Designation: D5537 – 14

Standard Test Method for Heat Release, Flame Spread, Smoke Obscuration, and Mass Loss Testing of Insulating Materials Contained in Electrical or Optical Fiber Cables When Burning in a Vertical Cable Tray Configuration[1]

This standard is issued under the fixed designation D5537; 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 is a fire-test-response standard.

1.2 This test method provides a means to measure the heat released and smoke obscuration by burning the 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. Flame propagation cable damage, by char length, and mass loss are also measured.

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 heat release, smoke release, flame propagation and mass loss characteristics of the materials contained in single and multiconductor electrical or optical fiber cables.

1.4 This test method does not provide information on the fire performance of materials insulating 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 materials in those 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 This test equipment is suitable for measuring the concentrations of certain toxic gas species in the combustion gases (see Appendix X4).

1.7 The values stated in SI units are to be regarded as standard (see IEEE/ASTM SI-10). The values given in parentheses are mathematical conversions to inch-pound units that are provided for information only and are not considered standard.

1.8 *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*

1.9 *Fire testing is inherently hazardous. Adequate safeguards for personnel and property shall be employed in conducting these tests.*

1.10 *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:*[2]

D1711 Terminology Relating to Electrical Insulation
D5424 Test Method for Smoke Obscuration of Insulating Materials Contained in Electrical or Optical Fiber Cables When Burning in a Vertical Cable Tray Configuration
E84 Test Method for Surface Burning Characteristics of Building Materials
E176 Terminology of Fire Standards
E603 Guide for Room Fire Experiments
E800 Guide for Measurement of Gases Present or Generated During Fires
E1354 Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter
E1537 Test Method for Fire Testing of Upholstered Furniture
E2067 Practice for Full-Scale Oxygen Consumption Calorimetry Fire Tests
IEEE/ASTM SI-10 International System of Units (SI), The

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

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[2] 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**

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