



Designation: D2247 – 15 (Reapproved 2020)^{ε1}

Standard Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity¹

This standard is issued under the fixed designation D2247; 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.

^{ε1} NOTE—Section 2 was editorially updated in June 2024.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This practice covers the basic principles and operating procedures for testing water resistance of coatings by exposing coated specimens in an atmosphere maintained at 100 % relative humidity so that condensation forms on all surfaces of test specimens.

1.2 This practice uses the technique of creating a slight temperature differential within the exposure area to form condensation on the coated specimens. As the warmer saturated air passes the cooler specimens, water is deposited onto the specimens in the form of condensation.

1.3 This practice places the entire specimen in the exposure area allowing condensation to form on all surfaces. This makes this practice suitable for flat panels as well as large or 3D objects. This practice differs from other methods where condensation is only formed on the front coating surface, while the back surface is outside the exposure area. Other tests may also deposit water droplets on the surface but where the source is not from condensation (for example, water spray).

NOTE 1—Alternative practices for testing the water resistance of coatings include Practices [D870](#), [D1735](#), and [D4585](#).

1.4 This practice is limited to the methods of obtaining, measuring, and controlling the conditions and procedures of tests conducted in 100 % relative humidity. It does not specify specimen preparation, or evaluation of results.

1.5 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *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 appro-*

priate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.

1.7 *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.*

2. Referenced Documents

2.1 ASTM Standards:²

- [D609 Practice for Preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Conversion Coatings, and Related Coating Products](#)
- [D610 Practice for Evaluating Degree of Rusting on Painted Steel Surfaces](#)
- [D714 Test Method for Evaluating Degree of Blistering of Paints](#)
- [D823 Practices for Producing Films of Uniform Thickness of Paint, Coatings and Related Products on Test Panels](#)
- [D870 Practice for Testing Water Resistance of Coatings Using Water Immersion](#)
- [D1193 Specification for Reagent Water](#)
- [D1654 Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments](#)
- [D1730 Practices for Preparation of Aluminum and Aluminum-Alloy Surfaces for Painting](#)
- [D1735 Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus](#)
- [D2616 Test Method for Evaluation of Visual Color Difference With a Gray Scale](#)
- [D3359 Test Methods for Rating Adhesion by Tape Test](#)
- [D3363 Test Method for Film Hardness by Pencil Test](#)
- [D4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers](#)

¹ This practice is under the jurisdiction of ASTM Committee [D01](#) on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee [D01.27](#) on Accelerated Testing.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.