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Standard Test Method for VISCOSITY OF EPOXY RESINS AND RELATED COMPONENTS[1]

This standard is issued under the fixed designation D 2393; 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 method has been approved for use by agencies of the Department of Defense and for listing in the DoD Index of Specifications and Standards.

1. Scope

1.1 This test method covers the measurement of the viscosity of epoxy resins, other epoxidized compounds, modifiers, and diluents used in formulating epoxy systems, liquid curing agents that effect the hardening of epoxy resins, and epoxy resin-curing agent systems or mixtures.

1.2 The viscosity of other liquid materials, either clear or opaque, can be determined by this test method.

1.3 While the test method described is valid for viscosities between 0.1 and 2000 Pa·s (100 and 2 000 000 cP), the use of a kinematic method of measurement is recommended for viscosities between 0 and 0.5 Pa·s (0 and 500 cP).

NOTE 1—For unfilled systems, more precise results may be obtained by using a kinematic procedure for viscosities up to 50 Pa·s (50 000 cP).

1.4 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems 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.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 1824 Test Method for Apparent Viscosity of Plastisols and Organosols at Low Shear Rates by Brookfield Viscometer[2]

E 1 Specifications for ASTM Thermometers[3]

3. Significance and Use

3.1 The procedures for testing permit the accurate determination of the viscosity of materials within the range from 0.1 to 2000 Pa·s (100 to 2 000 000 cP).

3.2 The tests may be used for both the characterizing and the quality control testing of liquid materials.

3.3 This procedure is related to Test Method D 1824, but is of more general application.

4. Apparatus

4.1 *Viscometer*, Brookfield Model RVF or equivalent.

NOTE 2—This test method is based on the use of a Brookfield viscometer.[4] Any other comparable viscometer may be used, provided that the limitations and procedures specified by the manufacturer are followed.

NOTE 3—Any viscometer must be checked for accuracy against standard liquids covering the normal range of operation of the instrument. The time lapse between checks must not exceed 6 months. A defective instrument must be recalibrated before further use, preferably by the manufacturer of the instrument.

4.2 *Bath*, temperature-controlled, controllable to ±0.1°C (±0.2°F), either oil or water type.

4.3 *Thermometer*, Celsius, with 0.1 divisions,

[1] This test method is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D20.16 on Thermosetting Materials.

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[2] *Annual Book of ASTM Standards*, Vol 08.02.

[3] *Annual Book of ASTM Standards*, Vols 05.03 and 14.01.

[4] Available from Brookfield Engineering Laboratories, Inc., Stoughton, MA.