



Standard Guide for Selecting Materials to Be Used for Insulation, Jacketing and Strength Components in Fiber-Optic Cables¹

This standard is issued under the fixed designation D 4967; 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 This guide is intended to provide a list of materials commonly used in components that provide insulation, jacketing and strength in fiber-optic cables. Where these materials are covered by ASTM standards, an appropriate reference is made. Due to changing technology, not all materials being used are necessarily listed here.

1.2 This guide does not include materials used in components for optical purposes (optical fiber and its coating) or external metallic armoring (such as for a barrier to rodents).

1.3 This guide offers two general lists of materials:

1.3.1 A subdivision of fiber-optic cable construction into components that are used for insulation, jacketing, or strength, with a generic material classification for specific applications in each component (see Section 5); and

1.3.2 An alphabetical list of the generic material classifications, showing ASTM standards where they exist (see Table 1).

2. Referenced Documents

2.1 ASTM Standards:

- D 1248 Specification for Polyethylene Plastics Molding and Extrusion Materials²
- D 1457 Specification for Polytetrafluoroethylene (PTFE) Molding and Extrusion Materials³
- D 1711 Terminology Relating to Electrical Insulation⁴
- D 2116 Specification for FEP-Fluorocarbon Molding and Extrusion Materials²
- D 2287 Specification for Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds²
- D 2526 Specification for Ozone-Resisting Silicone Rubber Insulation for Wire and Cable⁵
- D 3159 Specification for Modified ETFE-Fluoropolymer

¹ This guide is under the jurisdiction of ASTM Committee D-9 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.18 on Solid Insulations, Nonmetallic Shieldings, and Coverings for Electrical and Telecommunications Wires and Cables.

Current edition approved April 10, 1999. Published June 1999. Originally published as D 4967 – 89. Last previous edition D 4967 – 95.

² Annual Book of ASTM Standards, Vol 08.01.

³ Discontinued; see 1995 Annual Book of ASTM Standards, Vol 08.01.

⁴ Annual Book of ASTM Standards, Vol 10.01.

⁵ Annual Book of ASTM Standards, Vol 10.02.

TABLE 1 Materials in Current Use

Material	ASTM Specification
Acrylates	...
Aramids:	
fibers	D 3317
tape	...
Fluoroplastics:	
ECTFE	D 3275
ETFE	D 3159
FEP	D 2116
PFA	D 3307
PTFE	D 1457
PVDF	D 3222
Glass fibers	...
Glass-fiber reinforced plastics	...
Grease and similar materials	D 4730, D 4731, D 4732
Nylon	D 4066
Polybutylene	D 4730, D 4731, D 4732
Polycarbonate	D 3935
Polyester tape	D 3664
Polyethylene	D 1248
Polyimide tape	...
Polypropylene	D 4101
Polyurethane	...
Poly(vinyl chloride)	D 2287
Rubber	D 4730, D 4731, D 4732
Silicone rubber	D 2526
Steel	...
Thermoplastic elastomer	D 4246
Thermoplastic polyester	D 4507

- Molding and Extrusion Materials⁶
- D 3222 Specification for Unmodified Poly (Vinylidene Fluoride) (PVDF) Molding, Extrusion, and Coating Materials⁶
- D 3275 Specification for E-CTFE-Fluoroplastic Molding, Extrusion, and Coating Materials⁶
- D 3307 Specification for PFA-Fluorocarbon Molding and Extrusion Materials⁶
- D 3317 Specification for High Modulus, Organic Yarn and Roving⁷
- D 3664 Specification for Biaxially Oriented Polymeric Resin Film for Capacitors in Electrical Equipment⁵
- D 3935 Specification for Polycarbonate (PC) Unfilled and Reinforced Material⁶

⁶ Annual Book of ASTM Standards, Vol 08.02.

⁷ Discontinued; see 1986 Annual Book of ASTM Standards, Vol 15.03.