



Standard Guide for Selection of Test Methods for Coatings for Use in Light-Water Nuclear Power Plants¹

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1. Scope

1.1 This guide is intended to provide a common basis in the selection of test methods that may be required to evaluate and qualify protective coatings (paints) for use in a light-water nuclear power plant, and all the listed items are for Coating Service Level I application. It lists and describes tests to be conducted on all coatings specified for this service.

1.2 This guide also lists the specifications and their scopes that describe evaluation tests for these coating systems.

1.3 Coating Service Level I pertains to those coating systems whose failure could impair the operation of the engineered safety features that are essential for preventing the possible consequences of postulated accidents that could cause undue risk to the health and safety of the general public. Coating Service Level I applies principally to the interior surface of the primary containment for both Pressurized Water Reactors (PWR) and Boiling Water Reactors (BWR) and to the structures and equipment contained therein. Coated surfaces include, but are not limited to, carbon steel, stainless steel, galvanized steel, aluminum, and masonry.

1.4 Requirements for coatings applied to other areas shall be assigned at the option of the owner or his designated representative. It is intended that this standard be incorporated in specifications, by reference, on the basis of owner requirements.

1.5 *This standard does not purport to address all of the safety problems 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.*

¹ This guide 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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2. Referenced Documents

2.1 ASTM Standards:

- D 3911 Test Method for Evaluating Coatings Used in Light-Water Nuclear Power Plants at Simulated Design Basis Accident (DBA) Conditions²
- D 3912 Test Method for Chemical Resistance of Coatings Used in Light-Water Nuclear Power Plants²
- D 4082 Test Method for Effects of Radiation on Coatings Used in Light-Water Nuclear Power Plants²
- D 4256 Test Method for Determination of the Decontaminability of Coatings Used in Light-Water Nuclear Power Plants²

3. Significance and Use

3.1 This guide covers methods of testing coatings for use in light-water nuclear power plants.

4. Test Methods

4.1 *Test Method D 3911*—This test method establishes procedures for evaluating protective coating systems test specimens under simulated Design Basis Accident (DBA) Conditions. Included is a description of conditions and apparatus for temperature-pressure testing, condition for radiation testing, and procedures for preparing, examining, and evaluating the samples after testing.

4.2 *Test Method D 3912*—This test method establishes procedures for the evaluation of the chemical resistance of coatings used in light-water nuclear power plants.

4.3 *Test Method D 4082*—This test method establishes a standard procedure for evaluating the lifetime radiation tolerance of coatings to be used in nuclear power plants.

4.4 *Test Method D 4256*—This test method establishes procedures for determining and ranking the ease of the decontaminability of coatings used in nuclear power plants.

² *Annual Book of ASTM Standards*, Vol 06.01.

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