



## **Galvanized Steel**

### **TECHNICAL BULLETIN #9**

#### **Guidelines to the Effective Use of Galvanized Steel with a Resin Coating**

##### **9.0 Properties of Galvanized Steel with a Resin Coating**

The resin coating applied to Galvanized Steel is a specially formulated water-based resin-chrome film, which is factory applied over a bare Galvanized Steel surface. In the cured state, the coating is colorless and odorless.

The resin film has excellent adhesion to the substrate with very good impact resistance, flexibility, roll formability, storage stain corrosion resistance (far superior to conventional passivation), and anti-fingerprinting properties. When it is used without post painting, the natural weathering process will typically not affect the surface appearance for at least 12 months.

##### **9.0.1 Factory Production of Galvanized Steel with a Resin Coating**

The clear resin film is applied wet, using state-of-the-art roll coaters. The roll coaters are similar in design and operation to those used on a coil coating line. The film is cured using computer-controlled ovens. This ensures that optimum coating properties are achieved prior to rewinding and shipping.

#### **9.1 Field Painting Guidelines**

##### **9.1.1 Wet Painting**

Galvanized Steel with a resin coating can typically be painted, provided paint manufacturers recommendations are followed and appropriate consideration is given to environmental conditions, end use, location and product application. Given the wide variety of available paint systems and applications, testing for specific compatibility is highly recommended. Traditionally, Galvanized Steel requires the surface to be painted also be washed with a suitable solvent to remove traces of residual roll forming lubricant, and suitable metal primer be applied before the application of a decorative topcoat.

Galvanized Steel with a resin coating removes the requirement to use solvent to clean up surfaces. A simple detergent wash is satisfactory, and generally eliminates the need to prime the surface. Galvanized Steel with a resin coating can typically be over-painted with high quality water based acrylic topcoat without priming, provided a lubricant has not been used in the forming process and the surface is clean and dry. Again, given the wide variety of available paint systems and applications, testing for specific compatibility is highly recommended.

Solvent based finish coat systems may be used, however, these must be applied after the material has been primed with a compatible water based, solvent resistant primer. If the material is correctly primed a number of coats may be applied. Surface preparation and priming must be in accordance with the paint manufacturer's instructions.

##### **9.1.2 Powder Coating**

Galvanized Steel with a resin coating is suitable for direct powder coating, provided the surface to be coated is clean and powders requiring a peak metal temperature in excess of 390°F are not used. It is recommended that a brief water wash serve as the only pretreatment step, rather than another form of solvent-based cleaning solution. Please contact our Sales Department to discuss a program to trial Galvanized Steel with a resin coating for these applications.

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## 9.2 Roll forming Characteristics

Lubricants are rarely required during the roll forming of Galvanized Steel with a resin coating because the clear resin film acts as a solid lubricant. The need for additional lubricant must be determined, however, on a case-by-case basis. Variables that should be considered include roll former design, (number of stands and severity of each incremental shape change) speed, surface condition of rolls and general machine maintenance.

Most common roof and sidewall trapezoidal shapes do not require additional lubrication if the roll former is well maintained and correctly set up. Very severe profiles may require a small amount of spot lubricant at the heaviest worked points.

The benefits of using Galvanized Steel with a resin coating include:

- a) No Pickup - The reduction or absence of pickup during forming due to the resin film means the reduction or elimination of time-consuming cleanup.
- b) Increased Tool Life - Reduced pickup combined with the lubricating benefits of the resin film will contribute to improved tool life in manufacturing and roll forming applications.
- c) Scheduling Flexibility - Galvanized Steel with a resin coating can typically be roll formed interchangeably with prepainted feed, avoiding the need for intermediate roll cleaning. This provides greater scheduling flexibility.
- d) Removal of Hazardous Work Place Chemicals - Hazardous substances such as kerosene and other lubricants can be removed from the work environment, improving occupational health and safety practices.
- e) Less Slippery - The resin film is less slippery than a lubricated steel surface particularly with the absence of residual lubricant left over from roll forming. This will make the product safer to walk on while installing, particularly in wet conditions.
- f) Improved Final Appearance - Residual lubricants can often create a patchy visual appearance as the result of uneven drying off of the lubricant. This problem can usually be avoided with Galvanized Steel with a resin coating.

