Designation: D 4858 – 02

An American National Standard

Standard Test Method for Determination of the Tendency of Lubricants to Promote Preignition in Two-Stroke-Cycle Gasoline Engines[1]

This standard is issued under the fixed designation D 4858; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This test method[2] evaluates the performance of lubricants intended for use in two-stroke-cycle spark-ignition gasoline engines which are prone to preignition.

1.2 *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.*

1.3 The values stated in SI units are the standard. The values given in parentheses are provided for information only.

2. Referenced Documents

2.1 *ASTM Standards:*

B 152 Specification for Copper Sheet, Strip, Plate, and Rolled Bar[3]

D 439 Specification for Automotive Gasoline[4]

D 445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)[4]

D 664 Test Method for Acid Number of Petroleum Products by Potentiometric Titration[4]

D 874 Test Method for Sulfated Ash from Lubricating Oils and Additives[4]

D 910 Specification for Aviation Gasolines[4]

D 2270 Practice for Calculating Viscosity Index from Kinematic Viscosity at 40° and 100°C[4]

D 2699 Test Method for Research Octane Number of Spark-Ignition Engine Fuel[4]

D 2700 Test Method for Motor Octane Number of Spark-Ignition Engine Fuel[4]

D 2885 Test Method for Research and Motor Method Octane Ratings Using On-Line Analyzers[4]

D 2896 Test Method for Base Number of Petroleum Products by Potentiometric Perchloric Acid Titration[4]

D 4857 Test Method for Determination of the Ability of Lubricants to Minimize Ring Sticking and Piston Deposits in Two-Stroke-Cycle Gasoline Engines Other than Outboards[5]

D 4863 Test Method for Determination of Lubricity of Two-Stroke-Cycle Gasoline Engine Lubricants[5]

E 230 Specification and Temperature-Electromotive Force (EMF) Tables for Standardized Thermocouples[6]

2.2 *ANSI Standard:*

ANSI MC 96.1 American National Standard for Temperature Measurement Thermocouples[7]

3. Terminology

3.1 *Definitions:*

3.1.1 *combustion chamber—in reciprocating internal combustion engines*, the volume bounded by the piston crown and any portion of the cylinder walls extending above the piston crown when in the top dead center position, and the inner surface of the cylinder head including any spark plugs and other inserted components.

3.1.2 *preignition—in a spark-ignition engine*, ignition of the mixture of fuel and air in the combustion chamber before the passage of the spark.

3.1.3 *scuff, scuffing—in lubrication*, damage caused by instantaneous localized welding between surfaces in relative motion that does not result in immobilization of the parts. **D 4863**

3.1.4 *spark plug fouling*—deposition of essentially nonconducting material onto the electrodes of a spark plug that may, but will not necessarily, prevent the plug from operating.

[1] This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.B0 on Automotive Lubricants.

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[2] Until the next revision of this test method, the ASTM Test Monitoring Center will update changes in this test method by means of Information Letters. These can be obtained from the ASTM Test Monitoring Center, 6555 Penn Ave., Pittsburgh, PA 15206-4489. Attention: Administrator. This edition incorporates revisions in all Information Letters through No. 01–3.

[3] *Annual Book of ASTM Standards*, Vol 02.01.

[4] *Annual Book of ASTM Standards*, Vol 05.01.

[5] *Annual Book of ASTM Standards*, Vol 05.02.

[6] *Annual Book of ASTM Standards*, Vol 14.03.

[7] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

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