



Designation: D6550 – 20

Standard Test Method for Determination of Olefin Content of Gasolines by Supercritical-Fluid Chromatography¹

This standard is issued under the fixed designation D6550; 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 total amount of olefins in blended motor gasolines and gasoline blending stocks by supercritical-fluid chromatography (SFC). Results are expressed in terms of mass percent olefins. The method working range is from expected concentration of 1 % by mass to expected concentration of 25 % by mass total olefins.

1.2 This test method can be used for analysis of commercial gasolines, including those containing varying levels of oxygenates, such as methyl *tert*-butyl ether (MTBE), diisopropyl ether (DIPE), methyl *tert*-amyl ether (TAME), and ethanol, without interference.

NOTE 1—This test method has not been designed for the determination of the total amounts of saturates, aromatics, and oxygenates.

1.3 This test method includes a relative bias section based on Practice D6708 accuracy assessment between Test Method D6550 mass percent and Test Method D1319 volume percent for total olefins in spark-ignition engine fuels as a possible Test Method D6550 alternative to Test Method D1319 for U.S. EPA regulations reporting. The Practice D6708 derived correlation equation is only applicable for test result range from 0.53 % to 26.88 % by mass as reported by Test Method D6550.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *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

- D1319 Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption
- D4052 Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter
- D5186 Test Method for Determination of the Aromatic Content and Polynuclear Aromatic Content of Diesel Fuels By Supercritical Fluid Chromatography
- D6296 Test Method for Total Olefins in Spark-ignition Engine Fuels by Multidimensional Gas Chromatography
- 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
- D6839 Test Method for Hydrocarbon Types, Oxygenated Compounds, and Benzene in Spark Ignition Engine Fuels by Gas Chromatography

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *critical pressure, n* —the pressure needed to condense a gas to a liquid at the critical temperature.

3.1.2 *critical temperature, n* —the highest temperature at which a gaseous fluid can be condensed to a liquid by means of compression.

3.1.3 *supercritical fluid, n* —a fluid maintained above its critical temperature and critical pressure.

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 D02.04.0C on Liquid Chromatography.

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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.

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