



# Standard Test Method for Salt Water Proofness of Insulating Varnishes Over Enamelled Magnet Wire<sup>1</sup>

This standard is issued under the fixed designation D 4880; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method covers the performance in a specified water solution of an insulating varnish applied over enamelled magnet wire.

1.2 The values stated in SI units are the 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.

## 2. Referenced Documents

2.1 *ASTM Standards:*

D 1676 Test Method for Testing Film-Insulated Magnet Wire<sup>2</sup>

D 1711 Terminology Relating to Electrical Insulation<sup>2</sup>

## 3. Terminology

3.1 *Definitions:* For definitions of terms used in this test method refer to Terminology D 1711.

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

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

3.1.2 *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 sub-

jected 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 1/10A 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  $120 \pm 2$  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 *Lethal voltages are a potential hazard during the performance of this test. It is essential that the test apparatus, and all associated equipment electrically connected to it, be properly designed and installed for safe operation. Solidly ground all electrically conductive parts which it is possible for a person to contact during the test. Provide means for use at the completion of any test to ground any parts which were at high voltage during the test or have the potential for acquiring an induced charge during the test or retaining a charge even after disconnection of the voltage source. Thoroughly instruct all operators as to the correct procedures for performing tests safely. When making high voltage tests, particularly in compressed gas or in oil, it is possible for the energy released at breakdown to be sufficient to result in fire, explosion, or rupture*

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D-9 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.01 on Electrical Insulating Varnishes, Powders, and Encapsulating Compounds.

Current edition approved Nov. 15, 1994. Published January 1995. Originally published as D 4880 – 88. Last previous edition D 4880 – 88.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 10.01.