



Designation: D5500 – 20a

Standard Test Method for Vehicle Evaluation of Unleaded Automotive Spark-Ignition Engine Fuel for Intake Valve Deposit Formation¹

This standard is issued under the fixed designation D5500; 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 a vehicle test procedure for evaluation of intake valve deposit formation of unleaded spark-ignition engine fuels. This test method uses a 1985 model BMW 318i² vehicle. Mileage is accumulated following a specified driving schedule on either public road or test track. This test method is adapted from the original BMW of North America/Southwest Research Institute Intake Valve Deposit test and maintains as much commonality as possible with the original test. Chassis dynamometers shall not be used for this test procedure as the BMW NA/SwRI IVD Test was not intended to be applicable to chassis dynamometers and no correlation between road operation and chassis dynamometers has been established.

NOTE 1—If there is any doubt as to the latest edition of Test Method D5500, contact ASTM International.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.3 *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 statements on hazards are given throughout this test method.

1.4 *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.*

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.A0.01 on Gasoline and Gasoline-Oxygenate Blends.

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² Originally obtained from BMW NA new car dealerships in the United States as a 1985 model year vehicle, the vehicle is currently available through the used vehicle market.

2. Referenced Documents

2.1 ASTM Standards:³

D235 Specification for Mineral Spirits (Petroleum Spirits) (Hydrocarbon Dry Cleaning Solvent)

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

D4814 Specification for Automotive Spark-Ignition Engine Fuel

2.2 ANSI Standard:

MC 96.1 American National Standard for Temperature Measurement Thermocouples⁴

3. Terminology

3.1 For general terminology, refer to Terminology D4175.

3.2 Definitions:

3.2.1 *base fuel, n—in automotive spark-ignition engine fuels*, a material composed primarily of hydrocarbons that may also contain oxygenates, anti-oxidants, corrosion inhibitors, metal deactivators, and dyes but does not contain deposit control or lead additives.

3.2.1.1 *Discussion*—A jurisdiction may set limits on lead content from all sources.

3.2.2 *deposit control additive, n*—material added to the fuel to prevent or remove deposits in one or more of the engine fuel, intake, and combustion systems.

3.2.2.1 *Discussion*—For the purpose of this test method, the performance evaluation of a deposit control additive is limited to the tulip area of intake valves.

3.2.3 *driveability, n—in vehicles equipped with internal combustion engines*, the quality of a vehicle's performance characteristics under a range of conditions as perceived by the operator. **D4814**

3.2.3.1 *Discussion*—The operating conditions may include cold starting and warm-up, acceleration, idling, and hot start.

³ 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.

⁴ 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