



Standard Test Methods for Heat-Shrinkable Tubing for Electrical Use¹

This standard is issued under the fixed designation D 2671; 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 These test methods cover the testing of heat-shrinkable tubing used for electrical insulation. Materials used include poly(vinyl chloride), polyolefins, fluorocarbon polymers, silicone rubber, and other plastic or elastomeric compounds.

1.2 The values stated in inch-pound units are the standard except for temperature, which shall be expressed in degrees Celsius. Values stated in parentheses are for information only.

1.3 The procedures appear in the following sections:

Procedure	Sections	ASTM Method Reference
Adhesive Peel Strength	98 to 104	
Brittleness Temperature	40	D 746
Color	55 to 56	D 1535
Color Stability	57 to 62	D 1535
Conditioning	7	D 618
Copper Stability	93	
Corrosion Testing	89 to 95	
Dielectric Breakdown	20 to 25	D 149
Dimensions	8 to 13	D 876
Flammability	68 to 72	D 876
Fluid Resistance	63 to 67	
Fungus Resistance	104 to 108	
Heat Resistance	49 to 54	
Heat Shock	26 to 30	
Low-Temperature Properties	36 to 43	
Restricted Shrinkage	14 to 19	
Selection of Test Specimens	6	
Secant Modulus	81 to 84	D 882
Storage Life	31 to 35	
Specific Gravity	73 to 74	D 792
Stress Modulus	85 to 88	D 412
Tensile Strength and Ultimate Elongation	44 to 48	D 412
Thermal Endurance	96 to 97	
Volume Resistivity	75 to 78	D 257
Water Absorption	79 to 80	D 570
Melting Point	104 to 108	D 3418

1.4 This is a fire-test-response standard.

1.5 *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 hazard statements, see Sections 5 and 68.2.

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 Flexible and Rigid Insulating Materials.

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NOTE 1—These test methods are similar, but not identical to, those in IEC 60684–2 (see also Note 9).

2. Referenced Documents

2.1 ASTM Standards:

D 149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies²

D 257 Test Methods for D-C Resistance or Conductance of Insulating Materials²

D 412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers—Tension³

D 570 Test Method for Water Absorption of Plastics⁴

D 618 Practice for Conditioning Plastics and Electrical Insulating Materials for Testing⁴

D 746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact⁴

D 792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement⁴

D 876 Test Methods for Nonrigid Vinyl Chloride Polymer Tubing Used for Electrical Insulation²

D 882 Test Methods for Tensile Properties of Thin Plastic Sheet⁴

D 1535 Practice for Specifying Color by the Munsell System⁵

D 1711 Terminology Relating to Electrical Insulation²

D 3418 Test Method for Transition Temperatures of Polymers by Thermal Analysis⁶

E 176 Terminology of Fire Standards⁷

2.2 Other Documents:

MIL-STD 104 Limits for Electrical Insulation Color⁸

IEC Publication 216 Guide for the Determination of Thermal Endurance Properties of Electrical Insulating Materials⁹

² Annual Book of ASTM Standards, Vol 10.01.

³ Annual Book of ASTM Standards, Vol 09.01.

⁴ Annual Book of ASTM Standards, Vol 08.01.

⁵ Annual Book of ASTM Standards, Vol 06.01.

⁶ Annual Book of ASTM Standards, Vol 08.02.

⁷ Annual Book of ASTM Standards, Vol 04.07.

⁸ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

⁹ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.