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An American National Standard

Standard Specification for Automotive Gasoline¹

This standard is issued under the fixed designation D 439; 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. Consult the DoD Index of Specifications and Standards for the specific year of issue which has been adopted by the Department of Defense.

1. Scope

1.1 This specification guides in establishing the requirements of gasoline for ground vehicles equipped with spark-ignition engines.

1.2 This specification describes various characteristics of gasolines for use over a wide range of operating conditions. It provides for a variation of the volatility of gasoline in accordance with seasonal climatic changes at the locality where the gasoline is used. It neither necessarily includes all types of gasolines that are satisfactory for automotive vehicles, nor necessarily excludes gasolines that may perform unsatisfactorily under certain operating conditions or in certain equipment. The significance of this specification is shown in Appendix X1.

1.3 Gasoline is not the only fuel used in ground vehicles equipped with spark-ignition engines. Blends of gasoline with oxygenates such as alcohols and ethers are common in the marketplace. However, some of the test methods referred to in this specification are not applicable to such blends. A specification that encompasses all fuels for automotive spark-ignition engines has been developed. It appears as Specification D 4814. Refer to Specification D 4814 for information and for requirements and test methods applicable to gasoline-oxygenate blends.

1.4 This specification represents a description of gasolines as of the date of publication. The specification is under continuous review, which may result in revisions based on changes in gasoline or automotive requirements, or both. All users of this specification, therefore, should refer to the latest edition.

NOTE 1—If there is any doubt as to the latest edition of Specification D 439, contact ASTM Headquarters.

1.5 The values stated in SI units are the standard. The values in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:

D 86 Method for Distillation of Petroleum Products²

D 130 Test Method for Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test²

¹ This specification is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.A on Gasoline.

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² Annual Book of ASTM Standards, Vol 05.01.

D 323 Test Method for Vapor Pressure of Petroleum Products (Reid Method)²

D 381 Test Method for Existent Gum in Fuels by Jet Evaporation²

D 525 Test Method for Oxidation Stability of Gasoline (Induction Period Method)²

D 1266 Test Method for Sulfur in Petroleum Products (Lamp Method)²

D 2533 Test Method for Vapor-Liquid Ratio of Spark-Ignition Engine Fuels³

D 2547 Test Method for Lead in Gasoline, Volumetric Chromate Method³

D 2599 Test Method for Lead in Gasoline by X-Ray Spectrometry³

D 2622 Test Method for Sulfur in Petroleum Products (X-Ray Spectrographic Method)³

D 2699 Test Method for Knock Characteristics of Motor Fuels by the Research Method⁴

D 2700 Test Method for Knock Characteristics of Motor and Aviation Fuels by the Motor Method⁴

D 2885 Test Method for Research and Motor Method Octane Ratings Using On-Line Analyzers⁴

D 3116 Test Method for Trace Amounts of Lead in Gasoline³

D 3120 Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry³

D 3229 Test Method for Low Levels of Lead in Gasoline by Wavelength Dispersion X-Ray Spectrometry³

D 3231 Test Method for Phosphorus in Gasoline³

D 3237 Test Method for Lead in Gasoline by Atomic Absorption Spectrometry⁵

D 3341 Test Method for Lead in Gasoline—Iodine Monochloride Method³

D 4814 Specification for Automotive Spark-Ignition Engine Fuel⁵

3. Terminology

3.1 Definitions:

3.1.1 *gasoline*—a volatile mixture of liquid hydrocarbons, generally containing small amounts of additives, suitable for use as a fuel in spark-ignition internal combustion engines.

3.1.2 *oxygenate, n*—an oxygen-containing, ashless, organic compound, such as an alcohol or ether, which may be used as a fuel or fuel supplement.

³ Annual Book of ASTM Standards, Vol 05.02.

⁴ Annual Book of ASTM Standards, Vol 05.04.

⁵ Annual Book of ASTM Standards, Vol 05.03.