



Standard Test Method for Salt Water Proofness of Insulating Varnishes Over Enamelled Magnet Wire¹

This standard is issued under the fixed designation D4880; 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 test method covers the electrical performance in a specified water solution of an insulating varnish applied over enamelled magnet wire.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units that are provided for information only and are not considered standard.

1.3 *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.* Specific precautionary statements are given in Section 6.

NOTE 1—There is no IEC method equivalent to this standard.

2. Referenced Documents

- 2.1 *ASTM Standards:*²
[D1676 Test Methods for Film-Insulated Magnet Wire](#)
[D1711 Terminology Relating to Electrical Insulation](#)

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this test method refer to Terminology [D1711](#).

3.1.2 *varnish, electrical insulating, n*—a liquid resin system that is applied to and cured on electrical components providing electrical, mechanical, and environmental protection.

3.1.2.1 *Discussion*—There are two types of electrical insulating varnish—solvent-containing and solventless. The solvent-containing varnish is solution, dispersion, or emulsion

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 Varnishes, Powders and Encapsulating Compounds.

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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.

of a polymer or a mixture of polymers in a volatile, nonreactable liquid. The solventless type is a liquid resin system free of volatile, nonreactable solvents.

3.1.3 *varnished, adj*—referring to any item on to which varnish has been applied and cured.

4. Significance and Use

4.1 This test method is useful in determining the performance of varnishes over enamelled magnet wire when subjected to the specified sodium chloride solution. It is useful in evaluating the resistance of varnished magnet wire to a diluted sodium chloride solution under applied voltage.

5. Apparatus

5.1 Description of Electrical Apparatus :

5.1.1 The apparatus shall contain devices for limiting or interrupting the current to each specimen whenever a failure occurs. In particular, 7.5 W light bulbs or 1/10 A fuses have been used. Lighting of the bulb or “blowing” of the fuse indicates failure.

5.1.2 The power supply shall provide a source of filtered 120 ± 2 V dc which drops by less than 2 V when a current of 0.5 A is drawn.

5.1.3 A positive polarity of 120 V dc is applied to the specimens. The surrounding sodium chloride solution is at ground potential. The ground connection, using an immersed electrode, is made using Nichrome, stainless steel, or other non-corrosive wire. Do not use iron, carbon steel, copper, or brass (see [Fig. 1](#)).

5.2 An appropriate container shall be selected for the sodium chloride solution. Fit it with a cover to prevent evaporation of the solution.

6. Safety Precautions

6.1 Do not use varnish at temperatures above the flash point when inadequate ventilation, and possibility of flames or sparks exist. Store varnish in sealed containers. These precautions shall also apply to the handling of the reagents and solvents called for in this test method.

6.2 **Warning**—Lethal voltages are a potential hazard during the performance of this test. It is essential that the test

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