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: D7753 – 12 (Reapproved 2020)

Standard Test Method for Hydrocarbon Types and Benzene in Light Petroleum Distillates by Gas Chromatography[1]

This standard is issued under the fixed designation D7753; 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 and provides for the quantitative determination of total saturates, total olefins, total aromatics and benzene in light petroleum distillates having a final boiling point below 215 °C by multidimensional gas chromatography. Each hydrocarbon grouping as well as benzene can be reported in both volume and mass percent.

1.2 This test method is applicable to light petroleum distillates such as oxygenate-free motor gasoline or spark ignition fuels, naphthas and hydrocarbon solvents over the content ranges from 1 % (V/V) to 70 % (V/V) total olefins, 1 % (V/V) to 80 % (V/V) total aromatics and 0.2 % to 10 % (V/V) benzene. This test method may apply to concentrations outside these ranges, but the precision has not been determined. Interlaboratory testing for precision used full range blending streams, such as FCC, reformates and spark ignition fuel or blended motor gasolines.

1.3 This test method is not intended to determine oxygenated components. Light petroleum distillate products such as motor gasoline may contain oxygenates. Oxygenates such as methyl *tert*-butyl ether (MTBE), *tert*-amyl methyl ether (TAME), ethyl *tert*-butyl ether (ETBE), ethanol and methanol etc. will coelute with specific hydrocarbon groups. If there is any suspicion the sample contains oxygenates, the absence of oxygenates should be confirmed by other standard test methods such as Test Methods D4815, D5599, or D6839 before using this test method.

1.4 This test method is not applicable for the determination of individual hydrocarbon components with the exception of benzene. Test Method D6733 may be used to determine a large number of individual hydrocarbons to complement this test method.

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

1.6 *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.*

1.7 *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]

D4815 Test Method for Determination of MTBE, ETBE, TAME, DIPE, tertiary-Amyl Alcohol and C_1 to C_4 Alcohols in Gasoline by Gas Chromatography

D5599 Test Method for Determination of Oxygenates in Gasoline by Gas Chromatography and Oxygen Selective Flame Ionization Detection

D6733 Test Method for Determination of Individual Components in Spark Ignition Engine Fuels by 50-Metre Capillary High Resolution Gas Chromatography

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 *aromatics, n*—mass or volume % of monocyclic aromatics and polycyclic aromatics (for example, naphthalenes), aromatic olefins and C_8^+ cyclodienes compounds.

3.1.2 *C_7^+ aromatics, n*—mass or volume % of all other aromatics compounds (see 3.1.1) in sample not including benzene.

3.1.3 *olefins, n*—mass or volume % of alkenes, plus cycloalkenes and some di-olefins.

[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 D02.04.0L on Gas Chromatography Methods.

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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.

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