



Designation: D7901 – 20

Standard Specification for Dimethyl Ether for Fuel Purposes¹

This standard is issued under the fixed designation D7901; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

1. Scope*

1.1 This specification covers dimethyl ether (DME) for use as a fuel in engines specifically designed or modified for DME and for blending with liquefied petroleum gas (LPG). This specification is for use by manufacturers of dimethyl ether, by engine developers of purpose-built engines, in contracts for the purchase of DME for fuel purposes, and for the guidance of consumers of this type of fuel.

NOTE 1—The generation and dissipation of static electricity can create problems in the handling of DME. For more information on the subject, see Guide D4865.

1.2 The values stated in SI units are to be regarded as standard. Units in parentheses are for information only.

1.3 *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.*

1.4 *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

- D1265 Practice for Sampling Liquefied Petroleum (LP) Gases, Manual Method
- D1267 Test Method for Gauge Vapor Pressure of Liquefied Petroleum (LP) Gases (LP-Gas Method)
- D1838 Test Method for Copper Strip Corrosion by Liquefied Petroleum (LP) Gases

¹ This specification is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.H0 on Liquefied Petroleum Gas.

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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.

- D2158 Test Method for Residues in Liquefied Petroleum (LP) Gases
- D2163 Test Method for Determination of Hydrocarbons in Liquefied Petroleum (LP) Gases and Propane/Propene Mixtures by Gas Chromatography
- D3700 Practice for Obtaining LPG Samples Using a Floating Piston Cylinder
- D4865 Guide for Generation and Dissipation of Static Electricity in Petroleum Fuel Systems
- D6667 Test Method for Determination of Total Volatile Sulfur in Gaseous Hydrocarbons and Liquefied Petroleum Gases by Ultraviolet Fluorescence
- D6897 Test Method for Vapor Pressure of Liquefied Petroleum Gases (LPG) (Expansion Method)
- D7756 Test Method for Residues in Liquefied Petroleum (LP) Gases by Gas Chromatography with Liquid, On-Column Injection
- D7828 Test Method for Determination of Residue Composition in Liquefied Petroleum Gas (LPG) Using Automated Thermal Desorption/Gas Chromatography (ATD/GC)

2.2 Other Documents:

- NFPA 77 Recommended Practice on Static Electricity³
- ISO/DIS 17196 Dimethyl ether (DME) for fuels—Determination of impurities—Gas chromatographic method⁴
- ISO 17197 Dimethyl ether (DME) for fuels—Determination of water content—Karl Fischer titration method⁴

3. Terminology

3.1 Abbreviations:

- 3.1.1 *DME*—dimethyl ether, the chemical compound (CH_3OCH_3).
- 3.1.2 *LPG*—liquefied petroleum gas.

4. Hazards

4.1 *Warning*—Dimethyl ether is a highly flammable, colorless gas with a faint ether-like odor. It is shipped and stored in a pressurized, liquefied state, much like LPG. Unlike LPG,

³ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, <http://www.nfpa.org>.

⁴ Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, <http://www.iso.org>.

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