



Designation: D1932 – 18

Standard Test Method for Thermal Endurance of Flexible Electrical Insulating Varnishes¹

This standard is issued under the fixed designation D1932; 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 U.S. Department of Defense.

1. Scope*

1.1 This test method covers the determination of the relative thermal endurance of flexible electrical insulating varnishes by determining the time necessary at elevated temperatures to decrease the dielectric breakdown of the varnish to an arbitrarily selected value when applied to a standard glass fiber fabric.

1.2 This test method does not apply to varnishes that lose a high percentage of their dielectric breakdown voltage when flexed before elevated temperature exposure as prescribed in the screening test (Section 9). Examples of such varnishes are those used for high speed armatures and laminated structures. Also, this test method is not applicable to varnishes which distort sufficiently during thermal elevated temperature exposure so that they cannot be tested using the curved electrode assembly.

1.3 Thermal endurance is expressed in terms of a temperature index.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

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

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.* For specific hazard statements, see Section 7.

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 Recom-*

mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

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

D374/D374M Test Methods for Thickness of Solid Electrical Insulation

D580/D580M Specification for Greige Woven Glass Tapes and Webbing

D618 Practice for Conditioning Plastics for Testing

D1346 Test Method for Testing Electrical Insulating Varnishes for 180 C and Above (Withdrawn 1986)³

D1711 Terminology Relating to Electrical Insulation

D2307 Test Method for Thermal Endurance of Film-Insulated Round Magnet Wire

D2518 Specification for Woven Glass Fabrics for Electrical Insulation (Withdrawn 2013)³

D5423 Specification for Forced-Convection Laboratory Ovens for Evaluation of Electrical Insulation

2.2 IEC Publications:

IEC 60216 Guide for the Determination of Thermal Endurance Properties of Electrical Insulating Materials (Part 1)⁴

3. Terminology

3.1 Definitions:

3.1.1 *temperature index (TI), n*—a number which permits comparison of the temperature/time characteristics of an electrical insulating material, or a simple combination of materials, based on the temperature in degrees Celsius which is obtained

¹ This test method is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.01 on Electrical Insulating Products.

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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, 25 West 43rd St., 4th Floor, New York, NY 10036.

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