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.

Designation: D7873 – 20

Standard Test Method for Determination of Oxidation Stability and Insolubles Formation of Inhibited Turbine Oils at 120 °C Without the Inclusion of Water (Dry TOST Method)[1]

This standard is issued under the fixed designation D7873; 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 is used to evaluate the sludging tendencies of steam and gas turbine lubricants during the oxidation process in the presence of oxygen and metal catalyst (copper and iron) at an elevated temperature. This test method may be used to evaluate industrial oils (for example, circulating oils and so forth).

1.2 This test method is a modification of Test Method D4310 where the sludging and corrosion tendencies of the same kinds of oils are determined after 1000 h at 95 °C in the presence of water. Water is omitted in this modification.

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

1.3.1 *Exception*—The values in parentheses in some of the figures are provided for information only for those using old equipment based on non-SI units.

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

1.5 **WARNING**—Mercury has been designated by many regulatory agencies as a hazardous substance that can cause serious medical issues. Mercury, or its vapor, has been demonstrated to be hazardous to health and corrosive to materials. Use Caution when handling mercury and mercury-containing products. See the applicable product Safety Data Sheet (SDS) for additional information. The potential exists that selling mercury or mercury-containing products, or both, is prohibited by local or national law. Users must determine legality of sales in their location.

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]

A510M Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel (Metric) (Withdrawn 2011)[3]

B1 Specification for Hard-Drawn Copper Wire

D943 Test Method for Oxidation Characteristics of Inhibited Mineral Oils

D1193 Specification for Reagent Water

D2272 Test Method for Oxidation Stability of Steam Turbine Oils by Rotating Pressure Vessel

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

D4310 Test Method for Determination of Sludging and Corrosion Tendencies of Inhibited Mineral Oils

E1 Specification for ASTM Liquid-in-Glass Thermometers

E230/E230M Specification for Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples

2.2 *Other Standards:*

Specification for IP Standard Thermometers[4]

ISO 3696 Water for Analytical Laboratory Use—Specification and Test Methods[5]

3. Terminology

3.1 *Definitions:*

3.1.1 *sludge, n*—a precipitate or sediment from oxidized mineral oil that is insoluble in n-heptane.

[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 D02.09.0C on Oxidation of Turbine Oils.

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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.

[3] The last approved version of this historical standard is referenced on www.astm.org.

[4] Available from Energy Institute, 61 New Cavendish St., London, WIG 7AR, U.K., http://www.energyinst.org.

[5] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

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

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