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AMERICAN SOCIETY FOR TESTING AND MATERIALS  
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## Standard Specification for Sample Preparation for Qualification Testing of Coatings to be Used in Nuclear Power Plants<sup>1</sup>

This standard is issued under the fixed designation D 5139; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This specification defines the size composition and surface preparation requirements for test samples used to evaluate coatings according to the following ASTM test procedures.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- A 36 Specification for Carbon Structural Steel<sup>2</sup>
- C 33 Specification for Concrete Aggregates<sup>3</sup>
- C 150 Specification for Portland Cement<sup>4</sup>
- C 192 Practice for Making and Curing Concrete Test Specimens in the Laboratory<sup>3</sup>
- C 260 Specification for Air-Entraining Admixtures for Concrete<sup>3</sup>
- C 494 Specification for Chemical Admixtures for Concrete<sup>3</sup>
- C 618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete<sup>3</sup>
- D 3911 Test Method for Evaluating Coatings Used in Light-Water Nuclear Power Plants at Simulated Design Basis Accident (DBA) Conditions<sup>5</sup>
- D 3912 Test Method for Chemical Resistance of Coatings Used in Light-Water Nuclear Power Plants<sup>5</sup>
- D 4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser<sup>6</sup>
- D 4082 Test Method for Effects of Radiation on Coatings Used in Light-Water Nuclear Power Plants<sup>5</sup>
- D 4256 Test Method for Determination of the Decontaminability of Coatings Used in Light-Water Nuclear Power Plants<sup>5</sup>
- D 4258 Practice for Surface Cleaning Concrete for Coating<sup>5</sup>

D 4259 Practice for Abrading Concrete<sup>5</sup>

D 4260 Practice for Acid Etching Concrete<sup>5</sup>

D 4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers<sup>5</sup>

#### 2.2 Other Standards:

American Concrete Institute, ACI 301 Specifications for Structural Concrete for Buildings<sup>7</sup>  
SSPC-SP-1, 2, 3, 5, 6, 7, 10, or 11<sup>8</sup>

### 3. Significance and Use

3.1 This specification provide uniform requirements for the preparation of test samples used for qualification testing of coatings used in nuclear power plant construction and maintenance.

### 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). Edges and corners may be rounded. A 1/4 in. diameter hole suitably located may be in the test panel as appropriate for the test samples in Test Methods D 3911, D 3912, D 4082 and D 4256.

4.1.1 For Test Method D 4541 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 All panels should be carbon steel, meeting the requirements of Specification A 36.

4.3 Surface preparation shall be in accordance with SSPC-SP 10 for qualification testing. Other surface preparation as required by the project or specific conditions may be used when testing for evaluation over surfaces other than SSPC-SP 10, such as SSPC-SP 1, 2, 3, 5, 6, 7, or 11.

### 5. Concrete Blocks

5.1 Applicable to Test Methods D 3911, D 3912, D 4082, D 4256 and D 4541. 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). The edges may be chamfered up to 1/4 in. (6.35 mm) maximum.

5.2 Composition shall be as follows:

<sup>7</sup> Available from American Concrete Institute, P.O. Box 19150, Detroit, MI 48219.

<sup>8</sup> Surface Preparation Standards are available from Steel Structures Painting Council, 4400 5th Ave., Pittsburg, PA 15213-2683.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D-33 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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<sup>2</sup> Annual Book of ASTM Standards, Vol 01.04.

<sup>3</sup> Annual Book of ASTM Standards, Vol 04.02.

<sup>4</sup> Annual Book of ASTM Standards, Vol 04.01.

<sup>5</sup> Annual Book of ASTM Standards, Vol 06.02.

<sup>6</sup> Annual Book of ASTM Standards, Vol 06.01.