



AMERICAN SOCIETY FOR TESTING AND MATERIALS

1916 Race St., Philadelphia, Pa. 19103

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Standard Test Method for SAG FLOW OF HIGHLY VISCOUS RESINS¹

This standard is issued under the fixed designation D 2730; 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.

1. Scope

1.1 This method² covers the determination of the flow properties of highly viscous materials and pastes. The test procedure is applicable to mixed and curing systems, as well as to individual resin and hardener components. Testing of low-viscosity materials by this procedure is generally not practical. Low viscosity materials should be tested in accordance with Method D 2393.

1.2 The values stated in SI units are to be regarded as the standard.

2. Applicable Documents

2.1 ASTM Standards:

D2393 Test for Viscosity of Epoxy Resins and Related Components³

D2471 Test for Gel Time and Peak Exothermic Temperature of Reacting Thermosetting Resins³

E 1 Specification for ASTM Thermometers⁴

3. Significance

3.1 The procedure described can be used as a quality control and acceptance test for highly viscous materials and pastes. The method determines the maximum thickness to which a material can be applied without sagging. It also provides a means of measuring the amount of sag flow at a given thickness.

4. Apparatus

4.1 *Sag Flow Board*, as pictured in Fig. 1.

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

4.3 *Thermometer*, Celsius, with 0.1°C divisions, or Fahrenheit, with 0.2°F divisions. A suitable thermometer is ASTM Thermometer 91°C, 20 to 50°C range, with 0.1°C divisions,

conforming to the requirements as prescribed in Specification E 1.

4.4 *Splining Tool* or other straightedge.

4.5 *Timer*.

4.6 *Mold Release Agent*.

NOTE 1—In establishing standards and in comparative testing, it is essential that a single mold release agent be used and properly applied.⁵

5. Conditioning

5.1 Cover the sample and place it in a temperature-controlled bath at the test temperature for at least 4 h prior to testing, or for however much longer time is needed for all parts of the sample to reach the test temperature within 0.1°C (0.2°F).

NOTE 2—If the sample is a reacting mixture, such as a mixture of a paste resin with a hardener, bring the resin component and the hardener component to the test temperature separately before mixing.

5.2 Periods of conditioning shorter than 4 h may be used, if experience has shown sag flow results to be comparable to those obtained after 4 h conditioning. If the sample is conditioned less than 4 h, the time of conditioning must be shown in the report.

6. Procedure

6.1 Condition the sag flow board (Fig. 1) for

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

Current edition approved March 3, 1980. Published May 1980. Originally published as D 2730 - 68. Last previous edition D 2730 - 68 (1979).

² Another procedure for sag flow measurement is incorporated in MIL-S-8802D. This procedure involves use of special apparatus.

³ *Annual Book of ASTM Standards*, Part 36.

⁴ *Annual Book of ASTM Standards*, Parts 25 and 44.

⁵ A satisfactory mold release agent that was used in interlaboratory testing is Chem-Trend Monocoat, available from Chem-Trend, Inc., 3205 E. Grand River Ave., Howell, Mich.