



Standard Specification for Crosslinked and Noncrosslinked Poly(Vinyl Chloride) Heat-Shrinkable Tubing for Electrical Insulation¹

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1. Scope

1.1 This specification applies to flexible, crosslinked and noncrosslinked poly(vinyl chloride) heat-shrinkable tubing for electrical insulating purposes. It is supplied in an expanded form and will shrink to its extruded diameter when heated.

NOTE 1—This standard is similar but not identical to IEC 60684-3-201.

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

2. Referenced Documents

2.1 ASTM Standards:

- D 1711 Terminology Relating to Electrical Insulation²
- D 2671 Test Methods for Heat-Shrinkable Tubing for Electrical Use²
- D 3636 Practice for Sampling and Judging Quality of Solid Electrical Insulating Materials²
- E 176 Terminology of Fire Standards³

2.2 Military Standards:⁴

- MIL-STD-104 Limits for Electrical Insulation Color
- MIL-H-5606 Hydraulic Fluid, Petroleum Base, Aircraft, Missile, and Ordnance
- MIL-T-5624 Turbine Fuel, Aviation, Grades JP-4 and JP-5
- MIL-L-7808 Lubricating Oil, Aircraft, Turbine Engine, Synthetic Base
- MIL-L-23699 Lubricating Oil, Aircraft, Turbine Engines, Synthetic Base
- MIL-A-8243 Anti-Icing and De-Icing Defrosting Fluid

2.3 Federal Standards:

- SS-S-550 Sodium Chloride, Technical, for Water-Softening Units⁵

2.4 IEC Standards:

- 60684-3-201 Flexible insulating sleeving, Part 3, Sheet 201: Heat shrinkable sleeving, general purpose, flexible, cross-linked PVC, shrink ratio 2:1⁶

3. Terminology

3.1 Definitions:

3.1.1 For definitions pertaining to electrical insulation, refer to Terminology D 1711.

3.1.2 For definitions pertaining to fire standards, refer to Terminology E 176.

4. Classification

4.1 *Type I*—Flexible, noncrosslinked poly(vinyl chloride) tubing capable of being shrunk at 135°C (275°F) in 15 min.

4.2 *Type II*—Flexible, crosslinked poly(vinyl chloride) tubing capable of being shrunk at 175°C (347°F) in 15 min.

5. Ordering Information

5.1 When tubing is ordered to this specification, the purchaser should define the size, color, and type of the required tubing.

6. Materials and Manufacture

6.1 The polymers used in the manufacture of heat-shrinkable tubing shall be modified poly(vinyl chloride) and the finished compound shall be free of all foreign matter other than intended formulation additives as appropriate.

6.2 The tubing shall be extruded, crosslinked (Type II only), and then expanded to the required dimensions.

7. Chemical and Physical Property Requirements

7.1 The material shall conform to the chemical and physical property requirements specified in Table 1.

7.2 Every lot of material shall be tested for dimensional requirements, restricted shrinkage, tensile strength, elongation, longitudinal change, and dielectric breakdown. Other requirements may be tested less frequently or at a frequency agreed upon between the supplier and the purchaser.

¹ This specification is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.07 on Flexible and Rigid Insulating Materials.

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² *Annual Book of ASTM Standards*, Vol 10.02.

³ *Annual Book of ASTM Standards*, Vol 04.07.

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

⁵ May be obtained from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

⁶ Available from American National Standards Institute, 11 W. 42nd St., New York, NY 10036.