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: D909 – 22

Method 6012.6—Federal Test Method Standard No. 791b

Standard Test Method for Supercharge Rating of Spark-Ignition Aviation Gasoline[1]

This standard is issued under the fixed designation D909; 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 U.S. Department of Defense.

1. Scope*

1.1 This laboratory test method covers the quantitative determination of supercharge ratings of spark-ignition aviation gasoline. The sample fuel is tested using a standardized single cylinder, four-stroke cycle, indirect injected, liquid cooled, CFR engine run in accordance with a defined set of operating conditions.

1.2 The supercharge rating is calculated by linear interpolation of the knock limited power of the sample compared to the knock limited power of bracketing reference fuel blends.

1.3 The rating scale covers the range from 85 octane number to *Iso*octane + 6.0 mL TEL/U.S. gal.

1.4 The values of operating conditions are stated in SI units and are considered standard. The values in parentheses are the historical inch-pound units. The standardized CFR engine measurements and reference fuel concentrations continue to be in historical units.

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.* Specific precautionary statements are given in Annex A1.

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]

D1193 Specification for Reagent Water

D2268 Test Method for Analysis of High-Purity *n*-Heptane and *Iso*octane by Capillary Gas Chromatography

D3237 Test Method for Lead in Gasoline by Atomic Absorption Spectroscopy

D3341 Test Method for Lead in Gasoline—Iodine Monochloride Method

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

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

D5059 Test Methods for Lead and Manganese in Gasoline by X-Ray Fluorescence Spectroscopy

D6299 Practice for Applying Statistical Quality Assurance and Control Charting Techniques to Evaluate Analytical Measurement System Performance

E344 Terminology Relating to Thermometry and Hydrometry

E456 Terminology Relating to Quality and Statistics

2.2 *CFR Engine Manuals:*[3]

CFR F-4 Form 846 Supercharge Method Aviation Gasoline Rating Unit Installation Manual

CFR F-4 Form 893 Supercharge Method Aviation Gasoline Rating Unit Operation & Maintenance

2.3 *Energy Institute Standard:*[4]

IP 224/02 Determination of Low Lead Content of Light Petroleum Distillates by Dithizone Extraction and Colorimetric Method

[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 D02.01 on Combustion Characteristics.

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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] Available from CFR Engines, Inc., N8 W22577, Johnson Dr., Pewaukee, WI 53186.

[4] Available from Energy Institute, 61 New Cavendish St., London, W1G 7AR, U.K., http://www.energyinst.org.

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

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