



Standard Guide for Forensic Paint Analysis and Comparison¹

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1. Scope

1.1 Forensic paint analyses and comparisons are typically distinguished by sample size that precludes the application of many standard industrial paint analysis procedures or protocols. The forensic paint examiner must address concerns such as the issues of a case or investigation, sample size, complexity and condition, environmental effects, and collection methods. These factors require that the forensic paint examiner choose test methods, sample preparation schemes, test sequence, and degree of sample alteration and consumption that are suitable to each specific case.

1.2 This guide is intended as an introduction to standard guides for forensic examination of paints and coatings. It is intended to assist individuals who conduct forensic paint analyses in their evaluation, selection, and application of tests that may be of value to their investigations. This guide describes methods to develop discriminatory information using an efficient and reasonable order of testing. The need for validated methods and quality assurance guidelines is also addressed. This document is not intended as a detailed methods description or rigid scheme for the analysis and comparison of paints, but as a guide to the strengths and limitations of each analytical method. The goal is to provide a consistent approach to forensic paint analysis.

1.3 This guide cannot replace knowledge, skill, or ability acquired through appropriate education, training, and experience and should be used in conjunction with sound professional judgment.

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

1.5 *Some of the methods discussed in this guide involve the use of dangerous chemicals, temperatures, and radiation sources. This guide does not purport to address the possible safety hazards or precautions associated with its application. 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 requirements prior to use.

2. Referenced Documents

2.1 *ASTM Standards:*²

D16 Terminology for Paint, Related Coatings, Materials, and Applications

D1535 Practice for Specifying Color by the Munsell System

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

E1492 Practice for Receiving, Documenting, Storing, and Retrieving Evidence in a Forensic Science Laboratory

E2808 Guide for Microspectrophotometry and Color Measurement in Forensic Paint Analysis

E2809 Guide for Using Scanning Electron Microscopy/X-Ray Spectrometry in Forensic Paint Examinations

E2937 Guide for Using Infrared Spectroscopy in Forensic Paint Examinations

3. Terminology

3.1 *Definitions*—For definitions of terms used in this guide other than those listed in 3.2, see Terminology **D16**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *additive (modifier)*—any substance added in a small quantity to improve properties. Additives may include substances such as driers, corrosion inhibitors, catalysts, ultraviolet absorbers, plasticizers, etc.

3.2.2 *binder*—a non-volatile portion of a paint which serves to bind or cement the pigment particles together.

3.2.3 *coating*—a generic term for paint, lacquer, enamel, or other liquid or liquifiable material which is converted to a solid, protective and/or decorative film after application.

3.2.4 *discriminate*—to distinguish between two samples based on significant differences; to differentiate.

3.2.5 *discriminating power*—the ability of an analytical procedure to distinguish between two items of different origin.

¹ This guide is under the jurisdiction of ASTM Committee **E30** on Forensic Sciences and is the direct responsibility of Subcommittee **E30.01** on Criminalistics.

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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.