



Designation: D5399 – 09 (Reapproved 2023)

Standard Test Method for Boiling Point Distribution of Hydrocarbon Solvents by Gas Chromatography¹

This standard is issued under the fixed designation D5399; 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 determination of the boiling point distribution of hydrocarbon solvents by capillary gas chromatography. This test method is limited to samples having a minimum initial boiling point of 37 °C (99 °F), a maximum final boiling point of 285 °C (545 °F), and a boiling range of 5 °C to 150 °C (9 °F to 270 °F) as measured by this test method.

1.2 For purposes of determining conformance of an observed or calculated value using this test method to relevant specifications, test result(s) shall be rounded off “to the nearest unit” in the last right-hand digit used in expressing the specification limit, in accordance with the rounding-off method of Practice E29.

1.3 The values stated in SI units are standard. The values given in parentheses are for information purposes only.

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

D86 Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.35 on Solvents, Plasticizers, and Chemical Intermediates.

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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.

D850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials

D1078 Test Method for Distillation Range of Volatile Organic Liquids

D2887 Test Method for Boiling Range Distribution of Petroleum Fractions by Gas Chromatography

D2892 Test Method for Distillation of Crude Petroleum (15-Theoretical Plate Column)

D3710 Test Method for Boiling Range Distribution of Gasoline and Gasoline Fractions by Gas Chromatography (Withdrawn 2014)³

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Terminology

3.1 Definitions:

3.1.1 *initial boiling point (IBP)*, *n*—the point at which a cumulative area count equal to 0.5 % of the total area under the chromatogram is obtained.

3.1.2 *final boiling point (FBP)*, *n*—the point at which a cumulative area count equal to 99.5 % of the total area under the chromatogram is obtained.

4. Summary of Test Method

4.1 The sample is introduced into a capillary gas chromatographic column that separates hydrocarbons in the order of increasing boiling point. The column temperature is raised at a reproducible rate and the area under the chromatogram is recorded throughout the run. Boiling points are assigned from a calibration curve obtained under the same conditions by running a known mixture of hydrocarbons covering the boiling range expected in the sample. From these data, the boiling point distribution of the sample is obtained.

5. Significance and Use

5.1 The gas chromatographic determination of the boiling point distribution of hydrocarbon solvents can be used as an

³ The last approved version of this historical standard is referenced on www.astm.org.