

# SWGTHREAD

## *Guide for the Detection of Footwear and Tire Impressions in the Field*

### 1. Scope

- 1.1 This Guide provides procedures for the detection of footwear and tire impressions in the field.
- 1.2 The particular procedures and methods employed in a given case will depend on the nature and quality of the impressions.
- 1.3 This Guide may not cover all aspects of unusual or uncommon conditions.
- 1.4 This Guide 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 Guide to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.
- 1.5 This Guide is not intended as a substitute for training in the detection of forensic footwear and tire track evidence. Completion of a training program and experience in these skills are essential to understanding and applying the principles outlined in this Guide.

### 2. Terminology

*Coaxial light*: illumination from the precise direction of the imaging lens, either through the lens or with a beam-splitter in front of the lens

*Electrostatic lifting device*: an instrument that utilizes electrostatic charges as a means of transferring dry origin impressions from a surface to a film

*Forensic light source*: a tunable light source, with a series of excitation filters, which normally cover the spectral range from 280-1100 nm (UV-Visible-IR)

*Impression*: the product of direct physical contact of an item resulting in the transfer and retention of characteristics of that item

*Oblique lighting*: illumination from a light source that is at a low angle of incidence, or even parallel, to the surface of the item. **Syn.** *Side lighting*

*Polarized lighting*: illumination consisting of light rays with a single propagation direction and a single vibration direction. Polarized light is produced by the use of a polarizing filter.

### 3. Significance and Use

3.1 The procedures outlined here are grounded in the generally accepted body of knowledge and experience for the detection of footwear and tire impression evidence. By following these procedures, both patent and latent impressions can be detected.

3.2 Footwear and tire tread impressions are detected in the field for the following purposes:

3.2.1 To determine position and orientation of impressions, tire track width, turning radius, and other information that would aid in the reconstruction of events

3.2.2 For future documentation, collection, and examination

### 4. Interferences

4.1 Footwear and tire evidence may have inherent limitations that can interfere with the procedures in this Guide. Limitations, when known, should be noted and recorded.

4.2 Limitations can be due to environmental factors, lighting, substrate features, and quality of original impressions.

### 5. Equipment and Requirements

5.1 Electrostatic lifting device

5.2 Light sources of sufficient type and intensity to allow for detection of impression evidence

**Note:** Light sources may include natural light, incandescent light, fiber optic, fluorescent light sources, or forensic light sources of varying wavelengths

5.3 Materials for physical and chemical enhancement

5.4 Photographic equipment

5.5 Sufficient time for a thorough search

## 6. Procedures

The following procedures may be used, as appropriate, depending on the composition of the impression evidence and the substrate material. The order of the following detection methods may vary.

6.1 Look for visible impressions utilizing natural and/or artificial light sources.

6.2 Use oblique, coaxial, and polarized light to detect less visible and latent impressions.

6.3 Use electrostatic lifting device to search for latent dust impressions.

6.4 Document and/or photograph (as set forth in the Guide for the Forensic Documentation and Photography of Footwear and Tire Impressions at the Crime Scene) impressions prior to and after any procedure.

6.5 Use fingerprint powder to develop latent impressions on nonporous surfaces.

6.6 Use physical and/or chemical enhancement methods to develop and/or enhance faint and latent bloody impressions and to develop and/or enhance nonblood impressions.

**Note:** Paper, glass, and other items that may contain latent impressions that cannot be detected in the field may require collection for later processing in the laboratory.

## 7. Report

7.1 Procedures utilized and impressions detected should be documented and may also appear in a report.

## 8. Bibliography

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