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Standard Test Methods for Jet-Fuel-Resistant Concrete Joint Sealer, Hot-Poured Elastic Type¹

This standard is issued under the fixed designation D 1855; 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 These test methods cover the following tests for jet-fuel-resistant concrete joint sealer of the hot-poured elastic type:

	Sections
Nonimmersed Penetration	4
Immersed Penetration	5 and 6
Solubility	7
Flow	8
Nonimmersed Bond	9
Immersed Bond	10

1.2 *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 5 Test Method for Penetration of Bituminous Materials²
- D 217 Test Method for Cone Penetration of Lubricating Grease³
- D 362 Specification for Industrial Grade Toluene⁴
- D 471 Test Method for Rubber Property—Effect of Liquids⁵
- D 1015 Test Method for Freezing Points of High-Purity Hydrocarbons³
- D 1191 Methods for Testing Concrete Joint Sealers²
- D 1217 Test Method for Density and Relative Density (Specific Gravity) of Liquids by Bingham Pycnometer³
- D 1218 Test Method for Refractive Index and Refractive Dispersion of Hydrocarbon Liquids³
- D 2700 Test Method for Knock Characteristics of Motor and Aviation Fuels by the Motor Method⁶

3. Preparation of Sample

3.1 The portion selected for test shall weigh approximately 1200 g. When one melter is used, divide the test

sample into 24 segments of 50 ± 2 g and add the segments to the melter at the rate of 1/min with continued stirring and working. When two melters are used, divide the test sample into 48 segments of 25 ± 2 g and add the segments to each melter at the rate of 1/min, with continued stirring and working. The pouring temperature of the material and the temperature of the oil bath shall be as recommended by the manufacturer. Continue heating at the recommended pouring temperature until exactly 90 min have elapsed since the first segment was added to the melters. Then pour the test samples. Discard the first 50 to 60 g of material discharged from the melters. The units for melting laboratory samples shall be of the double-boiler type employing a high flash point oil as the heat-transfer medium. They shall be so designed and built that the oil shall completely surround the sides of the inner or material chamber. Heating shall be thermostatically controlled to maintain the temperature of the oil within $\pm 5^\circ\text{F}$ ($\pm 3^\circ\text{C}$) of that recommended by the manufacturer of the sealer under test. The melting units shall be equipped with a bottom discharge controlled by a knife or blade valve to permit drawing off of the melted material. Install a mechanical stirrer both in the material chamber and oil bath. Also provide thermometers for continuous reading of the temperature of both the sample being melted and the heat-transfer oil.

NOTE 1—Safe heating temperature shall be considered to be the highest temperature to which the joint sealing material can be heated and still conform to the flow requirements. This must be at least 20°F (11°C) above the manufacturer's recommended pouring temperature, or the actual pouring temperature, whichever is higher.

NONIMMERSED PENETRATION

4. Procedure

4.1 Determine nonimmersed penetration in accordance with Test Method D 5, except use a penetration cone in place of the standard penetration needle. The cone shall conform to the requirements given in Test Method D 217, except that the interior construction may be modified as desired. The total moving weight of the cone and attachments shall be 150.0 ± 0.1 g.

IMMERSED PENETRATION

5. Test Fuel⁷

5.1 The test fuel shall be composed of 70 volume % of

¹ These test methods are under the jurisdiction of ASTM Committee D-4 on Road and Paving Materials and are the direct responsibility of Subcommittee D04.33 on Formed-In-Place Sealants for Joints and Cracks in Pavements.

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² Annual Book of ASTM Standards, Vol 04.03.

³ Annual Book of ASTM Standards, Vol 05.01.

⁴ Annual Book of ASTM Standards, Vol 06.03.

⁵ Annual Book of ASTM Standards, Vol 09.01.

⁶ Annual Book of ASTM Standards, Vol 05.04. (Not available as a separate reprint).

⁷ Test fuel, meeting the requirements of ASTM Test Method D 471, Reference Fuel B, is available from Phillips Petroleum Co., Petrochemical and Supply Div., Drawer 0, Borger, TX 79007.