



Designation: D3912 – 10 (Reapproved 2023)

Standard Test Method for Chemical Resistance of Coatings and Linings for Use in Nuclear Power Plants¹

This standard is issued under the fixed designation D3912; 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 test method establishes procedures for the evaluation of the chemical resistance of coatings and linings for use in Coating Service Level I and II applications in nuclear power plants.

1.2 This test method is intended to be used as a screening test to evaluate coatings and linings on steel and concrete substrates.

1.3 This test method addresses two exposure intervals:

(1) Short Term (Typically 5 days): Such exposures are primarily applicable for coatings exposed to chemical splash or spill.

(2) Long Term (Typically 180 days): Such exposures are primarily applicable for linings exposed to continuous or near-continuous chemical immersion.

1.4 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.

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This test method 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. Referenced Documents

2.1 *ASTM Standards:*²

D714 Test Method for Evaluating Degree of Blistering of Paints

D1193 Specification for Reagent Water

D5139 Specification for Sample Preparation for Qualification Testing of Coatings to be Used in Nuclear Power Plants

D7230 Guide for Evaluating Polymeric Lining Systems for Water Immersion in Coating Service Level III Safety-Related Applications on Metal Substrates

2.2 *NACE Standard:*

NACE Standard TM-01-74–2002 Laboratory Methods for the Evaluation of Protective Coatings Used as Lining Materials in Immersion Service³

3. Significance and Use

3.1 The lining test described in 6.2 may be used to evaluate the chemical resistance characteristics of coating systems for lining surfaces of tanks, vessels and similar facilities used in Coating Service Level I and II applications in a nuclear power plant. For the evaluation of linings in Coating Service Level III water immersion applications in nuclear power plants use the test methods and guidance found in Guide D7230.

3.2 The specific chemical resistance tests described in 6.1 are dependent upon the relative severity of the service conditions. The specific chemical reagents to be used shall be specified to reflect the intended service conditions.

3.3 At the discretion of the user, the methods presented may also be used to evaluate coatings and linings for applications in other types of power plants or other industrial services.

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 NACE International (NACE), 15835 Park Ten Pl., Houston, TX 77084, <http://www.nace.org>.