

Guide for Lifting Footwear and Tire Impression Evidence

1. Scope

- 1.1 This Guide provides procedures for lifting footwear and tire impression evidence.
- 1.2 The particular procedures and methods employed in a given case will depend on the evidence.
- 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 lifting of footwear and tire impression evidence. Completion of a training program and experience in these skills is essential to understanding and applying the principles outlined in this Guide.
- 1.6 This Guide relates to the detection, recovery, and enhancement of footwear and tire impression evidence using various lifting techniques.

2. Terminology

Adhesive lifter: adhesive coated materials or tapes that can be used to lift impressions from non-porous surfaces

Dental stone: a gypsum product used to cast impressions

Dry origin Impression: formed under dry conditions such as dry dust and dry residue impressions

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

Gelatin lifter: gelatin laid on a pliable backing that can be used to lift impressions from porous or non-porous surfaces

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

Mikrosil™: casting material formulated to produce excellent rendering of fine detail

Oblique angle: angle between 0 and 90 degrees

Polyvinylsiloxane: casting material formulated to produce excellent rendering of fine detail

Residue Impression: formed by the deposition of a substance from the shoe or tire onto another surface

Wet origin impression: formed under wet conditions, including impressions deposited by residues of blood, grease, mud and other wet substances.

3. Significance and Use

- 3.1 The procedures outlined here are grounded in the generally accepted body of knowledge and experience in the lifting of footwear and tire impression evidence. By following these procedures, impressions can be transferred to a lifting medium.
- 3.2 Footwear and tire tread impressions are lifted for subsequent examination in the laboratory.

4. Interferences

- 4.1 Footwear and tire impression 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 substrate features, quality of original impressions, environmental factors, and methods of collection and visualization/detection.

5. Equipment and Requirements

- 5.1 Appropriate light source(s)
- 5.2 Electrostatic dust lifter and film
- 5.3 Adhesive and gelatin lifting materials
- 5.4 Fingerprint powders
- 5.6 Dental stone

5.7 Mikrosil™ or other polyvinylsiloxane (PVS) casting materials

5.8 Sufficient time and facilities to complete all applicable procedures

6. Procedures

6.1 When lifting impressions, examiners should use the least destructive method first. If in doubt, treat all impressions as dry origin and apply the methods listed below. If unsuccessful, attempt collection as indicated for wet origin impressions. All procedures shall be performed when applicable and noted when appropriate. The order and use of these individual techniques is determined by considerations such as substrate, components of the impression, and environmental conditions.

6.2 Electrostatic dust lifter

6.2.1 Electrostatic lifting is useful for the detection and lifting of dry origin dust and residue impressions which are the result of tracking from dry dirty surfaces onto relatively cleaner surfaces.

6.2.2 Electrostatic lifting is normally the first technique used, as unsuccessful attempts will not prevent subsequent lifting and enhancement techniques.

6.2.3 There are a number of electrostatic lifters available. Consult the manual provided by the manufacturer for specific operating instructions.

6.2.4 All of these devices utilize a film which has a black side and an aluminum coated side. The black side of the film is placed against the impression, and a high voltage charge is applied to the film, resulting in the transfer of the dry dust or residue impression.

6.2.5 To visualize the lifted impressions, the lifts should be examined in a darkened room with a high intensity light source held at an oblique angle to the surface of the lift.

6.2.6 The lifting film should never be reused.

6.2.7 Smaller lifts can be stored in individual clean file folders. These folders should never be reused.

6.2.8 Larger lifts can be stored by carefully rolling with the aluminum side out. After rolling, the edge can be secured with a small piece of tape.

6.2.9 Electrostatic lifts are fragile and impressions can be destroyed by any wiping action across the surface of the lift. Consideration should be given to photographing lifts prior to packaging. Electrostatic lifts retain a charge and should never be packaged in cardboard, cardboard boxes, or plastic bags.

6.3 Adhesive and gelatin lifters

6.3.1 Footwear size adhesive and gelatin lifters are used for the lifting of dust and residue impressions, wet origin impressions, as well as impressions developed with fingerprint powder.

6.3.2 Gelatin lifters are available in white, black and clear. White lifters provide greater contrast with impressions enhanced with dark colored powders. Black lifters provide greater contrast with light colored powders and residue impressions. Clear lifters normally do not provide good contrast. Gelatin lifts of residue impressions should be photographed as soon as possible after collection.

6.3.3 Adhesive lifters are available in white and clear. They include footprint sized sheets and various widths of rolled tapes. White backgrounds are recommended for clear adhesive. Clear adhesive on a clear background is not recommended. These lifts are normally used for impressions developed with dark colored powders and are not recommended for lifting dust or residue impressions. Rolled tapes are available in five inch widths and are preferred to narrower tapes.

6.4 Dental Stone can be used to lift impressions such as mud and tire residues from surfaces such as concrete and tile. Refer to the "Guide for Casting Footwear and Tire Impression Evidence" for mixing instructions. A thick layer of dental stone can be poured over the impression area and lifted when dry.

6.5 Mikrosil™ or other polyvinylsiloxane (PVS) casting materials can be used to lift impressions, enhanced with powder, from any surface. These products lift the complete powdered impression and are particularly useful on textured surfaces.

7. Report

7.1 Procedures utilized and evidence collected should be documented and may also appear in a report.

8. Bibliography

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