Organic coatings include latex paints, plastics, asphaltic materials, rubbers, and elastomers. The specific material selected for a coating job must have characteristics that would allow its proper application under all conditions existing during the coating process. Proper identification of the physical or other properties of the film expected from the application must be specified. Inspection procedures to verify the properties and to maintain uniformity of the system must also be stated. The safety of personnel involved in the work or of others in the vicinity must be considered.

Proper application of a coating can mean the difference between a successful job and a severe economic loss. In some instances, the choice of the application method can be the most important decision. At other times, more subtle influences determine the outcome of the work.

As with any coating, proper surface preparation is a critical component of successful application. This typically includes establishing a suitable anchor pattern to promote adhesion and cleaning the surface of mill scale, grease, and other contaminants.

Atmospheric conditions are an important consideration. In high-humidity environments, a coating must be applied very quickly after the surface is cleaned. Gross oxidation of the surface by moisture and oxygen in the air cannot be allowed.

Many coating resins are intolerant of moisture. Application of these materials on a dewy morning, under rainy conditions, or where rain is anticipated can be a waste of time and money. Also, the rheology (flow characteristics) of most coating materials is such that flow-out of the film and proper solvent release will not occur below a given temperature. For many materials, this point is around 5 to 10 °C (40 to 50 °F).

The most difficult influence to control is that of contamination of the surface by some airborne species before the coating is applied. This can be a whiff of hydrogen sulfide (H₂S), sulfur trioxide (SO₃), or other chemical from industrial or power plant exhaust. It may be an alkaline material, such as fly ash, ground seashells, or limestone dust. In a marine environment, salt contamination is a problem. When a coating is applied over such contaminants, a more rapid failure is certain to occur once moisture permeates the film.

Materials to be applied must be properly mixed. The process can be difficult for some materials, and adequate equipment to do the job should be available. When catalysts are to be added to the mixture, close attention to the required proportions must be given, and thorough premixing must be accomplished. The pot life of the mixture must be known and understood.

Many jobs have been downgraded because excessive or inadequate thinning of the coating material was made before the application. Overthinning to make the mixture more workable is the more common error.

Many methods of applying a coating are available. The familiar techniques involve brushing, rolling, dipping, palm- ing, and spraying. Other procedures have been developed for more specific types of organic coatings and economy of operation.

This article is adapted by MP Editorial Advisory Board Member Norm Moriber from Corrosion Basics—An Introduction, Second Edition, Pierre R. Roberge, ed. (Houston, TX: NACE International, 2006), pp. 423-424. MP