



Designation: D2305 – 18

Standard Test Methods for Polymeric Films Used for Electrical Insulation¹

This standard is issued under the fixed designation D2305; 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 These test methods cover the testing of homogeneous organic polymer films not over 2.4 mm (95 mils) thick that are to be used for electrical insulation.

1.2 These test methods are not necessarily applicable to testing films in combinations with a coating, another film, or with other types of substrate, such as fabrics or papers.

1.3 The values stated in SI units are the standard. The values in parentheses are provided for information only.

1.4 The procedures appear in the following sections:

Procedure	Sections
Conditioning	6 and 7
Dielectric Breakdown Voltage & Dielectric Strength	21 to 26
Extractables	65 to 70
Heat-Seal Strength	59 to 64
Permittivity and Dissipation Factor	42 to 47
Resistance Method for Measuring the Tendency to Corrode Metals	38 to 41
Sampling	5
Shrinkage	48 to 53
Strain Relief	13 to 20
Surface Resistivity	27 to 31
Tensile Properties	12
Thickness	8 to 11
Volume Resistivity	32 to 37
Water Absorption	53 to 58

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—These test methods are similar to IEC 60674–2.

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ These test methods are under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and are the direct responsibility of Subcommittee D09.07 on Electrical Insulating Materials.

Current edition approved May 1, 2018. Published June 2018. Originally published in 1964. Last previous edition approved in 2010 as D2305 – 10. DOI: 10.1520/D2305-18.

2. Referenced Documents

2.1 ASTM Standards:²

- D149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
- D150 Test Methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulation
- D257 Test Methods for DC Resistance or Conductance of Insulating Materials
- D374 Test Methods for Thickness of Solid Electrical Insulation (Metric) D0374_D0374M
- D570 Test Method for Water Absorption of Plastics
- D882 Test Method for Tensile Properties of Thin Plastic Sheet
- D883 Terminology Relating to Plastics
- D1000 Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications
- D1531 Test Methods for Relative Permittivity (Dielectric Constant) and Dissipation Factor by Fluid Displacement Procedures (Withdrawn 2012)³
- D1676 Test Methods for Film-Insulated Magnet Wire
- D1711 Terminology Relating to Electrical Insulation
- D5032 Practice for Maintaining Constant Relative Humidity by Means of Aqueous Glycerin Solutions
- D6054 Practice for Conditioning Electrical Insulating Materials for Testing (Withdrawn 2012)³
- E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 IEC Standard:

- Publication 60674–2 Specification for Plastic Films for Electrical Purposes⁴

3. Terminology

3.1 Definitions:

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.

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

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

*A Summary of Changes section appears at the end of this standard