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.

Designation: D2008 – 12 (Reapproved 2018)

Standard Test Method for Ultraviolet Absorbance and Absorptivity of Petroleum Products[1]

This standard is issued under the fixed designation D2008; 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 the measurement of the ultraviolet absorption of a variety of petroleum products. It covers the absorbance of liquids or the absorptivity of liquids and solids, or both, at wavelengths in the region from 220 nm to 400 nm of the spectrum.

1.2 The use of this test method implies that the conditions of measurement—wavelength, solvent (if any), sample path length, and sample concentration—are specified by reference to one of the examples of the application of this test method in the annexes or by a statement of other conditions of measurement.

1.3 Examples of the application of this test method are the absorptivity of refined petroleum wax, and the absorptivity of USP petrolatum.

1.4 The values stated in SI units are to be regarded as the standard. The values stated in Fahrenheit, feet, and inches, indicated in parentheses, are for information only.

1.5 **Warning**—Mercury has been designated by many regulatory agencies as a hazardous substance that can cause serious medical issues. Mercury, or its vapor, has been demonstrated to be hazardous to health and corrosive to materials. Use Caution when handling mercury and mercury-containing products. See the applicable product Safety Data Sheet (SDS) for additional information. The potential exists that selling mercury or mercury-containing products, or both, is prohibited by local or national law. Users must determine legality of sales in their location.

1.6 *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.* For specific warning statements, see 7.3.1, 7.3.3, and 13.4.

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2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1193 Specification for Reagent Water
E131 Terminology Relating to Molecular Spectroscopy
E169 Practices for General Techniques of Ultraviolet-Visible Quantitative Analysis
E275 Practice for Describing and Measuring Performance of Ultraviolet and Visible Spectrophotometers

3. Terminology

3.1 Definitions of terms and symbols relating to absorption spectroscopy in this test method shall conform to Terminology E131. Terms of particular significance are the following:

3.2 *Definitions:*

3.2.1 *radiant energy, n*—energy transmitted as electromagnetic waves.

3.2.2 *radiant power, P, n*—the rate at which energy is transported in a beam of radiant energy.

3.2.3 *transmittance, T, n*—the molecular property of a substance that determines its transportability of radiant power, expressed by:

$$T = \frac{P}{P_o} \tag{1}$$

where:

P = the radiant power passing through the sample and
P_o = the radiant power incident upon the sample.

3.2.4 *absorbance, A, n*—the molecular property of a substance that determines its ability to take up radiant power, expressed by:

[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 D02.04.0F on Absorption Spectroscopic Methods.

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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.

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