



Standard Test Methods for Thin Thermally Conductive Solid Materials for Electrical Insulation and Dielectric Applications¹

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1. Scope

1.1 This standard is a compilation of test methods for evaluating properties of thermally conductive electrical insulation sheet materials to be used for dielectric applications.

1.2 Such materials are thin, compliant sheets, typically produced by mixing thermally conductive particulate fillers with organic or silicone binders. For added physical strength these materials are often reinforced with a woven or nonwoven fabric or a dielectric film.

1.3 These test methods apply to thermally conductive sheet material ranging from about 0.02 to 6-mm thickness.

1.4 *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.* See also 18.1.2 and 19.1.2.

1.5 The values stated in SI units are to be regarded as standard.

NOTE 1—There is no IEC publication or ISO standard equivalent to this standard.

2. Referenced Documents

2.1 ASTM Standards:

D 149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies²

D 150 Test Methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulating Materials²

D 257 Test Methods for DC Resistance or Conductance of Insulating Materials²

¹ These test methods are under the jurisdiction of ASTM Committee D-9 on Electrical and Electronic Insulating Materials and are the direct responsibility of Subcommittee D09.19 on Dielectric Sheet and Roll Products.

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² Annual Book of ASTM Standards, Vol 10.01.

D 374M Test Methods for Thickness of Solid Electrical Insulation [Metric]²

D 412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers—Tension³

D 624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers³

D 792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement⁴

D 883 Terminology Relating to Plastics⁴

D 1000 Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications²

D 1458 Test Methods for Fully Cured Silicone Rubber-Coated Glass Fabric and Tapes for Electrical Insulation²

D 1711 Terminology Relating to Electrical Insulation²

D 2240 Test Method for Rubber Property—Durometer Hardness³

D 5470 Test Method for Thermal Transmission Properties of Thin Thermally Conductive Solid Electrical Insulation Materials⁵

D 6054 Practice for Conditioning Electrical Insulating Materials for Testing⁵

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *apparent thermal conductivity, n*—the time rate of heat flow, under steady conditions, through unit area, per unit temperature gradient in the direction perpendicular to the area, for a nonhomogeneous material.

3.1.1.1 See 16.1 for a discussion of the terms *thermal conductivity* and *apparent thermal conductivity*. To avoid confusion, these test methods use *apparent thermal conductivity* for measurements of homogeneous and nonhomogeneous materials.

³ Annual Book of ASTM Standards, Vol 09.01.

⁴ Annual Book of ASTM Standards, Vol 08.01.

⁵ Annual Book of ASTM Standards, Vol 10.02.