

SSPC: The Society for Protective Coatings

TEST PANEL PREPARATION METHOD NO. 1

Uncontaminated Rusted Steel

1. Scope

1.1 This specification describes the requirements for preparing standard laboratory corroded test panels for use in evaluating coatings in accelerated or fence tests.

1.2 Test panels prepared in accordance with this specification are intended primarily for evaluating the performance of coatings that are recommended for use on minimally prepared, minimally contaminated substrates. The test panels are intended to represent the minimally rusted steel surface after being cleaned to SSPC-SP 2 (Hand Tool Cleaning).

1.3 Test panels prepared in accordance with this specification should not be used for evaluating the performance of coatings recommended for use over marine and industrial contaminated rusted steel.

2. Description

2.1 This is a method for preparing standard corroded test panels. The method is both rapid and reproducible. Steel panels are initially prepared in accordance with SSPC-SP 10 (Near White Metal Blast Cleaning) and then exposed in a cyclic wet/dry cabinet. This produces dense uniform corrosion products. The method employs deionized water and is not intended to deposit soluble ionic species on the substrates.

3. Referenced Standards

3.1 SSPC AND JOINT STANDARDS:

PA 2	Measurement of Dry Coating Thickness with Magnetic Gages
SP 1	Solvent Cleaning
SP 2	Hand Tool Cleaning
SP 10/NACE No. 2	Near White Metal Blast Cleaning

3.5 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS:

A 36	Specification for Carbon Structural Steel
G 85	Standard Practice for Modified Salt Spray (Fog) Testing (Annex A.5)

4. Preparation of Test Panels

4.1 Test panels shall be of A 36 steel with dimensions as agreed upon between the purchaser and supplier.

4.2 Test panels shall be solvent cleaned in accordance with SSPC-SP 1.

4.3 Test panels shall be abrasive blast cleaned in accordance with SSPC-SP 10, using a contaminant-free manufactured abrasive such as aluminum oxide.

5. Corrosion of Test Panels

5.1 Test panels shall be exposed in a cyclic spray cabinet (see ASTM G 85, Annex A.5).

5.2 The cyclic spray cabinet shall alternate between one hour wet (ambient temperature, deionized water) and one hour dry conditions (initial dry temperature 25°C, final dry temperature of 45°C achieved after 30 minutes).

5.3 The total exposure time in the cyclic spray cabinet shall be 504 hours (three weeks). Panels shall be rotated through six positions in the cabinet such that each panel spends an equal amount of time at each position. The positions are the right, center, and left sides of the top and bottom rows of the cabinet. The middle row of the cabinet shall not be used except with newer models of cabinets where it can be shown that temperature variations are not greater than those observed in the right, center, and left positions of the top and bottom rows.

6. Inspection of Corroded Test Panels

6.1 The corroded test panels shall be uniformly corroded over the entire surface. Between-panel variations shall not be statistically significant. Estimate uniformity of rusting by SSPC-PA 2, "Measurement of Dry Coating Thickness with Magnetic Gages." NOTE: If the variation of rust thickness of a panel from the mean exceeds the requirement in Section 6.1.1, do not use such a panel.

6.1.1 After measuring the rust thickness on each panel determine the mean rust thickness for the entire population of prepared panels. Determine the standard deviation from the mean rust thickness of the panel population. Discard any panels from the full population that are not within ± 2 standard deviations of the population mean rust thickness.

7. Preparation and Storage of Test Panels Prior to Coating Application

7.1 Corroded test panels may be stored indefinitely under dry conditions prior to coating application and subsequent

exposure testing.

7.2 Corroded test panels shall be blown down with clean, dry compressed air prior to coating application.

8. Disclaimer

8.1 While every precaution is taken to ensure that all information furnished in SSPC standards and specifications is as accurate, complete, and useful as possible, SSPC cannot assume responsibility nor incur any obligation resulting from the use of any materials, coatings, or methods specified herein, or of the specification or standard itself.

8.2 This specification does not attempt to address problems concerning safety associated with its use. The user of this specification, as well as the user of all products or practices described herein, is responsible for instituting appropriate health and safety practices and for ensuring compliance with all governmental regulations.

Appendix A—Supplementary Information

The utility of this method was evaluated in a research project conducted by SSPC and sponsored by the U.S. Army Construction Engineering Research Lab. Key results from this study are:

A.1 Statistically high significant agreement (correlation between two factors at the 99% confidence level) is demonstrated between the unranked performance of coating systems applied to test panels prepared by this method when subjected to accelerated testing.

A.2 Statistically significant agreement (correlation between two factors at the 95% confidence level) is demonstrated between the unranked performance of coating systems applied to panels prepared by this method and naturally rusted surfaces when subjected to accelerated testing.

A.3 Statistically high significant agreement is demonstrated between the ranked performance of coatings applied to panels prepared by this method and naturally rusted surfaces when subjected to accelerated testing.

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