Designation: D4953 – 15

Standard Test Method for Vapor Pressure of Gasoline and Gasoline-Oxygenate Blends (Dry Method)[1]

This standard is issued under the fixed designation D4953; 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 and is applicable to gasolines and gasoline-oxygenate blends with a vapor pressure range from 35 kPa to 100 kPa (5 psi to 15 psi) (see Note 2). This test method, a modification of Test Method D323 (Reid Method), provides two procedures to determine the vapor pressure (Note 1) of gasoline and gasoline-oxygenate blends.

NOTE 1—Because the external atmospheric pressure is counteracted by the atmospheric pressure initially present in the air chamber, this vapor pressure is an absolute pressure at 37.8 °C (100 °F) in kilopascals (pounds-force per square inch). This vapor pressure differs from the true vapor pressure of the sample due to some small vaporization of the sample and air in the confined space.

NOTE 2—Vapor pressure of gasoline or gasoline-oxygenate blends below 35 kPa (5 psi) or greater than 100 kPa (15 psi) can be determined with this test method but the precision and bias (Section 11) do not apply. For materials with a vapor pressure greater than 100 kPa (15 psi), use a 0 kPa to 200 kPa (0 psi to 30 psi) gauge as specified in the annex of Test Method D323.

1.2 Some gasoline-oxygenate blends may show a haze when cooled to 0 °C to 1 °C. If a haze is observed in 9.4, it shall be indicated in the reporting of results. The precision and bias statements for hazy samples have not been determined (see Note 7).

1.3 The values stated in SI units are to be regarded as standard. The values given in parentheses are for information only.

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 and health practices and determine the applicability of regulatory limitations prior to use.* Specific warnings are given in 7.5, 8.4.1, 8.5.1, 9.1, A1.1, and A1.1.3.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D323 Test Method for Vapor Pressure of Petroleum Products (Reid Method)

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

D4175 Terminology Relating to Petroleum, Petroleum Products, and Lubricants

D5190 Test Method for Vapor Pressure of Petroleum Products (Automatic Method) (Withdrawn 2012)[3]

D5191 Test Method for Vapor Pressure of Petroleum Products (Mini Method)

E1 Specification for ASTM Liquid-in-Glass Thermometers

3. Terminology

3.1 *Definitions:*

3.1.1 *Bourdon spring gauge, n*—pressure measuring device that employs a bourdon tube connected to an indicator.

3.1.2 *Bourdon tube, n*—flattened metal tube bent to a curve that straightens under internal pressure.

3.1.3 *dry method, n—in vapor pressure methods*, a specific empirical test method (D4953) for measuring the vapor pressure of gasoline and other volatile products in which contact of the test specimen with water is not allowed.

3.1.4 *dry vapor pressure equivalent (DVPE), n*—value calculated by a defined correlation equation, that is expected to be comparable to the vapor pressure value obtained by Test Method D4953, Procedure A.

3.1.5 *oxygenate, n*—oxygen-containing ashless organic compound, such as an alcohol or ether, which may be used as a fuel or fuel supplement. **D4175**

3.1.6 *vapor pressure, n*—pressure exerted by the vapor of a liquid when in equilibrium with the liquid **D4175**

[1] This test method is under the jurisdiction of Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.08 on Volatility.

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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] The last approved version of this historical standard is referenced on www.astm.org.

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

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