

# A Quick Guide to Steel Substrates and Surface Prep

What to Know Before You Coat

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## The Importance of Preparation in Exterior Coating Projects

Exterior coating restoration projects involving architectural steel surfaces should always include a case-by-case inspection to identify the proper preparation and products needed to ensure optimum protection. From the environmental conditions of the building to the current condition and type of steel to the type of coating system specified, several important details can affect the short- and long-term success of coating a steel exterior.



## The 4 C's of Surface Preparation

### 1 Climate

Sunlight, moisture, temperature extremes, wind, particulate, chemical pollutants and abrasion can break down a coating over time. Chemical agents and free radicals in sunlight, water and atmospheric pollution can react with a coating's chemistry, attacking the pigment particles and molecular bonds of the binder resin.

### 2 Corrosion

Moreover, when coatings break down, erode and expose the steel substrate, these climate conditions cause a troublesome electrochemical process called corrosion. When selecting a field-applied coating system, specifiers should therefore pay close attention to the structure's "micro-climate," including moisture, humidity, UV exposure and ambient chemical pollutants, to help identify the right high-performance coating system.

### 3 Condition/Cleanliness

Analyzing the existing condition of the steel is critical for determining surface preparation or cleaning processes needed to identify the requirement for additional chemical or coating treatments in a multi-coat system. Following ISO or NACE standards to identify surface conditions, atmospheric corrosivity category, level of cleanliness and suitable surface profile are mandatory steps for ensuring coating longevity.

### 4 Coating

Coating systems are formulated to work with specific substrates. A formulation developed for masonry is not suited for steel surfaces. Coatings manufacturers provide detailed information about substrate/coating compatibility on their product data sheets, field coatings application guides and the product's material specification, all of which should be consulted.

## Overcoating vs. Removal

These documents also provide important information, including coverage, VOCs, dry rate and viscosity, as well as how to prepare the substrate and apply the product(s) properly. The condition of the existing

coating system and substrate will indicate whether complete removal or overcoating is the best solution. The amount of corrosion or degradation present, degree of coating defects on the surface, number of coats and adhesion between coats are some of the factors to consider before making an overcoat or complete removal decision. The coating manufacturer can offer resources or personnel to make a case-by-case assessment and determine the optimum solution. With their assistance, it can also be verified that the specification for a project follows the warranty.

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## Priming

A primer provides an important bonding layer to help the topcoat adhere to the steel surface. Manufacturers highly recommend that a mock-up be installed with proper surface preparation and then tested using ASTM D3359 Standard Test Method for Measuring Adhesion by Tape Test before coating. Inadequate adhesion will cause the coating to delaminate and fail, eliminating its protective properties.

## Intercoat Adhesion

Sometimes intercoat adhesion — or compatibility between primer and topcoat — is overlooked but can be an issue if not considered. The manufacturer has already done extensive testing to its formulations with respect to performance and compatibility, so it's a smart decision to source a multi-coat system from the same manufacturer.



## Benefits of PVDF-Based Coatings

To coat steel surfaces, many specifiers are turning to single-component, water-based coating systems such as **NeverFade® Façade Restoration Coatings** with Kynar Aquatec.

Formulated with polyvinylidene fluoride (PVDF), a tough engineering thermoplastic that withstands thermal, chemical and ultraviolet conditions, this particular low-VOC coating system has demonstrated more than 18 years of weatherability in extreme conditions. It promotes long-term adhesion to steel surfaces, protecting against corrosion, UV degradation, color fading, mold and mildew growth, dirt pick-up and abrasion.

**Contact APV Engineered Coatings today** to learn more about our PVDF-based coatings.