



Designation: D2303 – 20^{ε1}

Standard Test Methods for Liquid-Contaminant, Inclined-Plane Tracking and Erosion of Insulating Materials¹

This standard is issued under the fixed designation D2303; 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.

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

^{ε1} NOTE—Fig. 4 was updated editorially in May 2021.

1. Scope*

1.1 These test methods cover the evaluation of the relative tracking and erosion resistance of insulating solids using the liquid-contaminant, inclined-plane test.² The following test methods also can be used to evaluate the tracking resistance of materials: Test Method **D2132** (contaminants: dust and fog) and Test Method **D3638** (contaminant: conductive liquid drops).

1.2 Two tracking and one erosion test procedure are described:

1.2.1 A “variable voltage method” to evaluate resistance to tracking.

1.2.2 A “time-to-track method” to evaluate resistance to tracking.

1.2.3 A method for quantitative determination of erosion (**Annex A1**).

1.3 While a particular contaminant solution is specified, other concentrations of the same contaminant, or different contaminants are used to simulate different environmental or service conditions.

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 Although this standard and IEC 60587-2007, “Test Methods for Evaluating Resistance to Tracking and Erosion for Electrical Insulating Materials Used Under Severe Ambient Conditions,” differ in approach or detail, data obtained using either are technically equivalent.

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 appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use. Specific precautionary statements are given in Section 9.*

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:*³

D374/D374M Test Methods for Thickness of Solid Electrical Insulation

D1711 Terminology Relating to Electrical Insulation

D2132 Test Method for Dust-and-Fog Tracking and Erosion Resistance of Electrical Insulating Materials

D3638 Test Method for Comparative Tracking Index of Electrical Insulating Materials

2.2 *IEC Standard:*

IEC 60587-2007 Test Methods for Evaluating Resistance to Tracking and Erosion for Electrical Insulating Materials Used Under Severe Ambient Conditions

3. Terminology

3.1 *Definitions:*

3.1.1 *erosion, electrical, n*—the progressive wearing away of electrical insulation by the action of electrical discharges.

3.1.2 *erosion resistance, electrical, n*—the quantitative expression of the amount of electrical erosion under specific conditions.

¹ These test methods are under the jurisdiction of ASTM Committee **D09** on Electrical and Electronic Insulating Materials and are the direct responsibility of Subcommittee **D09.12** on Electrical Tests.

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² K. N. Mathes, “Surface Failure Measurements,” Chapter 4 of *Engineering Dielectrics Volume IIB Electrical Properties of Solid Insulating Materials: Measurement Techniques*, ASTM STP 926, ASTM International, 1987.

³ 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.

*A Summary of Changes section appears at the end of this standard