

# How To Remove Rust

*Make rusted iron elements as good as new again in 4 simple steps.*

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A rusted iron railing that's weathered many years outside can be returned to a good-as-new appearance with these simple steps.

As old-house owners, we may deal with corrosion on a number of different metals, but it's likely that the battle against the forces of rust will focus on one metal in particular: iron. Iron is arguably the most useful metal on the planet. It is plentiful and very strong; it can be cast into molds or rolled into sheets. Sure, there are stronger, lighter, more rust-resistant and conductive metals, but pound for pound, iron is the least expensive. The main downside to iron is its tendency to combine readily with oxygen to form rust. But rusted iron can be restored through a simple four-step procedure: cleaning, repairing, priming, and finishing.

## **Step 1: Clean It**

Corrosion can be cleaned from metals using abrasive, chemical, or even thermal techniques. Hard metals like iron and steel respond well to abrasive and chemical cleaning. Sandblasting is the most aggressive form of abrasion, but for most of us, some form of wire brushing and manual sanding is usually all that's needed. Wire brushes come in a wide variety of shapes and sizes, and many can be attached to a number of common power tools. If you're using power, remember to use a light touch (it's easy to grind away intact metal beneath rust). Clean crevices out with a

hacksaw blade. Finally, remove any remaining rust with either a piece of emery cloth or an abrasive pad like synthetic steel wool. These flexible sanding materials can be folded into the shapes needed to clean tight areas. When you're finished, clean the abraded surface with a rag dampened in mineral spirits.



Start by sanding away corrosion—either by hand, or with the help of power tools.

Another option is to clean the iron with chemicals that contain phosphoric acid, like Naval Jelly. After scraping away loose scale and dirt, use a disposable brush to apply a thick coating of Naval Jelly. Wait 10 minutes, then remove the slurry with a rag. Any remaining residue comes off easily with water, per the instructions. I like to follow this up with a mineral-spirits wipedown to get rid of remaining moisture. For particularly heavily rusted areas, the jelly can be applied repeatedly.

A final cleaning option is a tannic- acid-based “rust converter”—several have been on the market for a number of years with some good success. After scraping away loose scale, rust, and dirt (don't clean too well; the converter needs rust to work), clean the surface with mineral spirits, then apply the rust treatment. A chemical reaction turns the rust black while it alters and bonds it to the surface of the iron. If you plan to finish the piece with an alkyd paint, this layer also acts as a primer, allowing you to skip a step. However, if you want to use a latex topcoat, you'll still need to apply an alkyd primer over the converted rust.

## **Step 2: Repair It**

Sheet metal can be repaired with sheets of woven fiberglass coated with an epoxy or polyester resin. Several companies manufacture paste-like fillers containing iron filings; once cured, their surface can be ground flat to match the surrounding profile. For heavier stock, if you have welding experience, it should be fairly simple to create replacement parts. For small repairs, though, don't underestimate the holding power of many modern epoxies.

### Step 3: Prime It

There are two important rules to remember when priming cleaned iron. First, be sure to use an alkyd primer. Second, prime the cleaned metal as soon as possible. Unless you live in a particularly dry environment, iron and steel will begin to rust almost immediately—the sooner you apply a moisture-proof coating, the better. A good rule of thumb is to strip only as much rust as you can prime in a day. If time does elapse between wire-brushing and priming, you may have to lightly sand the surface again and wipe it down with mineral spirits.



After painting, the railing has been restored to a like-new appearance. Whether spraying or using a brush, always choose the best paint you can afford.

There are several common primers: primers for rusty metal, primers for clean metal, and cold galvanizing primers. Rusty metal primers are the most useful in restoration work. These sometimes actually contain rust, but since rust is a stable compound (i.e., it can't corrode any further), it binds to the surface of the metal to create a non-reactive film, making it a good choice over iron and steel. Cold galvanizing compounds, on the other hand, are clear binders containing zinc dust. The theory is that the zinc will act in concert with the metal just as it would when applied as a galvanized coating in a factory setting. The truth is, the zinc particles must be in direct contact with the iron in order to prevent rust by galvanic action. Some particles would be, but most are locked in the binder.

### Step 4: Finish It

Finish your project with two coats of the best metal paint you can afford. You can apply the paint either by spray or by brush. Spraying generally leaves a smoother coat of thinner paint, but it can take three to four coats to achieve the same level of protection offered by two brushed-on coats of paint.

