



Designation: D5139 – 10

Standard Specification for Sample Preparation for Qualification Testing of Coatings to be Used in Nuclear Power Plants¹

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1. Scope

1.1 This specification defines the size, composition, and surface preparation and coating application variables for preparing samples for evaluating coatings and linings over various substrates.

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

2. Referenced Documents

2.1 *ASTM Standards*:²

- A36/A36M Specification for Carbon Structural Steel
- C33/C33M Specification for Concrete Aggregates
- C150/C150M Specification for Portland Cement
- C192/C192M Practice for Making and Curing Concrete Test Specimens in the Laboratory
- C260 Specification for Air-Entraining Admixtures for Concrete
- C494/C494M Specification for Chemical Admixtures for Concrete
- C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
- D3912 Test Method for Chemical Resistance of Coatings and Linings for Use in Nuclear Power Plants
- D4258 Practice for Surface Cleaning Concrete for Coating
- D4259 Practice for Abrading Concrete
- D4260 Practice for Liquid and Gelled Acid Etching of Concrete
- D4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

¹ This specification is under the jurisdiction of ASTM Committee D33 on Protective Coating and Lining Work for Power Generation Facilities and is the direct responsibility of Subcommittee D33.02 on Service and Material Parameters.

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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.

2.2 *American Concrete Institute:
ACI 308 Guide to Curing Concrete*³

3. Significance and Use

3.1 This specification provides uniform requirements for the preparation of test samples used for testing of coatings and linings to be used in nuclear power plants.

3.2 At the users discretion, this standard may also be used when preparing samples to be tested for the purpose of assessing performance attributes for coating and lining systems that may be applied in other types of power plants or for other industrial facilities.

4. Steel Samples

4.1 Sample size shall be a minimum of 2-in. wide by 4-in. long by 1/8-in. thick (50.8-mm wide by 101.6-mm long by 3.175-mm thick) unless otherwise stated in the referenced test method. Edges and corners may be rounded. A suitably located 1/4 in. (6.35 mm) diameter hole may be provided in the test panel as appropriate when required by the test method.

4.1.1 For Test Method D4541 the minimum size shall be 3-in. wide by 5-in. long by 1/4-in. thick (76.2-mm wide by 127-mm long by 6.35-mm thick).

4.2 Unless otherwise required, all panels shall be carbon steel, meeting the requirements of Specification A36/A36M.

4.3 Surface preparation criteria, including substrate cleanliness and profile, shall be specified.

5. Concrete Blocks

5.1 The minimum size shall be 2-in. by 2-in. deep by 4-in. long (50.8-mm by 50.8-mm deep by 101.6-mm long) unless otherwise stated in the referenced test method. The edges may be chamfered up to 1/4 in. (6.35 mm) maximum.

5.2 Composition shall be as follows:

Cement	Specification C150/C150M, Type II	7 sacks/yd ³
Gravel	Specification C33/C33M, size 3/8 in.	45 % by volume

³ Available from American Concrete Institute (ACI), P.O. Box 9094, Farmington Hills, MI 48333-9094, http://www.concrete.org.