Designation: D 709 – 01

An American National Standard

Standard Specification for Laminated Thermosetting Materials[1]

This standard is issued under the fixed designation D 709; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers laminated thermosetting materials consisting of two or more plies or layers of reinforcing material bonded by a thermosetting synthetic resin. Examples of such reinforcement are cellulose paper, cotton fabric, glass fabric, and synthetic fiber fabrics. These materials are available in the form of sheets, rolled and molded tubes, and molded rods.

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

NOTE 1—This specification resembles IEC 60893-3 in title only. The content is significantly different.

1.3 The following safety hazards caveat pertains only to the test methods described in this specification. *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:*

D 229 Test Methods for Rigid Sheet and Plate Materials Used for Electrical Insulation[2]

D 257 Test Methods for DC Resistance or Conductance of Insulating Materials[2]

D 348 Test Methods for Rigid Tubes Used for Electrical Insulation[2]

D 349 Test Methods for Laminated Round Rods Used for Electrical Insulation[2]

D 495 Test Method for High-Voltage, Low-Current, Dry Arc Resistance of Solid Electrical Insulation[2]

D 621 Test Methods for Deformation of Plastics Under Load[3]

D 668 Test Methods for Measuring Dimensions of Rigid Rods and Tubes Used for Electrical Insulation[2]

D 785 Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials[4]

D 883 Terminology Relating to Plastics[4]

D 1180 Test Method for Bursting Strength of Round Rigid Plastic Tubing[5]

D 1711 Terminology Relating to Electrical Insulation[2]

D 2303 Test Method for Liquid-Contaminant, Inclined-Plane Tracking and Erosion of Insulating Materials[2]

D 2304 Test Method for Thermal Endurance of Rigid Electrical Insulating Materials[2]

D 3636 Practice for Sampling and Judging Quality of Solid Electrical Insulating Materials[6]

D 6054 Practice for Conditioning Electrical Insulating Materials for Testing[6]

2.2 *IEEE Standards:*[7]

1 General Principles for Temperature Limits in the Rating of Electric Equipment

98 Guide for the Preparation of Test Procedures for the Thermal Evaluation and Establishment of Temperature Indices of Solid Electrical Insulating Materials

99 Guide for the Preparation of Test Procedures for the Thermal Evaluation of Insulation Systems for Electric Equipment

101 Guide for the Statistical Analysis of Thermal Life Test Data

2.3 *NEMA Standards:*[8]

LI 1-1971 Industrial Laminated Thermosetting Products

LI 5-1969 Temperature Indices of Industrial Thermosetting Laminates

LI 3-1961 High-Temperature Properties of Industrial Thermosetting Laminates

2.4 *Military Specifications:*[9]

MIL-P-997 Plastic Material, Laminated, Thermosetting,

[1] This specification is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.07 on Flexible and Rigid Insulating Materials.

Current edition approved Sept. 10, 2001. Published November 2001. Originally published as D 709 – 43 T. Last previous edition D 709 – 00.

[2] *Annual Book of ASTM Standards,* Vol 10.01.

[3] *Discontinued*—See *1993 Annual Book of ASTM Standards,* Vol 08.01.

[4] *Annual Book of ASTM Standards,* Vol 08.01.

[5] *Discontinued*—See 1989 *Annual Book of ASTM Standards,* Vol 08.04.

[6] *Annual Book of ASTM Standards,* Vol 10.02.

[7] Available from the Institute of Electrical and Electronics Engineers, 345 E. 47 St., New York, NY 10017.

[8] Available from the National Electrical Manufacturers Association, 2101 L Street, NW, Washington, DC, 20037.

[9] Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094 Attn: NPODS.

This document is now PUBLIC

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.