



Standard Test Method for No Flow Point and Pour Point of Petroleum Products and Liquid Fuels¹

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1. Scope*

1.1 This test method covers the determination of the no flow point and pour point of petroleum products, liquid fuels, biodiesel, and biodiesel blends using an automatic instrument.

1.2 The measuring range of the apparatus is from -95°C to 45°C , however the precision statements were derived only from samples with no flow point temperatures from -77°C to $+2^{\circ}\text{C}$ and samples with pour point in the temperature range of -58°C to $+12^{\circ}\text{C}$.

1.3 Pour point results from this test method can be reported at 1°C or 3°C intervals.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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:²

- D97 Test Method for Pour Point of Petroleum Products
- D4057 Practice for Manual Sampling of Petroleum and Petroleum Products
- D4177 Practice for Automatic Sampling of Petroleum and Petroleum Products
- D6300 Practice for Determination of Precision and Bias Data for Use in Test Methods for Petroleum Products and Lubricants
- D6708 Practice for Statistical Assessment and Improvement

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

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

of Expected Agreement Between Two Test Methods that Purport to Measure the Same Property of a Material

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 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 formation or viscosity increase, or both, is sufficient to impede 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, have progressed to the point where the applied observation device no longer detects movement under the conditions of the test.

4. Summary of Test Method

4.1 After inserting the test specimen into the automatic no flow point apparatus and initiating the program, the test specimen is heated, if necessary, to a starting temperature and then cooled by prescribed rates. The test specimen is continuously tested for flow characteristics by continuously monitoring the air pressure variation inside the test specimen vial. When the specimen is still fluid, its movement will partially compensate for the reduction in air pressure in the test chamber above the test specimen surface. At some temperature the pressure measuring system detects a pressure decrease due to incapability of the test specimen to flow caused by a crystal structure formation in the specimen or its viscosity increase, or both. This temperature is recorded as no flow point with a resolution of 0.1°C . The pour point is recorded by rounding the no flow point temperature to either the next warmer 1°C interval or 3°C interval. The test specimen is then reheated to allow for removal from the test chamber.

5. Significance and Use

5.1 The no flow point of a petroleum product is an index of the lowest temperature of its utility for some applications. Flow

*A Summary of Changes section appears at the end of this standard