What paint should I use on welds on cold-formed steel framing?

—C.T., Puerto Rico

The short answer is a zinc rich paint. However, there’s more to it than merely coating the weld with a dab of paint. Galvanized metal usually has a thin film resembling white grease applied to its surface that will prevent any coating from adhering properly. Fresh welds may have a layer of slag, or metal waste, which will eventually release from the weld, taking the paint with it. Also, there are many varieties of zinc rich paint.

The Steel Structures Painting Council has a specification known as SSPC-SP1, Solvent Cleaning, which, according to Joel Wadas at Dietrich Industries, is the appropriate level of preparation before painting welds on steel framing. SSPC-SP1, in a nutshell, says to first remove all foreign matter, like the slag, using a tool such as a wire brush. Then clean the surface with clean cloths and a solvent strong enough to remove the shop film from the galvanized surface; lacquer thinner is a best bet. It is also important to ensure that you’re working with clean rags, otherwise you’ll wind up just smearing the shop coating around and leaving a film that prevents the paint from properly adhering.

The simplest and perhaps most effective variety of zinc rich paint for this use is a single-component, moisture-cured urethane type product. In fact, this product is also referred to as “cold galvanizing.” Zinc-rich coatings are used in all types of industrial applications. This is because zinc has a very interesting property. When it is applied over ferrous metal (metal containing iron), the two metals create a very low-level electrical inter-action that is referred to as “cathodic action,” giving the zinc film a “self healing” property. If the zinc coating (or galvanizing) is slightly scratched or eroded, the cathodic action works like electro-plating, causing the molecules in the layer of zinc to rearrange and repair itself—up to a point, anyway.

Moisture-cured urethane, as the name implies, cures by absorbing available moisture, usually from the air. But it will absorb small amounts of moisture on the surface being painted and actually bond better as long as the surface isn’t too wet; in which case the coating sets up too quickly and doesn’t bond at all. This affinity for moisture is very useful if a slight amount of rust is present, because the moisture-cured urethane will absorb the moisture present in the rust, essentially tying it up and preventing it from spreading.

One nasty little side effect that accompanies moisture-cured urethane’s affinity for water is that the lining of the human lung makes for a very nice bonding place for the fumes in the air. In other words, if you don’t want to participate in natural selection before your time, make sure you’re wearing a respirator designed for filtering out these fumes. And remember that a new set of cartridges for the respirator is much easier to come by than a new set of lungs.

About the Author

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