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# Standard Specification for Methyl Tertiary-Butyl Ether (MTBE) for Downstream Blending for Use in Automotive Spark-Ignition Engine Fuel<sup>1</sup>

This standard is issued under the fixed designation D5983; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers requirements for fuel grade methyl tertiary-butyl ether utilized in commerce, terminal blending, or downstream blending with fuels for spark-ignition engines. Other MTBE grades may be available for blending that are not covered by this specification.

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

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

- D130 Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test
- D156 Test Method for Saybolt Color of Petroleum Products (Saybolt Chromometer Method)
- D381 Test Method for Gum Content in Fuels by Jet Evaporation
- D1298 Test Method for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method
- D4045 Test Method for Sulfur in Petroleum Products by Hydrogenolysis and Rateometric Colorimetry
- 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
- D4176 Test Method for Free Water and Particulate Contamination in Distillate Fuels (Visual Inspection Procedures)
- D4177 Practice for Automatic Sampling of Petroleum and Petroleum Products
- D4306 Practice for Aviation Fuel Sample Containers for

### Tests Affected by Trace Contamination

- D4814 Specification for Automotive Spark-Ignition Engine Fuel
- D4953 Test Method for Vapor Pressure of Gasoline and Gasoline-Oxygenate Blends (Dry Method)
- D5441 Test Method for Analysis of Methyl Tert-Butyl Ether (MTBE) by Gas Chromatography
- D5854 Practice for Mixing and Handling of Liquid Samples of Petroleum and Petroleum Products
- E203 Test Method for Water Using Volumetric Karl Fischer Titration
- E300 Practice for Sampling Industrial Chemicals
- E1064 Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration

## 3. Terminology

### 3.1 Definitions:

- 3.1.1 *methanol, n*—the chemical compound  $\text{CH}_3\text{OH}$ .
- 3.1.2 *methyl tertiary-butyl ether (MTBE), n*—the chemical compound  $(\text{CH}_3)_3\text{COCH}_3$  [ $\text{C}_5\text{H}_{12}\text{O}$ ].
- 3.1.3 *oxygenate, n*—an oxygen-containing ashless, organic compound, such as an alcohol or ether, which may be used as a fuel or fuel supplement.

## 4. Performance Requirements

4.1 Methyl tertiary-butyl ether utilized in commerce, terminal blending, or downstream blending with fuels for ground vehicles equipped with spark-ignition engines shall conform to the requirements of **Table 1**.

NOTE 1—Individual applications may require a more restrictive sulfur limit. These requirements are to be negotiated between buyer and seller.

## 5. Workmanship

5.1 The MTBE shall be visually free of undissolved water, sediment, and suspended matter. It shall be clear and bright at the ambient temperature or  $21^\circ\text{C}$ , whichever is higher.

5.2 The specification defines only a basic purity for this product. The product shall be free of any adulterant or contaminant that may render the material unacceptable for its commonly used applications.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.A0.02 on Oxygenated Fuels and Components.

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<sup>2</sup> 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.