



Designation: D6421 – 20

Standard Test Method for Evaluating Automotive Spark-Ignition Engine Fuel for Electronic Port Fuel Injector Fouling by Bench Procedure¹

This standard is issued under the fixed designation D6421; 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 bench test procedure to evaluate the tendency of automotive spark-ignition engine fuel to foul electronic port fuel injectors (PFI). The test method utilizes a bench apparatus equipped with Bosch injectors specified for use in a 1985-1987 Chrysler 2.2 L turbocharged engine. This test method is based on a test procedure developed by the Coordinating Research Council (CRC) for prediction of the tendency of spark-ignition engine fuel to form deposits in the small metering clearances of injectors in a port fuel injection engine (see CRC Report No. 592).²

1.2 The test method is applicable to spark-ignition engine fuels, which may contain antioxidants, corrosion inhibitors, metal deactivators, dyes, deposit control additives, demulsifiers, or oxygenates, or a combination thereof.

1.3 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.

1.4 *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.* Specific precautionary statements are given throughout this test method.

NOTE 1—If there is any doubt as to the latest edition of Test Method D6421, contact ASTM International Headquarters. Other properties of significance to spark-ignition engine fuel are described in Specification D4814.

1.5 *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:³

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

D4814 Specification for Automotive Spark-Ignition Engine Fuel

D5500 Test Method for Vehicle Evaluation of Unleaded Automotive Spark-Ignition Engine Fuel for Intake Valve Deposit Formation

D5598 Test Method for Evaluating Unleaded Automotive Spark-Ignition Engine Fuel for Electronic Port Fuel Injector Fouling

2.2 ANSI Standard:⁴

MC 96.1 American National Standard for Temperature Measurement Thermocouples

2.3 CARB Standard:⁵

Test Method for Evaluating Port Fuel Injector (PFI) Deposits in Vehicle Engines

2.4 Clean Air Act Amendment:⁶

Clean Air Act Amendments of 1990, Public Law 101–549, Title 1 – Provisions for Attainment and Maintenance of National Air Quality Standards

3. Terminology

3.1 For general terminology, refer to Terminology D4175.

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 “A Program to Evaluate a Bench Scale Test Method to Determine the Deposit Forming Tendencies of Port Fuel Injectors,” available from Coordinating Research Council, Inc., 5755 North Point Parkway, Suite 265, Alpharetta, GA 30022, <http://www.crcao.org>.

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>.

⁵ Available from California Air Resources Board, P.O. Box 2815, Sacramento, CA 95815. (Incorporated by reference in California Code of Regulations, Title 13, Section 2257.)

⁶ Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <http://www.access.gpo.gov>.

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