



Designation: D2633 – 21

Standard Test Methods for Thermoplastic Insulations and Jackets for Wire and Cable¹

This standard is issued under the fixed designation D2633; 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 These test methods cover procedures for the testing of thermoplastic insulations and jackets used on insulated wire and cable. To determine the test to be made on the particular insulation or jacket compound, refer to the product specification for that type. These test methods do not apply to the class of products known as flexible cords. The electrical tests on insulation and water-absorption tests do not apply to the class of products having a separator between the conductor and the insulation.

1.2 These test methods pertain to insulation or jacket material for electrical wires and cables. In many instances the insulation or jacket material cannot be tested unless it has been formed around a conductor or cable. Therefore, tests are done on insulated or jacketed wire or cable in these test methods solely to determine the relevant property of the insulation or jacket material and not to test the conductor or completed cable.

1.3 Whenever two sets of values are stated, in different units, the values in the first set are regarded as standard, while the values in parentheses are provided for information only and are not considered standard.

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.* For specific hazards see Section 4 and for fire test safety caveats see Test Method D8354.

1.5 These test methods appear in the following sections:

Test Method	Section(s)
Cold Bend Test	75 to 77
Dielectric Strength Retention Test	45 to 51
Electrical Tests of Insulation	17 to 29
Heat Distortion Test	74
Heat Shock Test	73
Insulation Resistance Test	30 to 37

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 D09.07 on Electrical Insulating Materials.

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Test Method	Section(s)
Partial-discharge Extinction Level Test	38 to 44
Physical Tests of Insulation and Jackets	5 to 16
Flammability	63
	(Test Method D8354)
Surface Resistivity Test	64 to 67
Thermal Tests	72 to 77
Track Resistance Test	78 to 81
U-bend Discharge Test	68 to 71
Vertical Flame Test	63
Water Absorption Tests, Accelerated	52 to 62

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

2. Referenced Documents

2.1 ASTM Standards:²

- D149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
- D150 Test Methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulation
- D257 Test Methods for DC Resistance or Conductance of Insulating Materials
- D374/D374M Test Methods for Thickness of Solid Electrical Insulation
- D471 Test Method for Rubber Property—Effect of Liquids
- D573 Test Method for Rubber—Deterioration in an Air Oven
- D638 Test Method for Tensile Properties of Plastics
- D1248 Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
- D1711 Terminology Relating to Electrical Insulation
- D2132 Test Method for Dust-and-Fog Tracking and Erosion Resistance of Electrical Insulating Materials
- D3755 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials Under Direct-Voltage Stress

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.

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