



MAIN TYPES OF PAINT USED WITH STEEL: STANDARDS, SPECIALIZED PAINTS AND APPLICATION METHOD

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SUMMARY

Primers, specialized paints and finishing coats are applied to steel structures in order to protect them from the elements or for esthetic purposes. Various criteria is considered to determine the type of paint that will be used.

MAIN TYPES OF PAINT USED WITH STEEL

In the steel construction sector, the same types of paint are used from project to project. Each type of paint is designed to meet specific needs to satisfy the particular requirements of each individual project. Paint finishes can be used for esthetic purposes, permanent or temporary protection, and color identification. The following paragraphs summarize the various types of paint generally utilized in the industry.

Standard primers

Standard grey primers are generally provided as alkyd paints. At Canam-Buildings, the grey primer applied to joists either by dipping or with a paint gun is normally an alkyd paint. These one-component primers are easy to apply and economical but offer limited protection against rust. They are designed to provide temporary protection during transportation and erection and provide a uniform appearance. The Canadian Institute of Steel Construction (CISC) and Canadian Paint Manufacturers Association (CPMA) standards [CISC/CPMA 1-73a](#) and [CISC/CPMA 2-75](#) require that primed steel used in non-corrosive environments must be protected from rust for a maximum period of six and twelve months, respectively. Note that the 2-75 standard specifies that the steel must be prepared before painting in compliance with SSPC standard SP7-63 Brush-off Blast Cleaning (Article 4.1 – Surface Preparation).

Alkyd primers are usually grey but may also be available in red and white. Contrary to universal alkyd finishes, standard alkyd primers cannot be top coated with high-performance paints such as epoxy or polyurethane. However, they can be used in combination with additional coats of alkyd primer, enamel, water-based acrylic paints and certain types of intumescent coatings. Ideally, the application of a top coat should be done on the job site to minimize touchups from impacts that occur during transportation.

Specialty paints

Finishes other than the standard grey alkyd primers described above are commonly referred to as specialty paints. Compared with standard primers, these paints, which require much more care during the application process, are more costly but provide enhanced protection against corrosion. These types of specialty paints are discussed in the following paragraphs.

1. Zinc

Zinc rich primers are divided into two categories: organic and inorganic. Both types offer cathodic protection against rust since the zinc, which serves as a "sacrificial metal", acts as an anode to protect the steel from corrosion (Figure 1). When inorganic zinc primers are used in one-coat applications, the resulting rust protection is similar to that obtained with galvanization. Organic zinc primers are generally used in multiple coat systems. Note that zinc primers must be applied

in compliance with the SSPC-SP6/NACE No. 3 standard for surface preparation, which specifies a minimum surface profile of two mils. In certain cases, zinc primers can meet Class B requirements for friction coefficient in connections.

2. Epoxy

Epoxy coatings are two-component paints that offer much greater rust protection than standard primers, but less than zinc primers. Epoxy paints, which create a protective barrier that seal the metal surface, are very effective in humid environments such as arenas and pools (Figure 1). Specific epoxy paints are even used to coat the interior of fresh water and saltwater tanks. These coatings cost twice as much as standard primers due to their higher retail price and the thicker coats required.

3. Polyurethane

Polyurethane paints are usually applied as a finish coat on the zinc primer or epoxy (Figure 1). Several types of polyurethane paints can also be applied directly to steel without the use of primers. These finishes, which are characterized by their color retention and gloss, are generally not required for interior environments. Polysiloxane, a type of polyurethane coating, combines the properties of both epoxy and polyurethane paints and allows for the application of a single coat. However, it costs at least three times as much as conventional polyurethane paint.

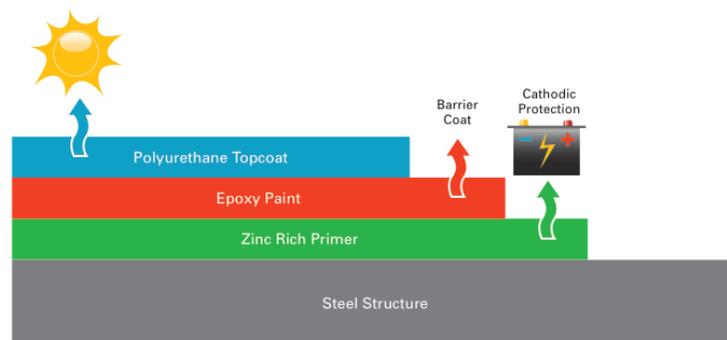


Figure 1
Three-coat paint system



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