



Designation: E805 – 12

Standard Practice for Identification of Instrumental Methods of Color or Color- Difference Measurement of Materials¹

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1. Scope

1.1 This practice covers the documentation of instrumental measurement of color or color difference for current communication or for future reference. The practice is applicable to instrumental measurements of materials where color is seen by reflected, transmitted or emitted light and any combinations of one or more of these processes. The practice is recommended for documentation of methodology in interlaboratory color-measurement programs.

1.2 An adequate identification of an instrumental measure of color or color-difference consists of five parts:

1.2.1 Nature and source of available samples and the form of specimens actually measured,

1.2.2 Instrumental conditions of measurement, including instrument geometrical and spectral conditions of measurement,

1.2.3 Standards used,

1.2.4 Data acquisition procedure, and

1.2.5 Color scales employed.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

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

D1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)

D1500 Test Method for ASTM Color of Petroleum Products

(ASTM Color Scale)

D1535 Practice for Specifying Color by the Munsell System

D1544 Test Method for Color of Transparent Liquids (Gardner Color Scale)

D2244 Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates

D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

D6166 Test Method for Color of Naval Stores and Related Products (Instrumental Determination of Gardner Color)

E179 Guide for Selection of Geometric Conditions for Measurement of Reflection and Transmission Properties of Materials³

E259 Practice for Preparation of Pressed Powder White Reflectance Factor Transfer Standards for Hemispherical and Bi-Directional Geometries

E284 Terminology of Appearance

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

E313 Practice for Calculating Yellowness and Whiteness Indices from Instrumentally Measured Color Coordinates

E991 Practice for Color Measurement of Fluorescent Specimens Using the One-Monochromator Method

E1164 Practice for Obtaining Spectrometric Data for Object-Color Evaluation

E1247 Practice for Detecting Fluorescence in Object-Color Specimens by Spectrophotometry³

E1331 Test Method for Reflectance Factor and Color by Spectrophotometry Using Hemispherical Geometry

E1345 Practice for Reducing the Effect of Variability of Color Measurement by Use of Multiple Measurements

E1347 Test Method for Color and Color-Difference Measurement by Tristimulus Colorimetry

E1348 Test Method for Transmittance and Color by Spectrophotometry Using Hemispherical Geometry

E1349 Test Method for Reflectance Factor and Color by Spectrophotometry Using Bidirectional (45°:0° or 0°:45°) Geometry

¹ This practice is under the jurisdiction of ASTM Committee E12 on Color and Appearance and is the direct responsibility of Subcommittee E12.04 on Color and Appearance Analysis.

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

E1708 Practice for Electronic Interchange of Color and
Appearance Data

iTeh Standards
(<https://standards.itih.ai>)
Document Preview

[ASTM E805-12](#)

<https://standards.itih.ai/catalog/standards/sist/8206d2e0-726e-426e-b967-3d9d19f96a16/astm-e805-12>

(1) Instrumental Method for Measurements of: Color Color difference of : _____

(2) Color Scales Used (Section 9): _____

(3) Specimen Description (Section 5)

(a) Form: _____

(b) Additional information (see 5.3) _____
 thickness (number of layers) single layer backed by powder (note packing pressure) paste liquid film drawdown (specify thickness and backing material).

(c) Special Considerations:
 Sensitivity to Environmental Conditions: temperature: _____, humidity _____

(d) Specimen Directionality: Specify orientation and rotation _____

(e) Specimen Conditioning: _____

(4) Instrument Description (Section 6)

Spectrophotometer Tristimulus Colorimeter

Make and model _____

(a) Measurement Mode _____

(b) Geometry: Influx and Efflux Geometry _____
 Specular Component included or excluded? _____
 Light Trap (if applicable) size, shape, and position _____
 Size and Shape of aperture _____
 Cover glass at specimen window Yes No
 Method of Correction _____

(c) Spectral: Lamp _____ Filters and elements used _____
 Detector _____ Modified by filters and elements _____

(5) Material Standard Used: _____
 Date of preparation or calibration: _____

(6) Reduction of Data: _____

(a) Tristimulus Integration: Filter Computed from spectral data taken every _____ nm over range _____ nm to _____ nm, with spectral bandwidth _____ nm bandpass correction according to E2729 _____ E308 Table 5 _____ E308 Table 6

(b) Color Difference Equation and Parameters used _____

FIG. 1 Sample Report Form

[E1767 Practice for Specifying the Geometries of Observation and Measurement to Characterize the Appearance of Materials](#)

[E2152 Practice for Computing the Colors of Fluorescent Objects from Bispectral Photometric Data](#)

[E2153 Practice for Obtaining Bispectral Photometric Data for Evaluation of Fluorescent Color](#)

[E2175 Practice for Specifying the Geometry of Multiangle Spectrophotometers](#)

[E2194 Practice for Multiangle Color Measurement of Metal Flake Pigmented Materials](#)

[E2729 Practice for Rectification of Spectrophotometric Bandpass Differences](#)

2.2 Other Standard Documents:

[CIE Publication 51](#) A Method for Assessing the Quality of Daylight Simulators for Colorimetry⁴

[DIN 6176](#) Farbmetrische, Bestimmung von Farbabstände bie Körperfarben nach der DIN99-Formel⁵

3. Terminology

3.1 Definitions of terms in Terminology [E284](#) are applicable to this practice.

⁴ Available from U.S. National Committee of the CIE (International Commission on Illumination), C/o Thomas M. Lemons, TLA-Lighting Consultants, Inc., 7 Pond St., Salem, MA 01970, <http://www.cie-usnc>.

⁵ Available from Beuth Verlag GmbH (DIN-Deutsches Institut für Normung e.V.), Burggrafenstrasse 6, 10787, Berlin, Germany, <http://www.en.din.de>.