



## Standard Test Methods for Sampling and Testing Electrical Insulating Board<sup>1</sup>

This standard is issued under the fixed designation D 3394; 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 sampling and testing of electrical insulating boards. These boards are porous, usually fibrous sheets used for dielectric and structural purposes in electrical apparatus.

1.2 These test methods are not intended for testing vulcanized fibre or molded laminated sheets.

1.3 These test methods are applicable to board materials having a nominal thickness of at least 0.030 in. (0.76 mm).

NOTE 1—For materials thinner than 0.030 in. (0.76 mm) see Test Methods D 202.

1.4 The test methods appear in the following sections:

|                                       | Sections | ASTM Method Reference                                                     |
|---------------------------------------|----------|---------------------------------------------------------------------------|
| Apparent Density                      | 18-23    |                                                                           |
| Aqueous Extract Characteristics       | 36-42    | D 202                                                                     |
| Ash Content                           | 43-46    | T 413                                                                     |
| Compatibility with Dielectric Liquids | 47-52    | D 664, D 877, D 924, D 971, D 974, D 1169, D 1500, D 1816, D 3455, D 3487 |
| Compressibility                       | 79-85    |                                                                           |
| Conditioning                          | 11       | D 685                                                                     |
| Degree of Polymerization              | 86-89    | D 4243                                                                    |
| Dielectric Strength in Air            | 53-59    | D 149                                                                     |
| Dielectric Strength in Oil            | 60-65    | D 149, D 2413, D 3426                                                     |
| Dimensions of Sheets                  | 12-17    |                                                                           |
| Moisture Content                      | 31-35    | D 644                                                                     |
| Oil Absorption                        | 72-78    |                                                                           |
| Reports                               | 10       |                                                                           |
| Sampling                              | 6-9      | D 3636                                                                    |
| Shrinkage                             | 24-30    | D 644                                                                     |
| Tensile Properties                    | 66-71    | D 202                                                                     |

1.5 The values stated in inch-pound units are to be regarded as the standard.

1.6 *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 consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:

<sup>1</sup> These test methods are under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and are the direct responsibility of Subcommittee D 09.19 on Dielectric Sheet and Roll Products.

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D 149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies<sup>2</sup>

D 202 Test Methods for Sampling and Testing Untreated Paper Used for Electrical Insulation<sup>2</sup>

D 374 Test Methods for Thickness of Solid Electrical Insulation<sup>2</sup>

D 586 Test Method for Ash in Paper<sup>3</sup>

D 644 Test Method for Moisture Content of Paper and Paperboard by Oven Drying<sup>3</sup>

D 664 Test Method for Acid Number of Petroleum Products by Potentiometric Titration<sup>4</sup>

D 685 Practice for Conditioning Paper and Paper Products for Testing<sup>3</sup>

D 877 Test Method for Dielectric Breakdown Voltage of Insulating Liquids Using Disk Electrodes<sup>5</sup>

D 924 Test Method for Dissipation Factor (or Power Factor) and Relative Permittivity (Dielectric Constant) of Electrical Insulating Liquids<sup>5</sup>

D 971 Test Method for Interfacial Tension of Oil Against Water by the Ring Method<sup>5</sup>

D 974 Test Method for Acid and Base Number by Color-Indicator Titration<sup>4</sup>

D 1169 Test Method for Specific Resistance (Resistivity) of Electrical Insulating Liquids<sup>5</sup>

D 1500 Test Method for ASTM Color of Petroleum Products (ASTM Color Scale)<sup>4</sup>

D 1816 Test Method for Dielectric Breakdown Voltage of Insulating Oils of Petroleum Origin Using VDE Electrodes<sup>5</sup>

D 2413 Test Methods for Preparation and Electrical Testing of Insulating Paper and Board Impregnated with a Liquid Dielectric<sup>2</sup>

D 2865 Practice for Calibration of Standards and Equipment for Electrical Insulating Materials Testing<sup>6</sup>

D 3426 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials Using Impulse Waves<sup>6</sup>

D 3455 Test Methods for Compatibility of Construction

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 10.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 15.09.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 05.01.

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 10.03.

<sup>6</sup> *Annual Book of ASTM Standards*, Vol 10.02.