



Designation: **D7055 – 09 D7055 – 14**

Standard Practice for Preparation (by Abrasive Blast Cleaning) of Hot-Rolled Carbon Steel Panels for Testing of Coatings¹

This standard is issued under the fixed designation D7055; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the procedures to be followed in the preparation (by abrasive blast cleaning) of hot rolled steel panels for laboratory testing of coatings.

1.2 This standard practice does not include procedures for the application of coatings.

1.3 The values stated in Sinch-pound units are to be regarded as ~~the~~ standard. The values given in parentheses are ~~for information only~~ mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[A36/A36M Specification for Carbon Structural Steel](#)

[A572/A572M Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel](#)

[A1011/A1011M Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength](#)

[D4285 Test Method for Indicating Oil or Water in Compressed Air](#)

[D4417 Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel](#)

[D4940 Test Method for Conductimetric Analysis of Water Soluble Ionic Contamination of Blasting Abrasives](#)

[D7393 Practice for Indicating Oil in Abrasives](#)

2.2 *ISO Standard:*

[ISO 8502-3, Part 3 Assessment of Dust on Steel Surfaces Prepared for Painting \(pressure-sensitive tape method\)](#)³

2.3 *SSPC/NACE Standards:*⁴

[AB-1 Mineral and Slag Abrasives](#)

[AB-2 Specification for Cleanliness of Recycled Ferrous Metallic Abrasives](#)

[AB-3 Newly Manufactured or Re-Manufactured Steel Abrasives](#)

[SP1/SP 1 Solvent Cleaning](#)

[SP5/NACE-SP 5/NACE No. 1 White Metal Blast Cleaning](#)

[SP 6/NACE No. 3 Commercial Blast Cleaning](#)

[SP10/NACE-SP 10/NACE No. 2 Near-White Metal Blast Cleaning](#)

[SSPC-VIS 1 Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning](#)

3. Summary of Practice

3.1 This practice enables the user to specify the level of preparation of hot-rolled carbon steel test panels (prepared by dry abrasive blast cleaning) for testing of coatings, including the steel composition, the degree of surface cleanliness, and the type of abrasive.

¹ This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.46 on Industrial Protective Coatings.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁴ Available from Society for Protective Coatings (SSPC), 40 24th St., 6th Floor, Pittsburgh, PA 15222-4656, <http://www.sspc.org>.

4. Significance and Use

4.1 The procedures described in this practice are designed to provide hot-rolled, carbon steel panels with uniform and reproducible abrasive blast cleaned surfaces for testing of coatings.

5. Test Panels

5.1 Prepare the test panels from unpainted hot-rolled steel plate or bar stock.

5.2 Prepare the test panels from unpainted hot-rolled steel plate or bar stock as described in 5.2 and 5.3. The panels shall be made to a size and thickness as agreed upon between the purchaser and seller.

5.3 The steel composition shall be either Specifications [A36/A36M](#), [A572/A572M](#), [A1011/A1011M](#) or as agreed upon between the purchaser and seller.⁵

5.4 The surface condition of the steel prior to surface preparation shall be specified and shall be one of two rust grades based on SSPC-VIS 1: Grade A, intact mill scale; or Grade B, rusting mill scale. If SSPC-SP 6/NACE No. 3 is specified in 6.2, then the surface condition shall be Grade B.

5.5 ~~Saw-cut~~ Remove any burr from saw-cut or sheared edges of the test panels shall have the burr removed. Sharp corners shall be broken using a grinding wheel panels.

5.6 Break sharp corners and/or edges using a grinding wheel.

6. Methods of Preparation

6.1 ~~Degreasing~~—Prior to abrasive blast cleaning, the surface shall be ~~degreased~~ cleaning ~~degrease~~ the panels surfaces using one of the methods listed below from SSPC-SP1.

6.1.1 *Solvent Cleaning*—Immerse the panel in a cleaning solution or rub the surface with a clean lint-free cloth wetted with an appropriate solvent. If excessive oil or grease is present, power brush the surface vigorously and re-rinse or wipe.

6.1.2 *Alkaline or Detergent Cleaning*—Aqueous alkaline cleaners are available from a number of sources as proprietary compounds or processes. Clean the panels with an alkaline solution or cleaner applied by spray or immersion. Brush or wipe in accordance with the recommendations of the cleaner manufacturer. One or more steps of rinsing with water ~~will be~~ is required after this cleaning procedure. To prevent rust formation, force dry the panel surfaces immediately after rinsing.

6.2 ~~Selecting~~ Select the Degree of Abrasive Blast Cleaning—The user shall ~~specify~~ Specify one of the following degrees of cleaning as defined below.

6.2.1 ~~SSPC-SP5/NACE No. 1, “White Metal Blast”~~—~~SSPC-SP 5/NACE No. 1—A white metal blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and other foreign matter.~~ White Metal Blast Cleaning.

6.2.2 ~~SSPC-SP10/NACE No. 2, “Near-White Metal Blast”~~—~~SSPC-SP 6/NACE No. 3—A Near-white blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 5 percent of each unit area of surface and may consist of light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied coating. A unit area is considered 9 square inches.~~ Commercial Blast Cleaning.

6.2.3 ~~SSPC-SP 10/NACE No. 2—Near-White Metal Blast Cleaning.~~

6.2.4 ~~Default Degree of Cleaning~~—If no degree of cleaning is specified, ~~solvent clean~~ the panels shall be ~~solvent cleaned~~ as described in 6.1.1, then abrasive blast ~~cleaned~~ clean the panels to “White Metal”—Metal Blast Cleaning” as described in 6.2.1.

6.3 ~~Selecting~~ Select the Surface Profile (anchor pattern) Depth—The specifier shall ~~select~~ Select a surface profile range of fine, medium or coarse as defined below, or specify an alternative range.

6.3.1 Fine: 1.0 to 2.5 mils (25-63 μm).

6.3.2 Medium: 1.5 to 3.5 mils (38-89 μm).

6.3.3 Coarse: 3.0 to 5.0 mils (75-125 μm).

6.3.4 Alternative Range: The range between the minimum and maximum shall be at least 1.0 mil (25 μm).

6.3.5 Default Surface Profile Range: If no surface profile range is specified, the range shall be Medium.

6.4 ~~Selecting~~ Select the Abrasive Type—The specifier shall ~~select~~ Select the abrasive type as defined below, or specify an alternative abrasive. The abrasive size shall be determined by the ~~specified~~ surface profile range selected in 6.3. The actual size(s) used shall be reported. Mineral and slag abrasives shall meet the ~~qualification~~ requirements of SSPC-AB1; SSPC-AB-1; Steel abrasives shall meet the ~~qualification~~ requirements of SSPC-AB2; SSPC-AB-2 (if recycled) and SSPC-AB3. All abrasives shall be tested SSPC-AB-3. Test all abrasives prior to use for oil contamination ~~prior to use~~ in accordance with Practice [D7393](#) and for conductivity in accordance with Test Method [D4940](#). The cleanliness of the abrasive used shall conform to the requirements of the SSPC Abrasive Standards.

⁵ [A36/A36M](#) specification steel is typically not available in thicknesses less than 3/16 in.