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Standard Guide for Preparation, Maintenance, and Distribution of Physical Product Standards for Color and Geometric Appearance of Coatings¹

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1. Scope

1.1 This guide covers three levels of physical product standards for color commonly used in the coatings industry, provides terminology to describe each level, and describes techniques for generating standards.

1.2 *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.*

2. Referenced Documents

2.1 ASTM Standards:

- D 16 Terminology for Paint, Related Coatings, Materials and Applications²
- D 523 Test Method for Specular Gloss²
- D 823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels²
- D 1729 Practice for Visual Evaluation of Color and Color Differences of Opaque Diffusely Illuminated Materials²
- D 2244 Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates²
- D 3134 Practice for Establishing Color and Gloss Tolerances²
- D 4086 Practice for Visual Evaluation of Metamerism²
- D 4449 Method for Visual Evaluation of Gloss Difference Between Surfaces of Similar Appearance²
- E 284 Terminology of Appearance²
- E 308 Practice for Computing the Colors of Objects by Using the CIE System²
- E 430 Test Methods for Measurement of Gloss of High Gloss Surfaces by Goniophotometry²
- E 805 Practice for Identification of Instrumental Methods of Color or Color-Difference Measurement of Materials²
- E 1164 Practice for Obtaining Spectrophotometric Data for Object-Color Evaluation²

- E 1331 Test Method for Reflectance Factor and Color by Spectrophotometry Using Hemispherical Geometry²
- E 1345 Practice for Reducing the Effect of Variability of Color Measurement by Use of Multiple Measurements²
- E 1347 Test Method for Color and Color-Difference Measurement by Tristimulus (Filter) Colorimetry²
- E 1349 Test Method for Reflectance Factor and Color by Spectrophotometry Using Bidirectional Geometry²
- 2.2 *Society of Automotive Engineers Standard:*
SAE J1545 Recommended Practice for Instrumental Color Difference Measurement for Exterior Finishes, Textiles, and Colored Trim³

3. Terminology

3.1 The definitions in Terminology E 284 and D 16 are applicable to this test method. The terms in E284 take precedence over those in D 16 if there are differences.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *concept color, n*—the color of the material submitted by the customer as the target for generating the master standard.

3.2.2 *master standard, n*—the physical standard for color that the customer approves as the target for visual, spectrophotometric, and colorimetric evaluation of all products referenced to that standard.

3.2.2.1 *Discussion*—in SAE J1545 this is referred to as the “official” standard.

3.2.3 *duplicate master standard, n*—a replicate of the master standard that serves as the master standard at a secondary location.

3.2.3.1 *Discussion*—in SAE J1545 this is referred to as the “reference” standard.

3.2.4 *working standard, n*—the physical product standard for color used for routine measurements and visual assessments in the laboratory and at the production site.

4. Summary of Guide

4.1 Product standards are the only standards by which products should be accepted or rejected for color. A master

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

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² *Annual Book of ASTM Standards*, Vol 06.01.

³ Available from the Society of Automotive Engineers, 400 Commonwealth Dr., Warrendale, PA 15096.