Designation: D323 – 08

Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)[1]

This standard is issued under the fixed designation D323; 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.

1. Scope*

1.1 This test method covers procedures for the determination of vapor pressure (see Note 1) of gasoline, volatile crude oil, and other volatile petroleum products.

1.2 Procedure A is applicable to gasoline and other petroleum products with a vapor pressure of less than 180 kPa (26 psi).

1.3 Procedure B may also be applicable to these other materials, but only gasoline was included in the interlaboratory test program to determine the precision of this test method.

1.4 Procedure C is for materials with a vapor pressure of greater than 180 kPa (26 psi).

1.5 Procedure D for aviation gasoline with a vapor pressure of approximately 50 kPa (7 psi).

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

1.6 This test method is not applicable to liquefied petroleum gases or fuels containing oxygenated compounds other than methyl *t*-butyl ether (MTBE). For determination of the vapor pressure of liquefied petroleum gases, refer to Test Method D1267 or Test Method D6897. For determination of the vapor pressure of gasoline-oxygenate blends, refer to Test Method D4953. The precision for crude oil has not been determined since the early 1950s (see Note 3). Test Method D6377 has been approved as a method for determination of vapor pressure of crude oil. IP 481 is a test method for determination of the air-saturated vapor pressure of crude oil.

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

1.8 *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 warning statements are given in Sections 7 and 18, and 12.5.3, 15.5, 21.2, A1.1.2, A1.1.6, and A2.3.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1267 Test Method for Gage Vapor Pressure of Liquefied Petroleum (LP) Gases (LP-Gas Method)

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

D4175 Terminology Relating to Petroleum, Petroleum Products, and Lubricants

D4953 Test Method for Vapor Pressure of Gasoline and Gasoline-Oxygenate Blends (Dry Method)

D6377 Test Method for Determination of Vapor Pressure of Crude Oil: $VPCR_x$(Expansion Method)

D6897 Test Method for Vapor Pressure of Liquefied Petroleum Gases (LPG) (Expansion Method)

E1 Specification for ASTM Liquid-in-Glass Thermometers

2.2 *Energy Institute Standards:*

IP 481 Test Method for Determination of the Air Saturated Vapour Pressure (ASVP) of Crude Oil[3]

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 *gasoline-oxygenate blend*, *n*—spark-ignition engine fuel consisting primarily of gasoline with one or more oxygenates.

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

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

Current edition approved Dec. 15, 2008. Published February 2009. Originally approved in 1930. Last previous edition approved in 2006 as D323–06. DOI: 10.1520/D0323-08.

[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 Energy Institute, 61 New Cavendish St., London, WIG 7AR, U.K., http://www.energyinst.org.uk.

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

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