NACE Standard RP0281-2004
Item No. 21026

Standard
Recommended Practice

Method for Conducting Coating (Paint) Panel Evaluation Testing in Atmospheric Exposures

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NACE International
1440 South Creek Drive
Houston, Texas 77085-4906
+1 (281)228-6200

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Foreword

This standard recommended practice provides guidelines for establishing standardized procedures for selecting coating (paint) test panels, preparing and painting the surfaces of coating test panels, selecting test sites, and grading and evaluating coating test panels in atmospheric exposure. Such standardization procedures are necessary for meaningful comparisons of coating panel tests.

The recommendations in this standard apply only to atmospheric exposure and specifically exclude immersion testing and laboratory testing. Standards and other recommendations relating to the procedures described herein are listed in Appendix D. This standard provides minimum procedural guidelines for all parties concerned with the field performance evaluation of protective coating systems.

This standard was originally prepared by NACE Task Group T-6H-25 of Unit Committee T-6H on Coating Materials for Atmospheric Service, and later transferred to Task Group T-6Q-16 of Unit Committee T-6Q on Quality Assurance of Protective Coating Materials and Their Application. The members of Task Group T-6Q-16 included representatives from consulting firms, users of protective coatings, and coating manufacturers. This standard was editorially updated in 1993 and reaffirmed in 1998 by Unit Committee T-6H. It was reaffirmed in 2004 by Specific Technology Group (STG) 02 on Protective Coatings and Linings—Atmospheric. This standard is issued by NACE under the auspices of STG 02.

In NACE standards, the terms *shall*, *must*, *should*, and *may* are used in accordance with the definitions of these terms in the NACE Publications Style Manual, 4th ed., Paragraph 7.4.1.9. The terms *shall* and *must* are used to state mandatory requirements. The term *should* is used to state something considered good and is recommended but is not mandatory. The term *may* is used to state something considered optional.

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Cathodic Protection of Prestressed Concrete Cylinder Pipelines

Contents

Section 1: General

1.1 This standard provides guidelines for establishing standard procedures for coating test panel selection, surface preparation, coating application, field exposure sites and conditions, and the grading and evaluation of coating test panels. Appendices A, B, and C provide example forms that may be used in conjunction with these recommendations. Appendix D provides a list of standards and other information related to coating panel testing.

1.2 While many of these recommendations may be appropriate for testing in other environments (such as accelerated weathering, salt fog, fume chambers, etc.), they are specifically intended for coating test panel evaluation in an atmospheric exposure. These recommendations are not intended to be used for laboratory testing, immersion testing, etc.

1.3 Preliminary screening of coating systems may be more efficiently and economically accomplished by laboratory testing. Also, superior performance of a coating system on a coating test panel in an atmospheric environment does not ensure that equivalent performance will be attained during actual field application and service.

Section 2: Purpose of Testing Program

2.1 The purpose of a test program should be clearly detailed prior to the establishment of test procedures. The choice of coating test panel, surface preparation, coating application methods, grading methods, and interpretation of gradings should always be done with the purpose of the test program in mind.

2.2 Written procedures and/or instructions should be provided.

Section 3: Coating Test Panel Selection

3.1 The coating test panel should be fabricated from the same material over which the coating is expected to perform in field service. For structural steel, this should be American Iron and Steel Institute (AISI)[(1)] N1020 hot-rolled carbon steel. A 1.6-mm (0.063-in.) minimum thickness should be maintained to prevent deformation during blast cleaning. The panel may have a lesser thickness if it is not blast cleaned. The panel should have a 13-cm (5.0-in.) minimum length and a 7.6-cm (3.0-in.) minimum width.

3.2 The variety of sizes and shapes of commercially available coating test panels can be divided into two categories: flat panels and composite panels.

3.2.1 A flat panel should be uniform with no surface irregularity. Variations in performance properties such as rusting, loss of gloss, and chalking as a result of formulation variables are best evaluated if coating is applied over a flat coating test panel. This type of surface minimizes the effect of application variables.

3.2.2 A composite coating test panel should be specially fabricated to include welds, sharp angles, crevices, and other hard-to-coat surface irregularities. Composite coating test panels are commonly used to evaluate a coating system over irregularities similar to those encountered during the coating of structural steel.

3.3 The same type of coating test panel shall be used for comparative evaluation of all candidate coating systems.

Section 4: Surface Preparation

4.1 Surface preparation of coating test panels should be that expected to be done in the field. Because of possible variations in uniformity of blast cleaning, testing is commonly done on panels cleaned to a white metal surface in accordance with NACE No. 1/SSPC[(2)]-SP 5,[1] particularly if small coating test panels are used (see Appendix D, Surface Preparation Section, for additional information).

(1) American Iron and Steel Institute (AISI), 1140 Connecticut Ave., NW, Suite 705, Washington, DC 20036.
(2) SSPC: The Society for Protective Coatings, 40 24th Street, Sixth Floor, Pittsburgh, PA 15222-4656.