
Standard Method of Test for

**Apparent Viscosity of Hot-Poured
Asphalt Crack Sealant Using
Rotational Viscometer**

AASHTO Designation: T 366-22¹

Technically Revised: 2022

Technical Subcommittee: 4e, Joints and Bearings



**American Association of State Highway and Transportation Officials
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1. SCOPE

- 1.1. This test method outlines the procedure for measuring the apparent viscosity of hot-poured asphalt crack sealant at elevated temperature from 150° to 200°C using a rotational viscometer as specified by M 338 and PP 85.
- 1.2. The rotational viscometer is a rotating spindle-type viscometer that meets the requirements of T 316. This test method can be used for general specification and is especially convenient for use in a field laboratory or a plant site.
- 1.3. Viscosity data obtained with this test method are used to ensure that the hot-poured asphalt crack sealant's apparent viscosity is low enough to fill cracks and, at the same time, high enough not to flow out of the crack. Ideally, the shear rates during the test should match the shear rates the hot-poured asphalt crack sealant experiences during installation. The rotational speed of the spindle was selected at 60 rpm to resemble field pouring conditions. Changing spindle sizes and rotational speeds affect both the shear rate and the measured apparent viscosity.
- 1.4. *This standard may involve hazardous material, 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 application of regulatory limitations prior to use.*
- 1.5. *The quality of the results produced by this standard are dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the equipment used. Agencies that meet the criteria of R 18 are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with R 18 alone does not completely assure reliable results. Reliable results depend on many factors; following the suggestions of R 18 or some similar acceptable guideline provides a means of evaluating and controlling some of those factors.*

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
 - M 338, Performance-Graded Hot-Poured Asphalt Crack Sealant
 - M 339M/M 339, Thermometers Used in the Testing of Construction Materials
 - PP 85, Grading or Verifying the Sealant Grade (SG) of a Hot-Poured Asphalt Crack Sealant
 - R 18, Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories

- T 316, Viscosity Determination of Asphalt Binder Using Rotational Viscometer

2.2. *ASTM Standards:*

- D5167, Standard Practice for Melting of Hot-Applied Joint and Crack Sealant and Filler for Evaluation
- E1, Standard Specification for ASTM Liquid-in-Glass Thermometers
- E220, Standard Test Method for Calibration of Thermocouples by Comparison Techniques
- E879, Standard Specification for Thermistor Sensors for General Purpose and Laboratory Temperature Measurements
- E1137/E1137M, Standard Specification for Industrial Platinum Resistance Thermometers

2.3. *International Electrotechnical Commission Standard:*

- IEC 60751:2008, Industrial Platinum Resistance Thermometers and Platinum Temperature Sensors

3. TERMINOLOGY

- 3.1. *apparent viscosity*—the ratio of shear stress to shear rate for a liquid. This parameter is a measure of the resistance to flow of the liquid. The SI unit of viscosity is the Pascal second (Pa·s).
- 3.2. *hot-poured asphalt crack sealant*—hot-poured modified asphaltic materials used in pavement cracks and joints.
- Note 1**—Based on the references, hot-poured asphalt crack sealant is typically applied at a temperature of 160°C or above.

4. SUMMARY OF METHOD

- 4.1. Hot-poured asphalt crack sealant material is homogenized according to ASTM D5167, cut into cubes no larger than 5 mm by 5 mm and placed into standard containers. Apparent viscosity is measured utilizing the rotational viscometer using a spindle recommended by the hot-pour asphalt crack sealant manufacturer. The spindle shall be attached to the rigid hook attachment and rotates at the speed of 60 rpm. The test shall be conducted at the hot-poured asphalt crack sealant manufacturer's recommended installation temperature.

5. SIGNIFICANCE AND USE

- 5.1. This test is intended for hot-poured asphalt crack sealant applied to roadway joints and cracks.
- 5.2. This procedure is designed to simulate the viscosity of hot-poured asphalt crack sealant while pouring the sealant into a crack.
- 5.3. Hot-poured asphalt crack sealant must be homogenized (ASTM D5167) before measuring the apparent viscosity by this method.

6. APPARATUS

- 6.1. Rotational Viscometer.
- 6.2. *Temperature Controlling Unit*—Maintaining a temperature ranging from 170° to 193°C within a tolerance of ±1°C.