Designation: D 495 – 99

An American National Standard

Standard Test Method for High-Voltage, Low-Current, Dry Arc Resistance of Solid Electrical Insulation[1]

This standard is issued under the fixed designation D 495; 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 Department of Defense.

1. Scope

1.1 This test method covers, in a preliminary fashion, the differentiation among similar materials with respect to their resistance to the action of a high-voltage, low-current arc close to the surface of insulation, intending to form a conducting path therein or in causing the material to become conducting due to the localized thermal and chemical decomposition and erosion.

1.2 The usefulness of this test method is very severely limited by many restrictions and qualifications, some of which are described in the following paragraphs and in Section 5. Generally, this test method should *not* be used in material specifications. Whenever possible, alternative test methods should be used, and their development is encouraged.

1.3 This test method will not, in general, permit conclusions to be drawn concerning the relative arc resistance rankings of materials that may be subjected to other types of arcs: for example, high voltage at high currents, and low voltage at low or high currents (promoted by surges or by conducting contaminants).

1.4 The test method is intended, because of its convenience and the short time required for testing, for preliminary screening of material, for detecting the effects of changes in formulation, and for quality control testing after correlation has been established with other types of simulated service arc tests and field experience. Because this test method is usually conducted under clean and dry laboratory conditions rarely encountered in practice, the prediction of a material's relative performance in typical applications and in varying "clean to dirty" environments may be substantially altered (Note 1). Caution is urged against drawing strong conclusions without corroborating support of simulated service tests and field testing. Rather, this test method is useful for preliminary evaluation of changes in structure and composition without the complicating influence of environmental conditions, especially dirt and moisture.

NOTE 1—By changing some of the circuit conditions described herein it has been found possible to rearrange markedly the order of arc resistance of a group of organic insulating materials consisting of vulcanized fiber and of molded phenolic and amino plastics, some containing organic, and some inorganic, filler.

1.5 While this test method uses dry, uncontaminated specimen surfaces, Test Method D 2132, Test Method D 2303, and Test Method D 3638 employ wet, contaminated specimen surfaces. Their use is recommended for engineering purposes and to assist in establishing some degree of significance to this test method for quality control purposes.[2]

1.6 This test method is not applicable to materials that do not produce conductive paths under the action of an electric arc, or that melt or form fluid residues that float conductive residues out of the active test area thereby preventing formation of a conductive path.

1.7 The values stated in inch-pound units are to be regarded as the standard.

1.8 *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 determine the applicability of regulatory limitations prior to use.* For specific precautionary statements, see 6.1.14, 6.1.19, Section 7, and 10.1.1.

2. Referenced Documents

2.1 *ASTM Standards:*

D 1711 Terminology Relating to Electrical Insulation[3]

D 2132 Test Method for Dust-and-Fog Tracking and Erosion Resistance of Electrical Insulating Materials[4]

D 2303 Test Method for Liquid-Contaminant, Inclined-Plane Tracking and Erosion of Insulating Materials[4]

D 3638 Test Method for Comparative Tracking Index of Electrical Insulating Materials[4]

D 6054 Practice for Conditioning Electrical Insulating Materials for Testing[4]

[1] This test method is under the jurisdiction of ASTM Committee D-9 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.12 on Electrical Tests.

Current edition approved March 10, 1999. Published June 1999. Originally published as D 495 – 38 T. Last previous edition D 495 – 94.

[2] Also helpful is Test Method D 2302 for Wet Tracking Resistance of Electrical Insulating Materials with Controlled Water-to-Metal Discharges. This test method was withdrawn and last appeared in the *1982 Annual Book of ASTM Standards*, Part 39.

[3] *Annual Book of ASTM Standards*, Vol 10.01.

[4] *Annual Book of ASTM Standards*, Vol 10.02.

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