Designation: D7097 – 16a

Standard Test Method for Determination of Moderately High Temperature Piston Deposits by Thermo-Oxidation Engine Oil Simulation Test—TEOST MHT[1]

This standard is issued under the fixed designation D7097; 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 covers the procedure to determine the mass of deposit formed on a specially constructed test rod exposed to repetitive passage of 8.5 g of engine oil over the rod in a thin film under oxidative and catalytic conditions at 285 °C. The range of applicability of the Moderately High Temperature Thermo-Oxidation Engine Test (TEOST MHT[2]) test method as derived from an interlaboratory study is approximately 10 mg to 100 mg. However, experience indicates that deposit values from 1 mg to 150 mg or greater may be obtained.

1.2 This test method uses a patented instrument, method and patented, numbered, and registered depositor rods traceable to the manufacturer[3] and made specifically for the practice and precision of the test method.[4]

1.3 The values stated in SI units are to be regarded as standard.

1.3.1 Although not an SI unit, the special name liter (L) is allowed by SI for the cubic decimeter (dm^3) and the milliliter (mL) for the SI cubic centimeter (cm^3). Likewise, the special name millimeter (mm) is allowed by SI as a measurement of length.

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:*[5]

D4485 Specification for Performance of Active API Service Category Engine Oils

D6335 Test Method for Determination of High Temperature Deposits by Thermo-Oxidation Engine Oil Simulation Test

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *bubble airflow gauge, n*—a precision bore glass tube marked in tenths of a milliliter used to measure accurately the flow rate of air around and past the depositor rod and to calibrate mass air flow controllers recommended for use in the procedure.

3.1.2 *depositor rod deposits, n*—particulate matter formed on the depositor rod surface by oxidation of the thin film of passing oil exposed to the rod temperature and air, and weighed after appropriate washing and drying to obtain the net mass gain.

3.1.3 *filter deposits, n*—particulates washed from the depositor rod after the test and collected on a special multi-layer filter cartridge.

3.1.4 *TEOST*[2], *n*—an acronym for Thermo-Oxidation Engine Oil Simulation Test.

3.1.5 *total rod deposits, n*—the mass of deposits collected on the depositor rod plus any mass of deposits washed from the depositor rod and later extracted on a filter.

3.1.6 *volatilized oil, n*—oil vapor coalesced on the mantle wall, and subsequently collected in a vial.

3.2 *Abbreviations:*

[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 D02.09.0G on Oxidation Testing of Engine Oils.

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[2] TEOST and MHT are registered trademarks of the Tannas Co. (Reg. 2001396), Tannas Company, 4800 James Savage Rd., Midland, MI 48642.

[3] The sole source of supply of the apparatus known to the committee at this time is Tannas Company, 4800 James Savage Rd., Midland, MI 48642. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,[1] which you may attend.

[4] The TEOST instrument, method and rod are patented. Interested parties are invited to submit information regarding the identification of an alternative(s) to this patented technology to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,[1] which you may attend.

[5] 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**

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