FACTSHEET FOR STANDARD PRACTICE ANSI/ASTM E3254-23

Use of Color in the Visual Examination and Forensic Comparison of Soil Samples

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?

This standard guides examiners proficient in forensic soil examinations in visually determining soil color using the Munsell color system. It excludes soil classification and instrumental measurement of soil color from its scope, even though it may be appropriate for some examinations (e.g., ANSI/ASTM E3294-22 focused on X-ray diffraction).

This standard recommends soil color for use in the initial screening of evidentiary soil samples and identification of soil samples suitable for further analysis. Additionally, it furnishes a test method for determining and comparing color in the Munsell color system. Guidelines for documenting and interpreting soil evidence are also provided.

WHY IS THIS STANDARD IMPORTANT? WHAT ARE ITS BENEFITS?

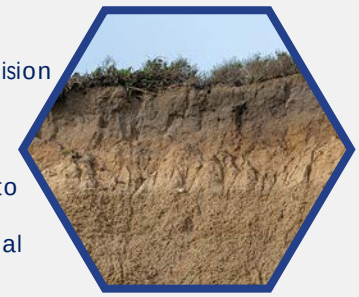
Soils can play a role in forensic investigations by establishing connections between a victim, a suspect, and a scene. Soils can also aid in determining a source region (provenance) of evidence or identifying possible burial locations.

Soil color, an easily observable characteristic, varies across locations and depths, offering exclusionary differences between soils. However, color can be altered due to contamination by body fluids, fire, rust, or oxidation.

This standard establishes a procedure to maintain consistency in forensic soil examinations among proficient examiners.

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

This standard recommends a test method for the visual examination of soil color with a Munsell color chart in a laboratory setting. The test method addresses appropriate lighting, sample size considerations and limitations, and instances when additional sample preparation (breaking up clods, sieving, heating, and drying) may be necessary. Potential soil alterations that can impact color are also covered.



Guidance on color, intensity, and lightness differences, including a sequential decision flow chart, is provided to aid a forensic science practitioner in determining:

- when the exclusion of a common source of soil is supportable based on soil color alone,
- when color alone is sufficient but additional examinations may be conducted to provide additional information, and
- when soil color determination is not sufficient to exclude a source and additional examinations are warranted.

Additionally, this standard provides useful references in evaluating the accuracy, precision, and bias of soil color determinations and suggests approaches to arrive at a possible interpretation.

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