



Designation: D5531 – 17 (Reapproved 2023)

# Standard Guide for Preparation, Maintenance, and Distribution of Physical Product Standards for Color and Geometric Appearance of Coatings<sup>1</sup>

This standard is issued under the fixed designation D5531; 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 guide covers three levels of physical product standards for color or appearance, or both, commonly used in the coatings industry, provides terminology to describe each level, and describes techniques for generating and caring for standards.

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

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 the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *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:<sup>2</sup>

- D16 Terminology for Paint, Related Coatings, Materials, and Applications
- D523 Test Method for Specular Gloss
- D823 Practices for Producing Films of Uniform Thickness of Paint, Coatings and Related Products on Test Panels
- D1729 Practice for Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials

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

D3134 Practice for Establishing Color and Gloss Tolerances

D4086 Practice for Visual Evaluation of Metamerism

D4449 Test Method for Visual Evaluation of Gloss Differences Between Surfaces of Similar Appearance

E284 Terminology of Appearance

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

E430 Test Methods for Measurement of Gloss of High-Gloss Surfaces by Abridged Goniophotometry

E805 Practice for Identification of Instrumental Methods of Color or Color-Difference Measurement of Materials

E1164 Practice for Obtaining Spectrometric Data for Object-Color Evaluation

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

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

### 2.2 Society of Automotive Engineers Standard:

SAE J1545 Recommended Practice for Instrumental Color Difference Measurement for Exterior Finishes, Textiles, and Colored Trim<sup>3</sup>

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.26 on Optical Properties.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

## 3. Terminology

3.1 The definitions in Terminology E284 and D16 are applicable to this standard. The terms in E284 take precedence over those in D16 if differences exist.

### 3.2 Definitions of Terms Specific to This Standard:

<sup>3</sup> Available from American Architectural Manufacturers Association (AAMA), 1827 Walden Office Square, Suite 550, Schaumburg, IL 60173-4268, <http://www.aamanet.org>. Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001, <http://www.sae.org>.

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