



Designation: D8181 – 18a

Standard Specification for Microemulsion Blendstock for Preparing Microemulsion Test Fuel Oils¹

This standard is issued under the fixed designation D8181; 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 describes an alcohol-carboxylic acid blendstock which is to be blended with fuel oils to produce a microemulsion of inverse micelles that is to be used as a test fuel oil.

NOTE 1—Microemulsion blendstocks shall not include substances such as raw vegetable oil triglycerides. Refer to Appendix X2.1.2, Composition, for details.

1.1.1 The microemulsion blendstock shall be stored in special facilities and drums or tanks that are suited for low flashpoint liquids and oxygenated products.

1.2 The microemulsion blendstock is to be blended with fuel oils to produce a microemulsion test fuel oil that is intended for testing and demonstration purposes in specialty applications such as compression-ignition engine and burner fuel applications.

NOTE 2—Typical fuel oils that could be used for blending with microemulsion blendstock are fuels that comply with Specifications D975 and D396 and may contain up to 5 % by volume biodiesel.

NOTE 3—Testing with test fuels containing 10 % microemulsion blendstock using B5 as a base fuel did not show any detrimental changes to specified fuel properties relative to B0 base fuels, but can impair measurement of microemulsion blendstock concentration.

1.2.1 The microemulsion test fuel oil (to be made from this blendstock) is to be used for demonstration purposes only in specific equipment and vehicles that are suited for use with low flashpoint fuels and oxygenated fuels such as ethanol.

NOTE 4—The low flash point of this blendstock relative to conventional diesel fuel increases certain hazards during storage and distribution.

1.3 Nothing in this specification shall preclude observance of federal, state, or local regulations, which may be more restrictive.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

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.E0 on Burner, Diesel, Non-Aviation Gas Turbine, and Marine Fuels.

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1.5 *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.*

1.6 *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

- D97 Test Method for Pour Point of Petroleum Products
- D130 Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test
- D396 Specification for Fuel Oils
- D445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)
- D664 Test Method for Acid Number of Petroleum Products by Potentiometric Titration
- D665 Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water
- D974 Test Method for Acid and Base Number by Color-Indicator Titration
- D975 Specification for Diesel Fuel Oils
- D3242 Test Method for Acidity in Aviation Turbine Fuel
- D4057 Practice for Manual Sampling of Petroleum and Petroleum Products
- D4175 Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants
- D4625 Test Method for Middle Distillate Fuel Storage Stability at 43 °C (110 °F)
- D4806 Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel

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.

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