Designation: F677 – 13

AnAmerican National Standard

Standard Test Method for Fluid and Grease Resistance of Thermoset Encapsulating Compounds Used in Electronic and Microelectronic Applications[1]

This standard is issued under the fixed designation F677; 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 determines the resistance of encapsulating compounds to fluids or greases by measuring changes in weight (Note 1) and volume under defined conditions of time and temperature.

NOTE 1—To provide consistency with the usage in other ASTM test methods concerned with determining the properties of plastic materials, the terms "weight" and "weigh" are used in this test method although the units of measurement are those of mass.

1.2 The values stated in SI units are standard. The values in parentheses are for information only.

NOTE 2—There is no similar or equivalent IEC 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.* See 9.1.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1193 Specification for Reagent Water

D1711 Terminology Relating to Electrical Insulation

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

D6054 Practice for Conditioning Electrical Insulating Materials for Testing (Withdrawn 2012)[3]

3. Terminology

3.1 Definitions:

3.1.1 For the definitions of terms used in this standard, refer to Terminology D1711.

4. Summary of Test Method

4.1 Specimens of encapsulating compound are immersed in fluids or greases for specified conditions of temperature and time. The weight and volume of each specimen is measured before and after immersion and percent change is reported.

4.2 The fluids and greases to be used as test media (8.3) are not specified by the test method and shall be agreed to by the parties to the test.

5. Significance and Use

5.1 Fluids and greases in contact with encapsulating compounds have the potential to adversely modify the encapsulant properties with resulting damage or loss of protection to components in electronic applications.

5.2 This test method provides a means for measuring the effect of fluids and greases on various encapsulants.

5.3 This test method is intended for use in research and evaluation.

6. Interferences

6.1 Test results obtained with molded or cast specimens of filled encapsulating compounds will differ from those obtained with cut or machined specimens (because of exposed fillers in the latter).

6.2 Lack of complete contact between the test medium and the surfaces of the specimen has the potential to seriously affect the results of the test.

6.3 Some encapsulants have the potential to be affected by the reagents specified for use in removing the test media from the specimens. If the encapsulants are affected, alternative reagents are required, as agreed upon by the parties to the test.

7. Apparatus

7.1 *Analytical Balance,* capable of determining weight to the nearest 0.001 g.

7.2 *Oven,* forced-convection type meeting the requirements of Specification D5423, Type I.

[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.

[3] The last approved version of this historical standard is referenced on www.astm.org.

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