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Standard Guide to Evaluation of Optical Properties of Powder Coatings[1]

This standard is issued under the fixed designation D5382; 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.

INTRODUCTION

The term optical properties of powder coatings refers to those properties associated with the interaction of visible light with the coatings. These properties include, but are not limited to, color, color difference, gloss, and metamerism. Coating powder users and producers may sometimes be overwhelmed by the sheer number of standard practices and standard test methods available for the evaluation of the optical properties of the finished coatings.

This guide is intended to lead the user to each of the practices and test methods needed, once the user decides whether the evaluation is to be by visible means or by instrumental means. Further, the user must decide which of the several optical properties mentioned above are to be evaluated. This guide will lead the user to the applicable practices and test methods for the properties chosen by the means selected.

1. Scope*

1.1 This standard provides the user with a guide to the various available practices and test methods for the evaluation of color, color difference, gloss, and metamerism by both visual and by instrumental means.

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:*[2]

D523 Test Method for Specular Gloss
D1535 Practice for Specifying Color by the Munsell System
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
D2616 Test Method for Evaluation of Visual Color Difference With a Gray Scale
D3134 Practice for Establishing Color and Gloss Tolerances
D4039 Test Method for Reflection Haze of High-Gloss Surfaces
D4086 Practice for Visual Evaluation of Metamerism
D4449 Test Method for Visual Evaluation of Gloss Differences Between Surfaces of Similar Appearance
D5767 Test Methods for Instrumental Measurement of Distinctness-of-Image Gloss of Coating Surfaces
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
E1247 Practice for Detecting Fluorescence in Object-Color Specimens by Spectrophotometry
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

[1] 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 D01.51 on Powder Coatings.

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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.

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