



Designation: D7279 – 20

Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids by Automated Houillon Viscometer¹

This standard is issued under the fixed designation D7279; 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 This test method covers the measurement of the kinematic viscosity of transparent and opaque liquids; such as base oils, formulated oils, diesel oil, biodiesel, biodiesel blends, residual fuel oils, marine fuels, and used lubricating oils using a Houillon viscometer in automated mode.

1.2 The range of kinematic viscosity capable of being measured by this test method is from 2 mm²/s to 2500 mm²/s (see Fig. 1). The range is dependent on the tube constant utilized. The temperature range that the apparatus is capable of achieving is between 20 °C and 150 °C, inclusive. However, the precision has only been determined for the viscosity range; 2 mm²/s to 478 mm²/s at 40 °C for base oils, formulated oils, diesel oil, biodiesel, and biodiesel blends; 3 mm²/s to 106 mm²/s at 100 °C for base oils and formulated oils; 25 mm²/s to 150 mm²/s at 40 °C and 5 mm²/s to 16 mm²/s at 100 °C for used lubricating oils; 25 mm²/s to 2500 mm²/s at 50 °C and 6 mm²/s to 110 mm²/s at 100 °C for residual fuels. As indicated for the materials listed in the precision section.

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

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. For specific warning statements, see Section 7.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

- D445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)
- D2162 Practice for Basic Calibration of Master Viscometers and Viscosity Oil Standards
- D4057 Practice for Manual Sampling of Petroleum and Petroleum Products
- D4177 Practice for Automatic Sampling of Petroleum and Petroleum Products
- D6299 Practice for Applying Statistical Quality Assurance and Control Charting Techniques to Evaluate Analytical Measurement System Performance
- D6300 Practice for Determination of Precision and Bias Data for Use in Test Methods for Petroleum Products, Liquid Fuels, and Lubricants
- D6708 Practice for Statistical Assessment and Improvement of Expected Agreement Between Two Test Methods that Purport to Measure the Same Property of a Material
- D6792 Practice for Quality Management Systems in Petroleum Products, Liquid Fuels, and Lubricants Testing Laboratories
- D7962 Practice for Determination of Minimum Immersion Depth and Assessment of Temperature Sensor Measurement Drift
- D8278 Specification for Digital Contact Thermometers for Test Methods Measuring Flow Properties of Fuels and Lubricants
- E563 Practice for Preparation and Use of an Ice-Point Bath as a Reference Temperature
- E1750 Guide for Use of Water Triple Point Cells

2.2 ISO Standards:

- ISO 5725 Accuracy (Trueness and Precision) of Measurement Methods and Results³

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.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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