



Standard Test Method for Viscosity of Resin Solutions¹

This standard is issued under the fixed designation D 1725; 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 measurement of the viscosity of resin solutions.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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. For specific hazard statements, see Section 7.*

2. Referenced Documents

2.1 ASTM Standards:²

D 154 Guide for Testing Varnishes

D 1545 Test Method for Viscosity of Transparent Liquids by Bubble Time Method

D 6440 Terminology Relating to Hydrocarbon Resins

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 Other Document:

OSHA Regulations, 29 CFR, paragraphs 19.10.1000 and 19.10.1200³

3. Terminology

3.1 For definitions related to hydrocarbon resins see Terminology D 6440.

4. Summary of Test Method

4.1 Solid resins are dissolved in organic solvents by cold-cut or hot-cut methods in the laboratory. The viscosity of such

prepared solutions, or of commercial solutions of resins is then determined by the bubble time method (Test Method D 1545). The bubble seconds are approximately equal to stokes.

5. Apparatus

5.1 *Bath*, constant-temperature, consisting of a cylindrical glass jar of about 5-gal capacity, or an aquarium tank with controls capable of maintaining the temperature at $25 \pm 0.1^\circ\text{C}$ with water as the bath medium.

5.2 *Bottles*, 225-mL (8-oz), wide-mouth, screw cap.

5.3 *Cellophane*, sheet, cut into 102 or 127-mm (4 or 5-in.) squares.

5.4 *Corks*, No. 2 short taper, to fit viscosity tubes.

5.5 *Holder for Viscosity Tubes*, preferably a mechanical holder⁴ with rack and pinion for inverting the tubes. The holder should be checked with a small level and T-square to make certain it holds the tubes in an exact vertical position after being placed in the constant-temperature bath.

5.6 *Bottle Shaker*, preferably one which will give end-over-end agitation.

5.7 *Timing Device*, such as a stopwatch or electric stop clock capable of being read to a precision of 0.1 s.

5.8 *Viscosity Tubes*, of clear glass and flat bottoms, having 10.65 ± 0.025 -mm inside diameter and 114 ± 1 -mm outside length. Plainly legible lines shall be located on the tubes as follows:

27 ± 0.5 mm
 100 ± 0.5 mm
 108 ± 0.5 mm

All distances shall be measured from the bottom outside of the tube. The distance between the first and second lines shall be 73 ± 0.5 mm.

6. Solvent

6.1 The solvent used should be mutually agreed upon between the purchaser and the manufacturer. Toluene, xylene, mineral spirits, alcohols, etc., are used for the preparation of solutions of resins. For a given resin, the viscosity obtained will depend on the solvent used. In case of dispute, both laboratories should use portions of the same batch of solvent.

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.33 on Polymers and Resins.

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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 Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

⁴ A suitable mechanical holder is available from the Gardner Laboratory, Inc., 5521 Landy Lane, Washington, DC, Item 660.