Designation: D3353 – 10

Standard Test Methods for Fibrous-Insulated Magnet Wire[1]

This standard is issued under the fixed designation D3353; 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 fibrous-insulated electrical conductors, commonly referred to as magnet wire, which are used in electrical apparatus. The test methods are intended primarily for evaluation of the electrical insulating materials used. It is intended that these test methods be used, except where modified by individual specifications for particular applications.

1.1.1 These test methods apply to those magnet wires that are fiber-covered and in which the substrate is bare conductor or is coated with an underlying insulating film as covered by Test Methods D1676. Fiber-covered wires are produced by serving helically or wrapping fibers or fibrous-tape insulation uniformly around the wire in single and multiple layers. The served or wrapped materials are bonded or not bonded to the underlying wire.

1.2 The test methods appear in the following sections:

Procedure	Section
Measurement of Dimensions	7
Electrical Resistance of Conductors	5
Elongation	4
Adhesion and Flexibility	8
Fibrous Coverage	6
Dielectric Breakdown Voltage	9

1.3 This standard and IEC 60851 are similar if not equivalent in technical content.

1.4 This standard and NEMA MW 1000 are similar if not equivalent in technical content.

1.5 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered 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 establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* See 8.4.1 and 9.4.1 for specific caution statements.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

B193 Test Method for Resistivity of Electrical Conductor Materials

D149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies

D1676 Test Methods for Film-Insulated Magnet Wire

D1711 Terminology Relating to Electrical Insulation

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

E8 Test Methods for Tension Testing of Metallic Materials

2.2 *Other Standards:*

IEC 60851 Methods of Test for Winding Wires[3]

NEMA Standards Publication No. MW 1000 on Magnet Wire[4]

3. Terminology

3.1 *Definitions*:

3.1.1 For definitions of terms used in this test method, refer to Terminology D1711.

3.1.2 *Definition of Term(s) Specific to this Standard*:

3.1.2.1 *serving*—a uniform wrapping of fibrous insulation around a magnet wire of bare conductor.

3.1.2.2 *fibrous coverage, of served-magnet wire*—that characteristic which allows a fibrous served magnet wire to be wound around mandrels in a prescribed manner without causing observable openings in the fibrous coverage.

4. Elongation

4.1 *Scope*—This test method covers the determination of the elongation of fibrous insulated magnet wire that results in a fracture of the conductor.

[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 D09.12 on Electrical Tests.

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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] Available from International Engineering Consortium, 549 West Randolph Street, Suite 600, Chicago IL 60661–2208.

[4] Available from National Electrical Manufacturers Association (NEMA), 1300 N. 17th St., Suite 1752, Rosslyn, VA 22209, http://www.nema.org.

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

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