



Standard Test Method for Pour Point of Petroleum Products (Automatic Pressure Pulsing Method)¹

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INTRODUCTION

This test method covers an alternative procedure for the determination of pour point of petroleum products Test Method D 97/IP15 using an automatic apparatus. The results from this test method based on observations at 3°C temperature intervals have been found to be equivalent to Test Method D 97/IP15. When specification requires Test Method D 97/IP15, do not substitute this test method.

1. Scope

1.1 This test method covers the determination of pour point of petroleum products by an automatic instrument that applies a controlled burst of nitrogen gas onto the specimen surface while the specimen is being cooled and detects movement of the surface of the test specimen with an optical device.

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

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

1.3 Test results from this test method can also be determined at 1 and 2°C testing intervals; however, precision data on these testing intervals are not available.

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

1.5 The values stated in SI units are regarded as standard.

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 Standard:

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 the prescribed conditions of the test.

3.2 Definition 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.

3.2.1.1 *Discussion*—The no-flow point occurs when, upon cooling, the formation of wax crystal structures or viscosity increase or both has 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.

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

3.2.2.1 *Discussion*—Test results from this test method can be determined at 1, 2, or 3°C intervals. Should the user wish to provide results with a similar format to Test Method D 97/IP15, then testing at 3°C intervals shall be used.

3.2.3 *pulse, n*—a controlled burst of nitrogen gas of a fixed pressure and flow rate sufficient to cause movement on the surface of the test specimen without fracturing the wax structure which may be formed in the specimen.

3.2.4 *Peltier device, n*—a solid state thermoelectric device constructed with dissimilar semiconductor materials, configured in such a way that it will transport heat to or away from

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 D02.07.0D on Wax Related Viscometric Properties of Fuels and Oils.

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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.