

## Standard Guide for Forensic Paint Analysis and Comparison



### WHAT IS AN AAFS STANDARD FACTSHEET?

The AAFS produces clear, concise, and easy-to-understand factsheets to summarize the contents of technical and professional forensic science standards on the OSAC Registry. They are not intended to provide an interpretation for any portion of a published standard.

### WHAT IS THE PURPOSE OF THIS STANDARD?

Different macroscopic, microscopic, chemical, and instrumental methods are available for the forensic examination of paints and coatings.

This guide is intended to assist forensic paint examiners in their evaluation, selection, and application of methods leading to an efficient and reasonable order of testing.

The guide describes methods suitable to detect and characterize paint samples, identify their chemical components, and conduct highly discriminating comparative analyses. The need for validated methods and quality assurance guidelines is also addressed. The document is not intended to suggest a detailed description of the methods or a rigid scheme for the analysis and comparison of paints, but rather offers an account of the strengths and limitations of each analytical method.

### WHY IS THIS STANDARD IMPORTANT? WHAT ARE ITS BENEFITS?

Paint traces can be recovered in different forms (i.e., multilayered fragments, smears, chips), sizes, amounts, and conditions.

The standard, therefore, aims to provide informed guidance to forensic paint examiners in selecting the most appropriate analytical scheme based on their equipment and instrumental capabilities and the size and condition of the unknown specimens.

Forensic science service providers that conduct trace materials analyses are encouraged to meet these minimum standards.



### HOW IS THIS STANDARD USED, AND WHAT ARE THE KEY ELEMENTS?

The standard guide provides an overview of techniques applied to the forensic analysis of paint components by selecting and organizing an analytical scheme for the analysis, identification, and comparison of paint. The forensic analysis of paint can provide valuable information on 1) the possible makes, models, and years of manufacture of motor vehicles; 2) questions about sources; and 3) the activity-related aspects of events under investigation (e.g., vehicle accidents or shooting reconstructions).

In the context of comparative examinations, the principle is that a combination of techniques that provide discrimination between as many types of paints and coatings as possible should be used. The guide covers the following key elements: the importance of describing the samples received, including their form and conditions (e.g., multilayered fragment vs. smear); consideration of the possibility of performing a physical match; aid in the form of flow-charts to assist with the use of the analytical procedure and with the selection of appropriate methods for the characterization and comparisons of each type of paint component (i.e., binders, pigments/extenders, and additives); and review of the applications, strengths, and limitations of the different analytical methods recommended in the guide.

Other associated ASTM standards and SWGMAT guides are discussed in the guide, and a comprehensive list of references is included. A forensic science service provider should use this guide and other provided references to incorporate paint testing into their quality system program.