



Designation: D876 – 21

Standard Test Methods for Nonrigid Vinyl Chloride Polymer Tubing Used for Electrical Insulation¹

This standard is issued under the fixed designation D876; 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 the testing of general-purpose (Grade A), low-temperature (Grade B), and high-temperature (Grade C)² nonrigid vinyl chloride polymer tubing, or its copolymers with other materials, for use as electrical insulation. For the purpose of these test methods nonrigid tubing shall be tubing having an initial elongation in excess of 100 % at break.

NOTE 1—These test methods are similar but not identical to those in IEC 60684–2.

1.2 The values stated in inch-pound units are to be regarded as standard, except for temperature, which shall be expressed in degrees Celsius. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 The procedures appear in the following sections:

Procedure	Section	ASTM Reference Standard
Brittleness Temperature	37 – 39	D746
Corrosion Tests	68 – 79	D1000
Dielectric Breakdown Voltage at High Humidity	59 – 67	E104
Dielectric Breakdown Voltage	52 – 58	D149
Dimensional Tests	8 – 14	D374
Effect of Elevated Temperatures	19 – 30	D412
Flammability Test		D8355, Test Method A
Oil Resistance Test	29 – 36	D471
Penetration Test	40 – 45	
Sampling	6	
Strain Relief Test	62 – 67	
Tension Test	16 – 18	D412
Test Conditions	7	
Volume Resistivity	46 – 51	D257

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 deter-*

mine the applicability of regulatory limitations prior to use. For specific hazard statements, see Section 5.

1.5 *For fire test caveats, see Test Methods D8355.*

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:*³

- D149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
- D257 Test Methods for DC Resistance or Conductance of Insulating Materials
- D374 Test Methods for Thickness of Solid Electrical Insulation (Metric) D0374_D0374M
- D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
- D471 Test Method for Rubber Property—Effect of Liquids
- D746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
- D1000 Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications
- D1711 Terminology Relating to Electrical Insulation
- D5032 Practice for Maintaining Constant Relative Humidity by Means of Aqueous Glycerin Solutions
- D8355 Test Methods for Flammability of Electrical Insulating Materials Used for Sleeving or Tubing
- E104 Practice for Maintaining Constant Relative Humidity by Means of Aqueous Solutions
- E176 Terminology of Fire Standards

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.

Current edition approved Jan. 1, 2021. Published February 2021. Originally approved in 1946. Last previous edition approved in 2013 as D876 – 13. DOI: 10.1520/D0876-21.

² Test methods applicable to Grade B will be specified at a later date.

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.

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