



Standard Guide for Evaluating Polymeric Lining Systems for Water Immersion in Coating Service Level III Safety-Related Applications on Metal Substrates¹

This standard is issued under the fixed designation D7230; 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 guide establishes procedures for evaluating lining system test specimens under simulated operating conditions.

1.2 Lining systems to be tested in accordance with this guide are intended for use in both new construction and for refurbishing existing systems or components.

1.3 The lining systems evaluated in accordance with this guide are expected to be applied to metal substrates comprising water-wetted (that is, continuous or intermittent immersion) surfaces in systems that may include:

1.3.1 Service water piping upstream of safety-related components,

1.3.2 Service water pump internals (draft tube, volutes, and diffusers),

1.3.3 Service water heat exchanger channels, pass partitions, tubesheets, end bells, and covers,

1.3.4 Service water strainers, and

1.3.5 Refueling water storage tanks and refuel cavity water storage tanks.

1.4 This guide anticipates that the lining systems to be tested include liquid-grade and paste-grade polymeric materials. Sheet type lining materials, such as rubber, are excluded from the scope of this guide.

1.5 Because of the specialized nature of these tests and the desire in many cases to simulate to some degree the expected service environment, the creation of a standard practice is not practical. This standard gives guidance in setting up tests and specifies test procedures and reporting requirements that can be followed even with differing materials, specimen preparation methods, and test facilities.

1.6 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.

1.7 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 to determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:²

[A36/A36M Specification for Carbon Structural Steel](#)
[C868 Test Method for Chemical Resistance of Protective Linings](#)

[D115 Test Methods for Testing Solvent Containing Varnishes Used for Electrical Insulation](#)

[D714 Test Method for Evaluating Degree of Blistering of Paints](#)

[D2240 Test Method for Rubber Property—Durometer Hardness](#)

[D2583 Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor](#)

[D2794 Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation \(Impact\)](#)

[D4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser](#)

[D4082 Test Method for Effects of Gamma Radiation on Coatings for Use in Nuclear Power Plants](#)

[D4538 Terminology Relating to Protective Coating and Lining Work for Power Generation Facilities](#)

[D4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers](#)

[D5139 Specification for Sample Preparation for Qualification Testing of Coatings to be Used in Nuclear Power Plants](#)

[D5144 Guide for Use of Protective Coating Standards in Nuclear Power Plants](#)

¹ This guide 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.

Current edition approved July 1, 2013. Published July 2013. Originally approved in 2006. Last previous edition approved in 2006 as D7230 – 06. DOI: 10.1520/D7230-06R13.

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.