



Standard Test Method for Pour Point of Petroleum Products (Rotational Method)¹

This standard is issued under the fixed designation D 5985; 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.

ε¹ NOTE—Figures A1.1 and A1.2 were editorially corrected in May 1999.

1. Scope

1.1 This test method covers the determination of pour point of petroleum products by an automatic instrument that continuously rotates the test specimen against a suspended detection device during cooling of the test specimen.

1.2 This test method includes the range of temperatures from – 57 to + 51°C.

NOTE 1—The range of temperatures which were included in the 1992 interlaboratory program only covered the temperature range of – 39 to + 6°C (see 13.4).

1.3 This test method determines the no-flow point of petroleum products by detection of the crystal structure or viscosity increase, or both, in the sample that is sufficient to impede flow of the specimen.

1.4 This test method is not intended for use with crude oils.

1.5 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *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.*

2. Referenced Documents

2.1 ASTM Standards:

D 97 Test Method for Pour Point of Petroleum Products²

D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products³

D 4177 Practice for Automatic Sampling of Petroleum and Petroleum Products³

2.2 IP Standards:

IP15 Test Method for Pour Point of Petroleum Products⁴

3. Terminology

3.1 Definitions:

3.1.1 *pour point, n—in petroleum products*, the lowest temperature at which movement of the test specimen is observed under prescribed conditions of test.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *no-flow point, n—in petroleum products*, the temperature of the test specimen at which a wax crystal structure or viscosity increase, or both, impedes movement of the surface of the test specimen under the conditions of the test.

3.2.2 *Discussion*—The no-flow point occurs when, upon cooling, the formation of wax crystal structures or viscosity increase, or both, have progressed to the point where the applied observation device no longer detects movement under the conditions of the test. The preceding observation temperature, at which flow of the test specimen is last observed, is the pour point.

3.2.3 *D 97/IP15 equivalent pour point, n—in petroleum products*, the temperature calculated by rounding the no-flow point to the next higher integer which is a multiple of 3°C.

3.2.4 *Discussion*—The no-flow point can be measured with a resolution of 0.1°C in this test method. In Test Method D 97 observations for no-flow are in 3°C intervals and when results with a similar format to Test Method D 97 are required, this calculation shall be performed. Some apparatus can perform this calculation automatically.

3.2.5 *rotational, n—in this standard*, the technique of turning the test specimen jar in an upright position upon a turntable with a stationary positioned, temperature sensor containing pendulum, inserted into the test specimen.

3.2.6 *Discussion*—Upon cooling of the test specimen, the resultant crystal formation or viscosity increase in the specimen exerts force upon the pendulum, offsetting the stationary position and causing detection of the no-flow point.

¹ This test method is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.07 on Flow Properties.

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² *Annual Book of ASTM Standards*, Vol 05.01.

³ *Annual Book of ASTM Standards*, Vol 05.02.

⁴ Available from Institute of Petroleum, 61 New Cavendish St., London, England W1M 8AR.