



## Standard Test Method for Float Test for Bituminous Materials<sup>1</sup>

This standard is issued under the fixed designation D 139; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This test method covers the float test for bituminous materials.

1.2 *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 a specific precaution statement, see 6.1.

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

### 2. Referenced Documents

#### 2.1 ASTM Standards:

C 670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials<sup>2</sup>

D 140 Practice for Sampling Bituminous Materials<sup>3</sup>

D 244 Test Methods for Emulsified Asphalts<sup>3</sup>

D 2170 Test Method for Kinematic Viscosity of Asphalts (Bitumens)<sup>3</sup>

E 1 Specification for ASTM Thermometers<sup>4</sup>

### 3. Summary of Test Method

3.1 A plug of bitumen is cast in a tapered collar. The assembled float and collar is then floated in the testing bath at the specified temperature. The time, in seconds, between placing the apparatus on the water and the water breaking through the material shall be taken as a measure of the consistency of the material under examination.

### 4. Significance and Use

4.1 The float test characterizes the flow behavior or consistency of certain bituminous materials.

4.2 This test method is useful in determining the consistency of bitumen as one element in establishing the uniformity of certain shipments or sources of supply.

### 5. Apparatus

5.1 *Float*—The float (Fig. 1) shall be made of aluminum or aluminum alloy and shall be in accordance with the following requirements:

	Min	Normal	Max
Mass of float, g	37.70	37.90	38.10
Total height of float, mm	34.0	35.0	36.0
Height of rim above lower side of shoulder, mm	26.5	27.0	27.5
Thickness of shoulder, mm	1.3	1.4	1.5
Diameter of opening, mm	11.0	11.1	11.2

5.2 *Collar*—The collar (Fig. 1) shall be made of brass and shall be in accordance with the following requirements:

	Min	Normal	Max
Mass of collar, g	9.60	9.80	10.00
Over-all height of collar, mm	22.3	22.5	22.7
Inside diameter at bottom, mm	12.72	12.82	12.92
Inside diameter at top, mm	9.65	9.70	9.75

The top of the collar shall screw up tightly against the lower side of the shoulder.

5.3 *Calibration of Assembly*—The assembled float and collar, with the collar filled flush with the bottom and weighted to a total mass of 53.2 g, shall float upon water with the rim 8.5  $\pm$  1.5 mm above the surface of the water. This adjustment of the total mass of the assembly is for the purpose only of calibrating the depth of immersion in the testing bath.

5.4 *Thermometer*—An ASTM Low Softening Point Thermometer, graduated in either Celsius or Fahrenheit degrees as specified, having a range from  $-2$  to  $+80^{\circ}\text{C}$  or  $+30$  to  $+180^{\circ}\text{F}$  and conforming to the requirements for Thermometer 15 $^{\circ}\text{C}$  or 15 $^{\circ}\text{F}$ , respectively, as prescribed in Specification E 1.

5.4.1 A thermometer consisting of K type 30 AWG gage thermocouple and a meter capable of reading 25 $^{\circ}\text{C}$  (77 $^{\circ}\text{F}$ ) to 260 $^{\circ}\text{C}$  (500 $^{\circ}\text{F}$ ). The thermocouple shall be 61 to 76 cm (24 to 30 in.) in length. This thermometer shall conform to the temperature/voltage tables of the National Institute of Standards and Technology and to the IEC 584 standards for K-, J-, and T-type thermocouples.<sup>5</sup>

5.5 *Testing Bath*—A circular bath of at least 185 mm in internal diameter and containing water at least 185 mm in depth; or a rectangular bath with minimum internal dimensions of 150 mm width and 300 mm length, and containing water at least 110 mm in depth. The height of the surface of the container above the water shall be at least 40 mm. The bath

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<sup>2</sup> Annual Book of ASTM Standards, Vol 04.02.

<sup>3</sup> Annual Book of ASTM Standards, Vol 04.03.

<sup>4</sup> Annual Book of ASTM Standards, Vol 14.03.

<sup>5</sup> Tegam Model 819 meter is an appropriate meter for this purpose.