



Designation: D 1532 - 88

AMERICAN SOCIETY FOR TESTING AND MATERIALS
1916 Race St., Philadelphia, Pa. 19103Reprinted from the Annual Book of ASTM Standards, Copyright ASTM
If not listed in the current combined index, will appear in the next edition.

Standard Specification for Polyester Glass-Mat Sheet Laminate¹

This standard is issued under the fixed designation D 1532; 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 specification covers laminated polyester glass-mat sheet materials for electrical/electronic and mechanical applications.²

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

2. Referenced Documents

2.1 ASTM Standards:

D 229 Method of Testing Rigid Sheet and Plate Materials Used for Electrical Insulation³

D 495 Test Method for High-Voltage, Low-Current, Dry Arc Resistance of Solid Electrical Insulation⁴

D 709 Specification for Laminated Thermosetting Materials³

D 2303 Test Methods for Liquid-Contaminant, Inclined-Plane Tracking and Erosion of Insulating Materials⁴

2.2 Other Documents:

NEMA LI1-1983 Industrial Laminated Thermosetting Products⁵

3. Grades

3.1 The grades specified are manufactured with suitable resins and fillers to obtain the required properties, as follows:

Grade ⁴	Description
GPO-1	general purpose
GPO-2	general purpose that requires resistance to flame
GPO-3	general purpose that requires resistance to flame and tracking

⁴ The grade designations in this specification are equivalent to the same grade designations described in NEMA Publication No. LI-1, Section 11.

4. Manufacture

4.1 These materials shall be made from a mat of random-laid glass fibers, saturated with polyester resin combined with suitable fillers, cured by applying heat and pressure and meeting the performance requirements specified herein.

5. Property Requirements

5.1 The average of four specimens tested in accordance

¹ This specification is under the jurisdiction of ASTM Committee D-9 on Electrical Insulating Materials and is the direct responsibility of Subcommittee D09.07 on Flexible and Rigid Insulating Materials.

Current edition approved Aug. 26, 1988. Published October 1988. Originally issued as D 1532 - 58 T. Last previous edition D 1532 - 82.

² See ASTM Specification D 709 for Laminated Thermosetting Materials, which appears in the *Annual Book of ASTM Standards*, Vol 10.01, containing nomenclature for the description of materials that includes type, grade, and form. This specification, with respect to that nomenclature, contains only one type (polyester glassmat) and form (sheets).

³ *Annual Book of ASTM Standards*, Vol 10.01.

⁴ *Annual Book of ASTM Standards*, Vol 10.02.

⁵ Available from the National Electrical Manufacturers Assn., 2101 L St. NW, Washington, DC 20037.

with Method D 229 shall conform to the requirements shown in Table 1.

6. Dimensions and Permissible Variations

6.1 *Standard Sheet Size*—Due to variation in sizes of press equipment, there is considerable variation in the length and width of manufacturers' standard size sheets. For most manufacturers, the standard size ranges from 24 to 48 in. (610 to 1219 mm) in width and between 36 and 96 in. (914 and 2438 mm) in length. There are some manufacturers, however, whose standard sizes may be outside of these ranges.

6.2 Permissible Variations in Sheet Size:

6.2.1 *Untrimmed Sheets*—The tolerances in length and width of a manufacturer's standard size untrimmed sheet shall be $\pm 1/4$ in. (± 6 mm) in length or width for lengths and widths up to and including 4 ft (1219 mm), and $\pm 1/2$ in. (13 mm) for lengths and widths over 4 ft. Untrimmed sheets shall have edges as molded but shall be free of sharp flash. The outer portion of an untrimmed sheet for a distance of $1/2$ -in. back from the edge shall not be required to conform to the property values prescribed in this specification.

6.2.2 *Trimmed Sheets*—The tolerances in length and width of a manufacturer's standard size trimmed sheet shall be ± 1 in. (25 mm) from the manufacturer's standard.

6.2.3 *Cut Pieces*—The tolerances in length and width of pieces cut from sheets shall be as prescribed in Table 2.

6.3 At least 90 % of the individual thickness measurements shall lie within the tolerances shown in Table 3 for the nominal thickness tested. No individual thickness measurement shall vary from the nominal value by more than 125 % of the specified tolerance.

6.4 *Warp and Twist*—The tolerances for warp and twist shall be as specified in Table 4.

7. Retest and Rejection

7.1 If the results of any test do not conform to the requirements prescribed in this specification, at the option of the manufacturer that test shall be repeated on two additional sets of specimens from the same batch or shipment, each of which shall conform to the requirements specified. If either of these two additional sets of specimens fails, the material may be rejected at the option of the purchaser. Notice of failure of material based on tests made in accordance with this specification shall be reported to the manufacturer within 3 weeks from the receipt of the material by the purchaser. Any portion of the accepted shipment of material that subsequently is found not to be in accordance with this specification may be rejected, provided the manufacturer is notified within 90 days from the date of receipt of the material by the purchaser.