Designation: D7563 – 10 (Reapproved 2016)

Standard Test Method for Evaluation of the Ability of Engine Oil to Emulsify Water and Simulated Ed85 Fuel[1]

This standard is issued under the fixed designation D7563; 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 describes a qualitative procedure to measure the ability of a specific volume of engine oil to emulsify a specific added volume of combined water and simulated Ed85 fuel upon agitation in a high-speed blender and to retain this emulsified state for at least 24 h at temperatures of both 20 °C to 25 °C and –5 °C to 0 °C.

1.2 Information Letters are published periodically by the ASTM Test Monitoring Center (TMC) to update this and other test methods under the jurisdiction of Subcommittee D02.B0. Copies of these letters can be obtained by writing the Center.[2]

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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[3]

D1193 Specification for Reagent Water

D4175 Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants

D4485 Specification for Performance of Active API Service Category Engine Oils

D4806 Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel

D5798 Specification for Ethanol Fuel Blends for Flexible-Fuel Automotive Spark-Ignition Engines

D5854 Practice for Mixing and Handling of Liquid Samples of Petroleum and Petroleum Products

E1272 Specification for Laboratory Glass Graduated Cylinders

3. Terminology

3.1 *Definitions:*

3.1.1 *denatured fuel ethanol, n*—fuel ethanol made unfit for beverage use by the addition of denaturants. **D4806**

3.1.2 *fuel ethanol (Ed75-Ed85), n*—blend of ethanol and hydrocarbon of which the ethanol portion is nominally 75 to 85 volume % denatured fuel ethanol. **D5798**

3.1.3 *engine oil, n*—liquid that reduces friction or wear, or both, between the moving parts within an engine; removes heat, particularly from the underside of pistons; and serves as a combustion gas sealant for piston rings.

3.1.3.1 *Discussion*—It may contain additives to enhance certain properties. Inhibition of engine rusting, deposit formation, valve train wear, oil oxidation, and foaming are examples. **D4175**

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *simulated Ed85 fuel, n*—laboratory blend made to simulate Ed85 fuel by mixing 85 % denatured fuel ethanol and 15 % unleaded gasoline by volume.

3.2.2 *test oil, n*—any engine oil subjected to evaluation in this test method.

4. Summary of Test Method

4.1 Distilled water, simulated Ed85 fuel, and the test oil are emulsified in a high-speed blender. Portions of the resulting emulsion are stored in two graduated cylinders (or suitably dimensioned alternative containers) at temperatures of 20 °C to 25 °C and –5 °C to 0 °C for 24 h. Presence or absence of an aqueous layer at the bottom of either of the containers after this time interval is observed and reported.

5. Significance and Use

5.1 During engine operation, engine oil can become contaminated by water and fuel. In the case of Ed85 fuels, this

[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.B0.07 on Development and Surveillance of Bench Tests Methods.

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[2] Information letters may be obtained from the ASTM Test Monitoring Center, 6555 Penn Avenue, Pittsburgh, PA 15206-4489. www.standards.astmtmc.cmu.edu.

[3] 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.

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