



Designation: E 102 – 93 (Reapproved 1997)

Standard Test Method for Saybolt Furol Viscosity of Bituminous Materials at High Temperatures¹

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1. Scope

1.1 This test method covers the empirical procedures for determining the Saybolt Furol viscosities of bituminous materials at specified temperatures between 248 and 464°F (120 and 240°C).

1.2 The values stated in inch-pound units are to be regarded as 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.* See 8.1.

2. Referenced Documents

2.1 ASTM Standards:

D 88 Test Method for Saybolt Viscosity²

D 92 Test Method for Flash and Fire Points by Cleveland Open Cup³

D 140 Practice for Sampling Bituminous Materials²

E 1 Specification for ASTM Thermometers⁴

E 11 Specification for Wire-Cloth Sieves for Testing Purposes⁵

3. Terminology

3.1 Definitions:

3.1.1 *Furol*—an acronym of “Fuel and road oils.”

3.1.2 *Saybolt Furol viscosity*—the corrected efflux time in seconds of 60 mL of sample flowing through a calibrated Furol orifice under specified conditions. The viscosity value is reported in Saybolt Furol seconds, abbreviated SFS, at a specified temperature.

4. Summary of Test Method

4.1 The efflux time in seconds of 60 mL of sample, flowing through a calibrated orifice, is measured under carefully controlled conditions. The time is corrected by an orifice factor and reported as the viscosity of the sample at that temperature.

5. Significance and Use

5.1 This test method is useful in characterizing certain bituminous materials, as one element in establishing uniformity of shipments and sources of supply.

5.2 This test method is an extension of Test Method D 88.

6. Apparatus

6.1 *Saybolt Furol Viscometer and Bath*, as shown and described in Test Method D 88, Fig. 1 and Annex 1. An external heater may also be used, but if so, it shall be more than 2 in. (51 mm) from the viscometer. An aluminum-block, constant-temperature bath is also acceptable, and no stirring device is required with this type of bath.

6.2 *Displacement Ring*, as shown in Fig. 1, constructed of the same corrosion-resistant metal as the viscometer.

6.3 *Cover*—A metal cover for the viscometer, cylindrical with a flat top, approximately 2¼ in. (57 mm) in diameter and ¼ in. (7 mm) deep (Note 1). One hole slightly larger than the diameter of a viscosity thermometer shall be drilled in the center of the cover, and two smaller holes to permit the vertical rods of the displacement ring to pass through the cover.

NOTE 1—The cover of a 3-oz (90-mL) Gill-style ointment box fulfills these requirements.

6.4 *Thermometer Support*, as shown in Test Method D 88, Fig. 3.

6.5 *Saybolt Viscosity Thermometers*, as listed in Table 1, for reading the temperature of the sample. Each thermometer shall conform to the requirements listed in Specification E 1 for that ASTM Thermometer Number.

6.6 *Bath Thermometers*—Saybolt Viscosity thermometers, or any other temperature-indicating means of equivalent accuracy.

6.7 *Sieve*, 850- μ m (No. 20), conforming to the requirements of Specification E 11.

¹ This test method is under the jurisdiction of ASTM Committee D-8 on Roofing, Waterproofing, and Bituminous Materials and is the direct responsibility of Subcommittee D08.05 on Solvent-Bearing Bituminous Compounds for Roofing and Waterproofing.

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² *Annual Book of ASTM Standards*, Vol 04.04.

³ *Annual Book of ASTM Standards*, Vol 05.01.

⁴ *Annual Book of ASTM Standards*, Vol 14.03.

⁵ *Annual Book of ASTM Standards*, Vol 14.02.