Standards Topics



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New ASTM Painting Standards

A number of new coating standards has emerged that are worthy of mention. ASTM committee D-1 on Paint and Related Coatings Materials and Applications recently completed balloting on five new standards.

- ASTM D 2200—Pictorial Surface Preparation Standards for Painting Steel Surfaces
- ASTM D 2092—Guide for Preparation of Zinc-coated (galvanized) Surfaces for Painting
- ASTM D 4541—Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers
- ASTM D 4752—Test Method for Measuring MEK Resistance of Ethyl Silicate (inorganic) Zincrich Primers by Solvent Rub
- ASTM D 5702—Standard Practice for Field Sampling of Coating Films for Analysis for Heavy Metals

D 2200 and a number of photographs are used to visually aid in judging and evaluating the degree of rusting before cleaning, and the degree of thoroughness of cleaning for that particular initial condition. The D-1 committee expects that the use of these standards will provide improved consistency in preparing steel surfaces for painting.

Three different sets of photographs are described in this standard and are designated as Methods A (ISO/ Swedish standard) and Methods B and C (Steel Structures Painting Council [SSPC] standards). The three methods differ in the depiction of the cleaning conditions, and in the number of cleaning methods included. The colored visual surface preparation standards represent different conditions of hot-rolled steel, before and after surface preparation.

D 2092 describes eight methods of treating new zinc-coated (galvanized) surfaces produced by either the hotdip method or by electroplating. The practice covers surfaces that have not been treated previously at the mill, to provide temporary protection against staining by moisture other than by easily removed protective oils. The treatment methods can be used to prepare new zinc-coated surfaces for painting and improve the bond of paint to the zinc surface.

D 4541 covers a procedure for evaluating the pull-off strength of a coating by determining either the greatest perpendicular force (in tension) that a surface area can bear before a plug of material is detached, or whether the surface remains intact at a prescribed force (pass/fail). The test method can be used to inspect applied coatings to make sure the coatings system has the specified degree of adhesion. It can also be used to compare adhesion of various coatings and to evaluate the strength of the substrate.

D 4752 can be used to determine when a zinc-rich coating is ready to topcoat. The standard describes a solvent rub technique for assessing the MEK resistance of ethyl silicate (inorganic), zinc-rich primers. The MEK resistance of some twocomponent, ethyl silicate, zinc-rich primers has been shown to correlate well with the cure of the primer, as determined by diffuse reflectance infrared spectroscopy. The solvent rub test has been shown to correlate well with the infrared spectroscopic results of some two-component, ethyl silicate inorganic zinc systems.

D 5702 covers a method to control the removal of samples of coating

films from substrates of subsequent laboratory analysis for heavy metal content on a mass basis. The technique can be used in the field, the fabricating shop, or laboratory. This method provides a standard, consistent procedure to remove coating samples and thereby improve the reliability of laboratory analysis.

New Metallic Coating Standards

In response to industry demand, committee B-08 has several new standards under development. The first of these, which is approaching final voting and is therefore not yet numbered, is Passivation of Stainless Steels Using Electropolishing. The proposed standard covers the passivation of 200, 300 and 400 series stainless steels, and the precipitationhardened alloys using electropolishing procedures.

The second of these new documents is Specification for Chromium Diffusion Coating Applied by Pack Cementation Process. This coating technique provides a chromium-rich surface to enhance corrosion and wear resistance, and to provide thermal stability. The coating is an environmentally friendly alternative to many applications now using hard chromium plating. Four classes of chromium diffusion are defined by base material category. These are: Carbon steels, low-alloy steels, stainless steels, and nickel-based alloys.

The third new document is Specification for Aluminum Diffusion Coating Applied by Pack Cementation Process. This coating technique provides an aluminum-rich surface that enhances corrosion resistance, thermal stability, and wear resistance. Three classes of aluminum diffusion are defined by base material category. These classes are: Carbon steels, stainless steels, and nickel-based alloys.

The last of the new B-08 documents is Anodic Coatings for Zinc and Zinc Alloys. The anodic coating can be applied to wrought or die-cast zinc alloy parts, as well as to electrodeposited, mechanically deposited, hot-dipped, or thermal-sprayed zinc coatings. The coating imparts exceptional corrosion- and wear-resistant qualities to the zinc surface.

These B-08 documents are in the intermediate stages of development. Anyone interested in expediting their progress is invited to join the committee and participate in the work. ASTM committee F07 has a new test method in the final stages of development—Standard Test Method for Measurement of Hydrogen Embrittlement in Steel by Incremental Loading Technique. The method is reported to be more sensitive than other methods and can be used with a wide variety of parts.

On the International Level

ISO/TC 156, on corrosion of metals and alloys, has initiated balloting on a

new accelerated corrosion test. ISO/ DIS 11474, corrosion tests in artificial atmosphere—accelerated outdoor test by intermittent spraying of a salt solution (scab test), describes a method of increasing the corrosivity of a test site by intermittently spraying a threepercent salt solution on test specimens. It was developed within the automobile industry for the study of underfilm corrosion, particularly where painted steel surfaces have been locally damaged by stone shots.