



Designation: D5288 – 21

Standard Test Method for Determining Tracking Index of Electrical Insulating Materials Using Various Electrode Materials (Excluding Platinum)¹

This standard is issued under the fixed designation D5288; 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 was developed using copper electrodes to evaluate the low-voltage (up to 600 V) tracking resistance of materials in the presence of aqueous contaminants.²

NOTE 1—At this time, only industrial laminates have been examined using this method, which was developed at the National Manufacturers Electrical Association (NEMA) laboratory located at the University of Cincinnati. It was found that a closer end point (less scatter) was obtained than with platinum electrodes, and materials tested tended to be ranked by resin system.

1.1.1 It is acceptable to consider other electrode materials for use with this test method depending upon the application of the insulating material.

1.2 This test method is similar to Test Method D3638, which determines the comparative tracking index of materials using platinum electrodes to produce the tracking on the specimen surface.

1.3 The values stated in metric (SI) units are the standard. The inch-pound equivalents of the metric units are approximate.

1.4 *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.*

1.5 *Fire testing is inherently hazardous. Adequate safeguards for personnel and property shall be employed in conducting these tests.*

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 Recom-*

mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 ASTM Standards:³

D618 Practice for Conditioning Plastics for Testing

D1711 Terminology Relating to Electrical Insulation

D3636 Practice for Sampling and Judging Quality of Solid Electrical Insulating Materials

D3638 Test Method for Comparative Tracking Index of Electrical Insulating Materials

2.2 IEC Publication:⁴

IEC 60112 Standard Method for the Determination of the Proof and the Comparative Tracking Indices of Solid Insulating Materials, 2003

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method and associated with electrical and electronic insulating materials, use Terminology D1711.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *tracking index, TI, n*—an index for electrical insulating materials which is arbitrarily defined as the numerical value of that voltage which will cause failure by tracking when the number of drops of contaminant required to cause failure is equal to 50.

3.2.1.1 *Discussion*—This value is obtained from a plot of the number of drops required to cause failure by tracking versus the applied voltage.

3.2.2 *tracking index-copper electrodes, TI-Cu, n*—a tracking index test using copper electrodes.

3.2.2.1 *Discussion*—This test is comparable to *comparative tracking index*, Test Method D3638, with the following exceptions: (1) copper electrodes are used instead of platinum, and

¹ This test method is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.12 on Electrical Tests.

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² Mathes, K. N., "Surface Failure Measurements," in *Engineering Dielectrics Volume IIB Electrical Properties of Solid Insulating Materials: Measurement Techniques*, STP926, 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.

⁴ Available from International Electrotechnical Commission (IEC), 3, rue de Varembe, 1st floor, P.O. Box 131, CH-1211, Geneva 20, Switzerland, [https://www.iec.ch](http://www.iec.ch).

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