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: D6045 – 12 (Reapproved 2017)

Standard Test Method for Color of Petroleum Products by the Automatic Tristimulus Method[1]

This standard is issued under the fixed designation D6045; 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 automatic determination of color of a wide variety of petroleum products such as undyed motor and aviation gasoline, aviation turbine fuels, naphthas, kerosine, pharmaceutical white oils, diesel fuel oils, heating oils, and lubricating oils by the automatic tristimulus method. This test method correlates to Test Method D156 and Test Method D1500 as calculated by the instrumentation.

NOTE 1—With the appropriate sample handling, this test method would apply to petroleum waxes, but they were not used in the round robin, and the precision of this test method with regard to waxes is unknown.

1.2 This test method reports results in terms of Test Method D156 or Test Method D1500.

1.3 This test method has a one-to-one correlation for the entire range of Test Method D1500 ASTM Color and for the range from 0 to +30 for Test Method D156 Saybolt color.

1.4 This test method does not apply to solid samples, petroleum products containing dye, and petroleum products having extreme fluorescence.

1.5 This test method does not apply to cloudy samples. Such samples shall be filtered so they are clear before measuring.

1.6 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.7 *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.*

1.8 *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:*[2]

D156 Test Method for Saybolt Color of Petroleum Products (Saybolt Chromometer Method)

D1500 Test Method for ASTM Color of Petroleum Products (ASTM Color Scale)

D2500 Test Method for Cloud Point of Petroleum Products and Liquid Fuels

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

E284 Terminology of Appearance

E308 Practice for Computing the Colors of Objects by Using the CIE System

2.2 *Energy Institute Standard:*

IP 17 Determination of Colour—Lovibond Tintometer[3]

3. Terminology

3.1 *Definitions:*

3.1.1 *ASTM color, n*—the name of an empirical scale of expressing the color of a petroleum liquid darker than Saybolt color based on a scale of 0.5 (lightest) to 8.0 Dil (darkest) and determined by Test Method D1500.

3.1.2 *CIE*—the abbreviation for the French title of the International Commission on Illumination, or Commission Internationale de l'Eclairage. **E284**

3.1.3 *CIE Standard Illuminant C, n*—Colorimetric illuminant, representing daylight with a correlated color temperature of 6774 K, defined by the CIE in terms of a relative spectral power distribution. **E284**

3.1.4 *CIE 1931 standard observer, n*—ideal colorimetric observer with color matching functions x(λ), y(λ), z(λ) corresponding to a field of view subtending a 2° angle on the retina; commonly called the "2° Standard Observer." **E284**

[1] This practice is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.05 on Properties of Fuels, Petroleum Coke and Carbon Material.

Current edition approved July 1, 2017. Published July 2017. Originally approved in 1996. Last previous edition approved in 2012 as D6045 – 12. DOI: 10.1520/D6045-12R17.

[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] *Methods for Analysis Testing*, available from Energy Institute, 61 New Cavendish St., London, WIG 7AR, U.K.

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