Designation: D 5983 – 97

An American National Standard

AMERICAN SOCIETY FOR TESTING AND MATERIALS
100 Barr Harbor Dr., West Conshohocken, PA 19428
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Standard Specification for Methyl *Tertiary*-Butyl Ether (MTBE) for Downstream Blending for Use in Automotive Spark-Ignition Engine Fuel[1]

This standard is issued under the fixed designation D 5983; 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 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 the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 *ASTM Standards:*

D 130 Test Method for Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test[2]

D 156 Test Method for Saybolt Color of Petroleum Products (Saybolt Chromometer Method)[2]

D 381 Test Method for Existent Gum in Fuels by Jet Evaporation[2]

D 1298 Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method[2]

D 4045 Test Method for Sulfur in Petroleum Products by Hydrogenolysis and Rateometric Colorimetry[3]

D 4052 Test Method for Density and Relative Density of Liquids by Digital Density Meter[3]

D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products[3]

D 4176 Test Method for Free Water and Particulate Contamination in Distillate Fuels (Visual Inspection Procedures)[3]

D 4953 Test Method for Vapor Pressure of Gasoline and Gasoline-Oxygenate Blends (Dry Method)[4]

D 5441 Test Method for Analysis of Methyl *tert*-Butyl Ether (MTBE) by Gas Chromatography[4]

E 203 Test Method for Water Using Volumetric Karl Fischer Titration[5]

E 300 Practice for Sampling Industrial Chemicals[5]

E 1064 Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration[5]

3. Terminology

3.1 *Definitions:*

3.1.1 methanol, *n*—the chemical compound CH_3OH.

3.1.2 methyl tertiary-butyl ether (MTBE), *n*—the chemical compound $(CH_3)_3COCH_3[C_5H_{12}O]$.

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°C (70°F), 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.

6. Sampling

6.1 Samples may be obtained by an appropriate procedure of Practice D 4057 or Practice E 300. Do not use soldered metal containers although they are specified in 11.3 of Practice E 300, because the soldering flux in the containers may contaminate the sample. Some soldered cans, such as those conforming to the requirements of 7.1 of Practice D 4057 are acceptable, but because they cannot readily be distinguished from cans which do not meet this specification, the use of metal containers is to be avoided.

[1] This specification is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricantsand is the direct responsibility of Subcommittee D02.Aon Gasoline and Oxygenated Fuels.

Current edition approved Apr. 10, 1997. Published October 1997. Originally published as D 5983 – 96. Last previous edition D 5983 – 96.

[2] *Annual Book of ASTM Standards*, Vol 05.01.

[3] *Annual Book of ASTM Standards*, Vol 05.02.

[4] *Annual Book of ASTM Standards*, Vol 05.03.

[5] *Annual Book of ASTM Standards*, Vol 15.05.