



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

This standard is issued under the fixed designation D470; 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.

1. Scope

1.1 These test methods cover procedures for testing cross-linked insulations and jackets for wire and cable. To determine the test to be made on the particular insulation or jacket, refer to the product specification for that type. These test methods do not apply to the class of products known as flexible cords.

1.2 In many instances the insulation or jacket 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 and not to test the conductor or completed cable.

1.3 The procedures appear in the following sections:

	Sections
AC and DC Voltage Withstand Tests	22 to 29
Capacitance and Dissipation Factor Tests	38 to 44
Cold Bend	128
Cold Bend, Long-Time Voltage Test on Short Specimens	51 to 57
Double AC Voltage Test on Short Specimens	45 to 50
Electrical Tests of Insulation	17 to 64
Heat Distortion Test	127
Horizontal Flame Test	100 to 104
Insulation Resistance Tests on Completed Cable	30 to 37
Mineral Filler Content, Determination of	111 to 115
Ozone Resistance Test	87 to 99
Partial-Discharge Test	58 to 64
Physical Tests of Insulation and Jacket Compounds	5 to 16
Surface Resistivity Test	116 to 120
Track Resistance Test	129 to 132
U-Bend Discharge Test	121 to 125
Water Absorption Test	65 to 71
Water Absorption Test, Accelerated	72 to 86
Water Absorption Test on Fibrous Coverings	105 to 110

1.4 Whenever two sets of values are presented, in different units, the values in the first set are the standard, while those in the parentheses are for information only.

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 D09.18 on Solid Insulations, Non-Metallic Shieldings and Coverings for Electrical and Telecommunication Wires and Cables.

Current edition approved Feb. 1, 2013. Published February 2013. Originally approved in 1937. Last previous edition approved in 2005 as D470 – 05. DOI: 10.1520/D0470-13.

1.5 *This standard does not purport to address all of the safety problems, 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 hazards see Section 4.

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
- D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
- D454 Test Method for Rubber Deterioration by Heat and Air Pressure
- D572 Test Method for Rubber—Deterioration by Heat and Oxygen
- D573 Test Method for Rubber—Deterioration in an Air Oven
- D1193 Specification for Reagent Water
- 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
- D5025 Specification for Laboratory Burner Used for Small-Scale Burning Tests on Plastic Materials
- D5207 Practice for Confirmation of 20-mm (50-W) and 125-mm (500-W) Test Flames for Small-Scale Burning Tests on Plastic Materials

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.