



# Standard Guide for Selecting Materials to Be Used for Insulation, Jacketing and Strength Components in Fiber-Optic Cables<sup>1</sup>

This standard is issued under the fixed designation D4967; 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 ( $\epsilon$ ) 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:*<sup>2</sup>

D1248 Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable

D1457

D1711 Terminology Relating to Electrical Insulation

D2116 Specification for FEP-Fluorocarbon Molding and Extrusion Materials

D2287 Specification for Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds

D2526 Specification for Ozone-Resisting Silicone Rubber Insulation for Wire and Cable (Withdrawn 2006)<sup>3</sup>

D3159 Specification for Modified ETFE-Fluoropolymer Molding and Extrusion Materials

D3222 Specification for Unmodified Poly(Vinylidene Fluoride) (PVDF) Molding Extrusion and Coating Materials

D3275 Classification System for E-CTFE-Fluoroplastic Molding, Extrusion, and Coating Materials

D3307 Specification for Perfluoroalkoxy (PFA)-Fluorocarbon Resin Molding and Extrusion Materials

D3317

D3664 Specification for Biaxially Oriented Polymeric Resin Film for Capacitors in Electrical Equipment

D3935 Specification for Polycarbonate (PC) Unfilled and Reinforced Material

D4066 Classification System for Nylon Injection and Extrusion Materials (PA)

D4101 Specification for Polypropylene Injection and Extrusion Materials

D4246 Specification for Ozone-Resistant Thermoplastic Elastomer Insulation For Wire and Cable, 90 °C Operation

D4507 Specification for Thermoplastic Polyester (TPES) Materials (Withdrawn 1999)<sup>3</sup>

D4730 Specification for Flooding Compounds for Telecommunications Wire and Cable

D4731 Specification for Hot-Application Filling Compounds for Telecommunications Wire and Cable

D4732 Specification for Cool-Application Filling Compounds for Telecommunications Wire and Cable

## 3. Terminology

3.1 *Definitions*—For definitions of terms used in this guide, refer to Terminology D1711.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *buffer, n*—a material that is applied over an optical fiber's protective coating to further protect the fiber from physical damage and provide mechanical protection.

<sup>3</sup> The last approved version of this historical standard is referenced on www.astm.org.

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is 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 Oct. 1, 2009. Published February 2010. Originally approved in 1989. Last previous edition approved in 2004 as D4967 – 99(2004)<sup>1</sup>. DOI: 10.1520/D4967-99R09.

<sup>2</sup> 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.