

Painting

Proper surface preparation, plus the right choice of primer and paint, is key to a long-lasting paint job.

When it comes to painting the exterior of a residential, light commercial or commercial building, nearly every structure, regardless of whether it's constructed of wood, brick, stucco, vinyl or other material, is probably going to have some metal to paint, ranging from gutters and downspouts to railings and light posts.

To help ensure that these metal surfaces will “wear like iron,” The Rohm and Haas Paint Quality Institute offers the following recommendations for painting two of the most common metal surfaces: ferrous and galvanized. For tips on painting aluminum, see the Spring 2001 issue of *Professional Painter*.

Ferrous Metals

Ferrous metals are those that either contain or derive from iron. They are commonly used in the manufacture of castings, fabricated sheet steel, and wrought iron. With the exception of stainless steel, all of these metals will rust, which can eat away at the metal as well as spoil its appearance and undermine any applied coatings.

Rusting can start almost immediately when unprotected ferrous metal is exposed to rain, snow, dew or moisture in any form. Your objective, then, is to stop any rusting that has begun and to keep moisture and air from interfacing with the metal after painting.

Accordingly, ferrous metals call for very thorough and meticulous surface preparation. Anything less may seriously compromise the appearance and durability of the finished paint job, not to mention the integrity of the metal itself.



Preparing the Surface

The first consideration when preparing a ferrous metal surface in a noncorrosive atmosphere for painting is to remove any loose rust that is present, as well as any peeling paint.

On smaller jobs, use a chisel-style scraper and a hand-held wire brush. Use the scraper to take off heavy rust and loose paint, then follow up by wire-brushing the surface to remove as much of the rust residue as possible. It is not necessary to remove every bit of rust and take the surface down to bare metal, but rather to remove as much rust as these methods will allow.

Metal *so that it 'wears like iron'*

On larger jobs, power wire-brushing or disk sanding with aluminum oxide paper is effective. Whether you use hand tools or power equipment to remove rust, be sure to wear personal protective equipment, including eye protection and a good dust mask.

After wire-brushing, the surface will be covered with small particles of loose rust and dust, which should be removed before any coating is applied. Brush these particles off with a soft-bristle brush, then scrub the surface with a detergent-and-water solution, followed by a thorough rinsing with clean water.

Surface preparation should not be omitted just because an iron or steel surface is new. New ferrous metal often has mill oil on it or small amounts of rust that are not readily visible. Not removing these before applying a coating could result in premature failure of the paint job.



Timing of Priming Is Critical

Once a ferrous metal surface is free from rust and other impurities, priming should be done as quickly as possible. This timing is vital because rust can begin to re-form on iron or steel if the surface is exposed for as little as a day or two. If that happens, you'll have to prepare the surface again.

When painting ferrous metal, it is important to apply a top quality metal primer because it must perform two vital functions: provide the bond between the topcoat and the metal, and inhibit corrosion. This is a point you should not compromise.

When priming ferrous metal:

DO: Use a quality exterior rust-inhibitive primer.

DO: Apply the primer at the recommended spread rate in order to achieve adequate film thickness, which directly impacts corrosion resistance.

DO NOT: Thin the primer before application, unless recommended by the manufacturer.

DO: Consider applying a second coat of primer for maximum corrosion resistance.

Top quality acrylic latex corrosion-inhibitive primers work well in applications where the metal is not exposed to heavily corrosive atmospheres, such as acidic or salt air. Unlike oil-based or solvent-based primers, they can be applied immediately after cleaning the surface, even if it is still slightly wet. Zinc-rich and zinc chromate epoxy and alkyd primers are more appropriate for more highly corrosive settings.

Selecting the right topcoat is also important when painting ferrous metals. A high quality acrylic latex paint is generally a good choice because it can



last as much as two to four times longer than conventional alkyd paints without serious cracking or fading, has a much quicker drying time, and is easier to handle and clean up.

Galvanized Metal

Galvanized metal is iron or steel that has a thin coating of zinc on it to help prevent rusting, and it is commonly used for gutters, downspouts and flashing.

If the galvanized surface is new or unweathered, wash and thoroughly rinse it before painting. This step is necessary to clean off any zinc chromate or residual oil left from the galvanizing process, which otherwise can interfere with adhesion of the paint.



Apply a quality exterior acrylic latex corrosion-inhibitive primer for best performance. However, if there are no signs of rust, a top quality exterior 100% acrylic latex paint can be applied to new galvanized metal without a primer.

Oil, alkyd and vinyl latex paints, however, should **never** be applied directly to bare galvanized metal without first applying a corrosion-inhibitive primer. Without an appropriate primer, these coatings can lose their adhesion to this substrate, sometimes in less than a year.

If the galvanized surface is weathered and unpainted, clean and rinse off any dirt and remove any rust with a non-metallic scouring pad. Then apply a corrosion-inhibitive metal primer and top quality exterior 100% acrylic latex paint.



If it is previously painted, carefully remove any rust that is present and all loose and peeling paint with a wire brush. Avoid cutting through the layer of zinc galvanizing. Then wash the surface with a detergent-and-water solution, rinse it thoroughly, and apply a corrosion-inhibitive metal primer followed by a 100% exterior acrylic latex paint.

How Many Coats?

When it comes to the number of coats of primer and paint to apply to metal, the cardinal rule is to follow the recommendations of the coating manufacturer. In general, however, one coat of primer is normally sufficient, although application of a second coat insures complete coverage and maximum protection in demanding situations.

Two coats of a topcoat are generally recommended rather than a single coat for two reasons: increased overall thickness of the coating for better durability, and elimination of the possibility of any pinholes extending through the coating.

In addition, always apply primer and paint to metal in thick coats for

optimum durability and rust resistance. That's because the thicker the coat, the less chance of moisture penetrating the paint and reaching the substrate. Brushing is fine for small applications, while rolling and airless spraying are better for covering large areas.

Direct-To-Metal Coatings

Another option when painting metal is Direct-To-Metal (DTM) coatings. These coatings are designed for direct application to metals without the use of a primer. They function as both primer and topcoat in one product.

DTM coatings can be used for a variety of applications, are available in semigloss or gloss formulations, and are now offered in high performance latex products. To ensure proper protection of the metal, two thick coats are usually recommended.

Regardless of whether you use a DTM coating or a primer-topcoat system, it is not difficult to get years of reliable service from a metal paint job. The keys are taking the time to properly prepare the surface, promptly priming the surface, and applying thick coats of the right type of coating. ■

Why It's Important to... **Prepare the Surface**

Good paint performance depends on good adhesion, and paint adheres best to surfaces that are clean and sound. That's why contractors make sure the surface is in this condition before they start.

Taking shortcuts on surface prep can cause even the highest quality paints to fail prematurely. In fact, according to experts at The Rohm and Haas Paint Quality Institute, inadequate surface preparation is *the* single greatest cause of premature exterior paint failures.

Thus, just as a builder needs a solid foundation to construct a house that lasts, so too must a painting contractor start with a sound surface. It is the first step to a durable, long-lasting exterior paint job.



Benefits of a Properly Prepared Surface

- **Better adhesion** — the paint is less likely to blister, flake or peel.
- **Better uniformity** — the paint has a more consistent color and sheen or gloss.
- **Better hiding** — no show-through from the surface that is being painted.
- **Increased mildew resistance** — the paint won't be marred by unsightly black or brown fungal growth.
- **Increased corrosion resistance, in the case of painting metal** — results in a longer-lasting paint job because of better protection against rusting.

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