



Standard Test Method for Smoke Obscuration of Insulating Materials Contained in Electrical or Optical Fiber Cables When Burning in a Vertical Cable Tray Configuration¹

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1. Scope

1.1 This is a fire-test-response standard.

1.2 This test method provides a means to measure the smoke obscuration resulting from burning electrical insulating materials contained in electrical or optical fiber cables when the cable specimens, excluding accessories, are subjected to a specified flaming ignition source and burn freely under well ventilated conditions.

1.3 This test method provides two different protocols for exposing the materials, when made into cable specimens, to an ignition source (approximately 20 kW), for a 20 min test duration. Use it to determine the flame propagation and smoke release characteristics of the materials contained in single and multiconductor electrical or optical fiber cables designed for use in cable trays.

1.4 This test method does not provide information on the fire performance of electrical or optical fiber cables in fire conditions other than the ones specifically used in this test method nor does it measure the contribution of the cables to a developing fire condition.

1.5 Data describing the burning behavior from ignition to the end of the test are obtained.

1.6 The production of light obscuring smoke is measured.

1.7 The burning behavior is documented visually, by photographic or video recordings, or both.

1.8 The test equipment is suitable for making other, optional, measurements, including the rate of heat release of the burning specimen, by an oxygen consumption technique and weight loss.

1.9 Another set of optional measurements are the concentrations of certain toxic gas species in the combustion gases.

1.10 The values stated in SI units are to be regarded as the standard (see IEEE/ASTM SI 10).

1.11 *This standard measures and describes the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all*

factors required for fire hazard or fire risk assessment of the materials, products or assemblies under actual fire conditions.

1.12 Fire testing of products and materials is inherently hazardous. Employ adequate safeguards for personnel and property in conducting these tests.

1.13 *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.*

2. Referenced Documents

2.1 ASTM Standards:

D 1835 Specification for Liquefied Petroleum (LP) Gases²

E 84 Test Method for Surface Burning Characteristics of Building Materials³

E 176 Terminology of Fire Standards³

E 800 Guide for Measurement of Gases Present or Generated During Fires³

E 1354 Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter³

IEEE/ASTM SI 10 Standard for Use of the International System of Units (SI): The Modern Metric System⁴

2.2 NFPA Standard:⁵

ANSI/NFPA 70-1990, National Electrical Code—1990, National Fire Protection Association⁵

2.3 Underwriters Laboratories Standards:⁶

UL 1056: Fire Test of Upholstered Furniture, Underwriters Laboratories, 1989

UL 1581: Reference Standard for Electrical Wires, Cables, and Flexible Cords, March 6, 1987, Underwriters Laboratories, Inc., ANSI/UL 1581-1985

UL 1685: Standard Vertical Tray Fire Propagation and

¹ This test method is under the jurisdiction of ASTM Committee D-9 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.21 on Fire Performance Standards.

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² Annual Book of ASTM Standards, Vol 05.01.

³ Annual Book of ASTM Standards, Vol 04.07.

⁴ Annual Book of ASTM Standards, Vol 14.02.

⁵ Available from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

⁶ Available from Underwriters Laboratories, Inc., 333 Pfingsten Rd., Northbrook, IL 60062.