



Designation: D5845 – 21

Standard Test Method for Determination of MTBE, ETBE, TAME, DIPE, Methanol, Ethanol and *tert*-Butanol in Gasoline by Infrared Spectroscopy¹

This standard is issued under the fixed designation D5845; 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 methanol, ethanol, *tert*-butanol, methyl *tert*-butyl ether (MTBE), ethyl *tert*-butyl ether (ETBE), *tert*-amyl methyl ether (TAME), and diisopropyl ether (DIPE) in gasoline by infrared spectroscopy. The test method is suitable for determining methanol from 1.7 % to 5.5 % by mass, ethanol from 1.5 % to 10 % by mass, *tert*-butanol from 1.6 % to 12 % by mass, DIPE from 1.2 % to 17 % by mass, MTBE from 2.0 % to 16.4 % by mass, ETBE from 2.0 % to 18.5 % by mass, and TAME from 1.5 % to 18.5 % by mass.

1.2 This test method is applicable to oxygenate(s) in gasoline singularly or in multiple mixtures hereof according to the oxygenates and mass percent ranges given in 1.1.

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

- D1298 Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method
- D4052 Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter
- D4057 Practice for Manual Sampling of Petroleum and Petroleum Products
- D4307 Practice for Preparation of Liquid Blends for Use as Analytical Standards
- D4815 Test Method for Determination of MTBE, ETBE, TAME, DIPE, tertiary-Amyl Alcohol and C₁ to C₄ Alcohols in Gasoline by Gas Chromatography
- D5599 Test Method for Determination of Oxygenates in Gasoline by Gas Chromatography and Oxygen Selective Flame Ionization Detection
- D8321 Practice for Development and Validation of Multivariate Analyses for Use in Predicting Properties of Petroleum Products, Liquid Fuels, and Lubricants based on Spectroscopic Measurements

NOTE 1—D5845 was developed with reference to E1655. A significant enhancement has been made to E1655 and is designated as D8321. D8321 is the preferred standard Practice and describes the mathematics, that is, the regression algorithms to develop calibration equations that are also described in E1655. Replace E1655 with D8321.

NOTE 2—Surrogate methods such as D5845 may indicate that they make use of the creation of multivariate calibration equations described therein D8321, but they should not claim to follow the procedures described herein.

2.2 Other Standard:³

GC/OFID EPA Test Method—Oxygen and Oxygenate Content Analysis (by way of gas chromatography with oxygen-selective flame ionization detection)

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 D02.04.0F on Absorption Spectroscopic 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.

³ Code of Federal Regulations, Part 80 of Title 40, Section 80.46(g); also published in the Federal Register, Volume 59, No. 32, February 16, 1994, p 7828.

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