

## Coating Galvanized Metal

Protecting raw steel by dipping it in a hot solution of zinc metal, “galvanizing”, was a major advance in preventing rust and corrosion from attacking the steel prematurely. However, the protective zinc layer in galvanizing can be difficult to paint/coat because of the extreme reactivity of zinc metal.

A successful finished paint/coating system starts with knowing what type of “galvanized” metal treatment you are painting. The four types most commonly used are:

1. Molten Zinc,
2. Galvanneal,
3. Bonderite G90,
4. Galvalume.

Acryzinc and Acrylume, Molten Zinc, and Galvanneal, respectively, are coated on both sides with a thin film (0.3-0.5 mils dry) of a hard water-based acrylic clear that contains corrosion inhibitors and provides lubricity for rollforming.

Good surface preparation is essential for painting/coating applications over molten zinc galvanized surfaces. Within days after production, powdery films of oxides and hydroxides begin to form on the surface, causing the galvanized surface to be extremely reactive and very difficult to paint/coat. The powdery films can be removed by sweep blasting, solvent or alkaline detergent wiping, or chemical cleaners on the market specifically formulated for preparing galvanized surfaces. Sweep blasting, when done correctly, is one of the best methods of preparing zinc galvanized metal for painting/coating. Major drawbacks are its cost, and it requires a good deal of expertise to do a good job. Excessive blasting can result in too much zinc being removed, exposing steel, and too little blasting will not remove the oxide film. Chemical etching by weak acids or other chemicals should not be used because the etching cannot be controlled, and will often remove excessive thickness of the galvanized coating.

For the best results, all zinc galvanized metal should be exposed to weather for at least 60 days. During the weathering, a film of zinc carbonates forms, which is essentially inert, slightly water soluble, and highly adherent. The only surface preparation needed is a warm water power wash (less than 1450 psi) to remove loose particles and dirt.

There are two galvanized products that are designed to be painted directly, “Galvanneal” and “Bonderized G90”. Galvanneal is a zinc-iron alloy and has a dull matte appearance that accepts paint/coating very well without pretreatment. The zinc coating weight is about 1/3 of the Bonderite G90 treatment, and is usually used in interior applications. Bonderite G90 is treated with zinc phosphate at the galvanizing line and is used in exterior applications. Neither of the above need to be exposed or treated before painting/coating, but do need all oil, grease and/or dirt to be removed before painting/coating.

Galvalume has a zinc-aluminum coating on the steel that provides better corrosion resistance and longer durability than zinc galvanized steel. The pretreatment for painting/coating Galvalume is the same as painting/coating zinc galvanized steel.