

Why paint steel? Often asked by engineers, owners and fabricators, there is no one simple answer.

The most common answer is not necessarily the “best answer”. The most common reason that steel is painted is for esthetic reasons. Engineers spend hundreds of hours engineering and planning. Fabricators spend as many hours cutting, welding, bolting and erecting and sometimes what the owner and public sees is rust, stains, and weld spatter. Therefore, *paint*.

On everything from exposed structural steel in a shopping mall to steel on a major bridge, the public today is used to and expects to see color... color that either lends interest and excitement to the project or, in the case of many projects, blends the construction into the surrounding environment.

The second and more important reason to paint steel is to protect it from the environment and extend the life of the project. While this is the more important reason, it is also the most misunderstood and more difficult in the decision making process. The color is easy. When deciding what coating to use to protect steel from the environment, there are many considerations that are often over looked.

To get it right, one must start at the very beginning of the process and answer important questions:

1. What surface preparation can or will be done?
 - a. Structural steel in a fabricators shop can most often be blasted prior to coating application, however a water tank or petroleum storage tank in an urban environment many times will not allow for open air blasting.
 - b. Surface preparation is one of the key factors in deciding what coatings may be used, how long the system will last and how long the steel will be protected.
2. Where will the coating be done? Is the specification being written for shop or field application, and will all fabricators bidding the project be capable of shop application?
 - a. A coating chosen for shop application may be very impractical for field application due to application equipment requirements.
 - b. A coating chosen for application in the controlled environment of a fabricators shop may be a major problem for field application due to temperature, humidity, or dew point restrictions.
3. What is the environment the steel is being placed in?
 - a. This sounds like an easy question to answer; is it sea coast, desert, urban; are there chemicals, is it wet or dry?
 - b. The environment must consider not just the project being coated, but the surrounding area as well. An example might be exposed structural steel in a paper mill or chemical plant. At first glance one might think a two coat alkyd system would be an acceptable system to specify and apply. However when considering the prevailing wind directions and the possibility of fall out, venting, spills, etc. from nearby process equipment it may be better to consider a high performance chemical resistant system such as Zinc, Epoxy, and Urethane.

These are a just a few of the things to consider when deciding what coating or coating system will be best. The more of the *what, where, when, how* and *what if* questions are answered in the planning and specification stage, the better the system and the longer the service life of the coating and the steel.



Paint Questions

By Roscoe (Skip) Pendry

Well thought out, specified and applied coating systems have been extending the service life of steel for many, many years and that is the most important answer to the question; why paint steel?

Now... what generic type product should be used? This is a much harder question to answer, because almost every situation, environment, and application is different.

A few years ago this question could be answered in a very general way by saying, the less aggressive the environment the “lower the performance” of the coating needed to be. On a scale of performance from lowest to highest, the list would have been: acrylic, alkyd, epoxy, zinc rich, and urethane. Then the systems and combinations would rank from one coat of any of these, to generic types, to systems that used two and three coats in combination. Today the question is much more complicated because of the advancements made in coatings technology and chemistry by paint manufacturers world wide. Today there are acrylic coatings that will out perform alkyds and there are two coat systems that will out perform three coat systems. What was “best” even three years ago has changed.

So, what’s the answer? The answer is that if you are an engineer specifying a coating or coatings system, or an owner-buying paint, contact any of the companies who manufacture products for steel and talk with a knowledgeable paint and coatings representative. Explain what you are painting, describe the environment and ask for a specific recommendation for that specific project or item. In response, you may get totally different suggestions from different experts. None of them will be wrong, just different.

Consider asking the question, what should I use on exposed structural steel? In a dry urban area the answer might be one coat of alkyd primer and one coat of alkyd finish coat. Move the exposed structural steel to a seacoast area within three to five miles of salt water, and the answer becomes one coat of a zinc rich primer, an intermediate coat of epoxy, and a finish coat of urethane. Or, as previously mentioned, consider some of the newer technology where in the dry area one coat of direct to metal urethane will out perform the two coats of alkyd and in the seacoast area one coat of zinc rich primer with one coat of high performance urethane will perform as well as the three coat system. You can readily see the need to consider each project individually. While there are two recommendations for the same steel in the same area, neither is wrong, just different based on the available technology and experience of the person you are asking the question of. ■

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