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.

Designation: D1322 – 19

An American National Standard

Designation: 598/12

Standard Test Method for Smoke Point of Kerosene and Aviation Turbine Fuel[1]

This standard is issued under the fixed designation D1322; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This test method covers two procedures for determination of the smoke point of kerosene and aviation turbine fuel, a manual procedure and an automated procedure, which give results with different precision.

1.2 The automated procedure is the referee procedure.

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.*

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]

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

D6299 Practice for Applying Statistical Quality Assurance and Control Charting Techniques to Evaluate Analytical Measurement System Performance

2.2 *Energy Institute Standard:*[3]

IP 367 Petroleum products—Determination and application of precision data in relation to methods of test

IP 598 Petroleum products—Determination of the smoke point of kerosene, manual and automated method

NOTE 1—Only IP 598 published in 2012 by the Institute of Petroleum (now Energy Institute) is equivalent to D1322; IP 57 is not equivalent.

3. Terminology

3.1 *Definitions:*

3.1.1 *aviation turbine fuel, n*—refined petroleum distillate, generally used as a fuel for aviation gas turbines.

3.1.1.1 *Discussion*—Different grades are characterized by volatility ranges, freeze point, and by flash point.

3.1.2 *kerosene, n*—refined petroleum distillate, boiling between 140 °C and 300 °C, generally used in lighting and heating applications.

3.1.2.1 *Discussion*—Different grades are characterized by volatility ranges and sulfur content.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *smoke point, n*—the maximum height, in millimetres, of a smokeless flame of fuel burned in a wick-fed lamp of specified design.

4. Summary of Test Method

4.1 The sample is burned in an enclosed wick-fed lamp that is calibrated against pure hydrocarbon blends of known smoke point. The maximum height of flame that can be achieved with the test fuel without smoking determined by the manual and automated apparatus is reported to the nearest 0.1 mm.

5. Significance and Use

5.1 This test method provides an indication of the relative smoke producing properties of kerosenes and aviation turbine fuels in a diffusion flame. The smoke point is related to the hydrocarbon type composition of such fuels. Generally the

[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.J0.03 on Combustion and Thermal Properties.

Current edition approved Nov. 1, 2019. Published December 2019. Originally approved in 1954. Last previous edition approved in 2018 as D1322 – 18. DOI: 10.1520/D1322-19.

[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 Energy Institute, 61 New Cavendish St., London, WIG 7AR, U.K., http://www.energyinst.org.uk.

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

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. United States