are **essential** for adhesion and long-term performance of the new coating system.

Note that there are some types of powder coating or coil coating which, due to their formulation, may not be readily recoatable, no matter what preparation is used. For example, powder coatings formulated for graffiti resistance and high performance powder or coil coatings (typically based on fluoropolymers) may not be recoatable at all. Where possible contact the manufacturer of the original coating to confirm its suitability for overcoating.

How Do I Paint Powder and Coil Coatings?

1. Clean the Surface

Remove all surface contamination such as oil, grease or dirt by washing with free-rinsing, oil-emulsifying alkaline degreasing detergent, in strict accordance with the manufacturer's written instructions and all safety warnings. Rinse with fresh potable water. Repeat until the surface is clean. A clean surface is indicated when the rinsing water wets out the surface instead of beading on the surface. Refer to relevant sections of AS1627.1 2003 Part 2.

2. Remove Corrosion Products

Mechanically remove all corrosion products. Chalky deposits, such as white rust (zinc corrosion products), may require the use of abrasive nylon pad. All red rust must be removed by power tool cleaning in accordance with AS1627.2 to clean, bright metal. Remove all abrasion products and dust.

Painting over Powder or Coil Coatings

4.3

3. Check Adhesion of Existing Powder or Coil Coating

Ensure that the coating is **tightly adhering** to the substrate. It may look sound, but adhesion to the substrate may have deteriorated over time. Perform a crosshatch adhesion test as per AS 1580.408.4-1993: Paints and related materials - Methods of test - Adhesion (cross-cut). If existing powder or coil coating fails the adhesion test, it must be removed.

4. Abrade Surface

Where existing coating had passed adhesion test, abrade using a non-metallic abrasive nylon pad to **remove gloss or chalkiness**, and to provide a sound, uniform surface for the new coating system to adhere to. Where coating had been removed back to a well-adhered, hard edge, mechanically feather edges of the coating to remove visual ridges. Remove all residual loose matter resulting from the cleaning and abrading processes.

5. Prime

Ensure that the entire surface is completely dry and contaminant-free and then **spot prime** power-tool cleaned bare steel areas with the recommended primer as soon as practical after preparation before the surface oxidises or becomes re-contaminated, and allow the primer to cure.

6. Apply Coating System

Here's where powder and coil coatings can differ – by the **end use** of the element to be recoated and the **substrate**.

Original Coating	Substrate	Recommended Primer	Recommended Topcoat
Powder Coating	Aluminium	Luxepoxy 4 White Primer	Weathermax HBR
Powder Coating	Steel	Durebild STE	Weathermax HBR
Coil Coating	Aluminium	Not Required	Weathershield
Coil Coating	Steel	Durebild STE	Weathermax HBR (high durability & aesthetics) or Weathershield (aesthetics)

Powder Coated Metals

Powder coatings are generally used on elements that take greater impact and wear-and-tear, such as window and door-frames, and therefore should be coated in high-performance, high durability **two-pack coating systems**, such as **Weathermax® HBR**.

Coil Coated Metals

Coil coatings may be used in areas not likely to be subject to impact or high wear-and-tear, such as roofs and facades, and, in such cases, may be best served with **single-pack acrylics**, such as **Weathershield® X10**. **Weathershield® X10** will offer adequate adhesion without the need for a primer. In cases where there will be exposure to impact or high wear-and-tear, such as in fencing or curtain walling, a system based on high durability **two-pack coatings**, such as **Weathermax® HBR** would give superior performance.

Can I Use An Etch Primer on Powder And Coil Coatings?

Absolutely not! Please refer to Dulux® Protective Coatings Tech Note 3.7.1 regarding this topic.

For product data sheets or Material Safety Data Sheets, go to www.duluxprotective.com.au.

For more information or advice regarding your specific project needs , please contact the Dulux Protective Coatings Technical Consultant in your state.