## 9.3 Resistance to Marking

Galvanized Steel with a resin coating resists marking and stains occurring during manufacturing, handling or fixing. The coating acts as a surface sealant, increasing protection of the metal surface from hand and boot marking.

## 9.4 Wet Stack Storage Stain Resistance

The resin coating provides an increased resistance to wet stack storage stain. Such stains appear white, gray or black, and are caused when the material is packaged and subjected to moisture ingress between production and final use. The coating acts as a barrier coat, minimizing aesthetic degradation.

## 9.5 Installation of Galvanized Steel with a Resin Coating

### 9.5.1 Flashings

The recommendations for flashing Galvanized Steel with a resin coating are the same as for Galvanized Steel. Using Galvanized Steel bare or with a resin coating in areas subject to water runoff from 55% Aluminum-Zinc Alloy Coated Steel, Pre-painted 55% Aluminum-Zinc Alloy Coated Steel, Pre-painted

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Galvanized Steel or aluminum coated steel should be avoided. Galvanized Steel bare or with a resin coating are not subject to pitting corrosion when used alongside lead or copper components. Similar to other metallic building materials, Galvanized Steel bare or with a resin coating should not be used in direct contact with green, wet or chemically treated wood products.

#### **9.5.2 Sealants**

Experience shows that Galvanized Steel with a resin coating is compatible with polyurethane, PVC, and polypropylene, and therefore would likely be compatible with common neutral cure silicone sealants. The adhesion properties of the resin film should be similar to Galvanized Steel.

#### **9.5.3 Fasteners**

Recommended fasteners for Galvanized Steel with a resin coating are the same as for Galvanized Steel.

### **9.6 Slitting Galvanized Steel with a Resin Coating**

Where friction drag pads are used to maintain processing tension during slitting/recoiling, pickup of chrome passivant can occur. Some chromate is present in this pickup, as it is with most Galvanized Steel, therefore, the following guidelines are recommended:

1. Use minimal frictional forces on pads.
2. Set minimum pad width 6" to minimize frictional forces if drag pads are used.
3. Encourage use of an appropriate respiratory device for personnel working in close proximity (4-6 Feet) if dust is produced by the drag pad.
4. Remove pickup from drag device and adjacent areas using appropriately designed apparatus.
5. Dispose of drag pads in accordance with environmental or local regulations.

### **9.7 Welding**

Spot, seam or gas metal arc welding can be carried out successfully on Galvanized Steel with a resin coating with typical resin coating weights. Fume generation may be slightly higher than Galvanized Steel without the coating. All welding should be carried out in well-ventilated areas.

### **9.8 High Temperatures**

The maximum recommended continuous service temperature is 390°F. Service temperatures exceeding 390°F will be detrimental to the coating. Applications requiring operating temperatures up to the 500°F safe limit for Galvanized Steel should be specified without the resin film.

### **9.9 General Corrosion Characteristics**

The Galvanized Steel with a resin coating does not improve the general corrosion characteristics of Galvanized Steel except as described in section 1.0. The resin coating has been tested to 1000 hours of UV exposure with no effect on appearance.

### **9.10 Product Mixing**

Galvanized Steel bare and/or with a resin coating should not be mixed in adjacent areas on the same building. The different surface finishes, both in the new and weathered conditions, will result in a contrasting appearance, which may be objectionable.

### **9.11 Visual Reflectivity**

Galvanized Steel with a resin coating has a reflectivity similar to standard Galvanized Steel.

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### **9.12 Electrical Conductivity**

The resin film applied to Galvanized Steel can potentially cause an insulating effect between panels in electrical appliance applications. The insulating effect would normally be overcome with welding or mechanical fastening of components. Manufacturers should be advised to ensure products are adequately grounded.

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