



INDIANA STATE POLICE FORENSIC SERVICES DIVISION

PHYSICAL EVIDENCE BULLETIN

TOOLMARK EVIDENCE

1.0 INTRODUCTION

- 1.1 Toolmark identification is a discipline of forensic science that determines if a toolmark was produced by a particular tool.
- 1.2 A tool is any object used to gain mechanical advantage. This is also thought of as the harder of two objects which when brought into contact with each other, results in the softer one being marked. These marks are generally categorized as impressed and striated marks. Some toolmarks may contain a combination of both features.
- 1.3 Laboratory examinations and comparisons of toolmarks recovered from a crime scene, with tools from a suspect, can often provide conclusive evidence to link a specific tool to a specific crime scene. This evidence combined with the investigators information can sometimes provide links to suspects in a crime.

2.0 SPECIAL PRECAUTIONS

- 2.1 Doors, windows, or other openings with hinged or sliding doors should not be opened, closed, or handled in any manner that might compromise latent fingerprints. These usually are found near the points of entry or exit. Notes, sketches, and photographs, with scales included in the photos, should be made to document any broken, forced, or cut locks, latches, or bolts in the immediate area.
- 2.2 A tool should never be fitted into an impression to see if it could have made the mark as this could alter their evidentiary value.

3.0 PHOTOGRAPHY

- 3.1** Two types of photographs are necessary for courtroom presentation as well as for investigative purposes.
 - 3.1.1** Overall photos depicting the entire scene and the object which bears the toolmark.
 - 3.1.2** Close-up photos showing the detail of the toolmark. These photos should contain a scale and are used for identification and orientation only.
- 3.2** Photographs should depict the physical location and arrangement of the door, window, etc. bearing the toolmark. These can reveal the direction of tool use and whether or not the tool is physically capable of making the mark. A scale/ ruler should be included in these photographs. The photos can be submitted, with the evidence, to the Indiana State Police (ISP) Forensic Services Division (FSD) for examination.
- 3.3** Photographs cannot be used for actual comparisons. All photographs will be used for orientation only.

4.0 TRACE EVIDENCE

- 4.1** Toolmarks should be examined carefully for any trace evidence. The first consideration should be for the presence of latent fingerprints. Processing for latent fingerprints should be preceded by careful examination for any loosely adhering particles of evidence. This evidence may be photographed and removed prior to application of fingerprint developing techniques. (Fingerprinting techniques can destroy trace evidence) If desired, the fingerprinting can be done by the ISP FSD.
- 4.2** On painted surfaces, bearing toolmark evidence, sample scrapings of the paint should be submitted to the ISP FSD for examination. Paint may not be readily seen adhering to the tool. However, microscopic examination may reveal minute particles that may be of evidentiary value.
- 4.3** Toolmark evidence should be packaged in such a manner as not to subject it to damage or loss of trace evidence. Flakes of adhering paint, or other trace materials may be lost from the tool while in transit. It could also be damaged, changing the microscopic characteristics. The tool should be padded with soft cotton or tissue and covered with a paper bag to prevent damage, loss of, or contamination of trace evidence.
- 4.4** Requested fingerprint and trace examinations will be performed prior to the toolmark examination.

5.0 REMOVAL AND MARKING OF EVIDENCE

- 5.1** Any items removed as evidence should be clearly marked with the case number, initials of recovering officer, and date/time of removal. The evidence should also be marked to show the configuration in which it was located; i.e., inside or outside, top or bottom, front or back, and the surface area bearing the toolmark.
- 5.2** Many objects bearing toolmarks that are detached during a forced entry, may be submitted directly as they are found. This includes segments of window or door molding, window or door sill, latches, bolts, locks, or doorknobs. (Where doorknobs are twisted, note whether anything obstructs access to the knob from either side; i.e., posts, door set back, etc.)
- 5.3** If the toolmark appears on items too large to be sent to the ISP FSD, it may be possible to remove the area containing the toolmark. If it is removed, a sufficiently large piece of the surrounding surface area must be included to prevent damage to the toolmark through bending, splintering, or breaking.
- 5.4** Any small removable item such as a doorknob, latch plate, lock, or hinge should be marked showing the top and front of the item as it was positioned before removal.

6.0 CASTS/MOLDS

- 6.1** If an actual item cannot be submitted for toolmark examination, a cast/mold can be made. A suitable material for this purpose is Mikrosil®. This is a two-part substance which reproduces the fine detail needed for microscopic comparison. The only acceptable Mikrosil® colors for examination are brown or grey. Other colors are difficult to view with existing equipment. It comes in kit form with easy to follow directions. The completed cast/mold should be placed in a container, of paper or cardboard, sealed, and marked for identification.

7.0 PACKAGING OF EVIDENCE

- 7.1** All items for consideration for toolmark examinations should be placed in a breathable type container such as a box, paper bag, or manila envelope.
- 7.2** The use of plastic bags should be avoided whenever possible. Plastic bags trap moisture which will possibly rust and corrode toolmark evidence that may alter the forensic characteristics of the evidence. Also, if the toolmark evidence is to be analyzed for biological or fingerprint evidence, plastic bags are unacceptable.

- 7.3** If an item of evidence is too large to be packaged (e.g. a large pair of bolt cutters, safe door, etc.) the evidence area should be securely protected with some type of padding material then that area may be wrapped with paper or cardboard.
- 7.4** If wires will be submitted, the contributor shall mark the ends of the wire which they cut to avoid confusion during the examination process. If possible, submit extra wire from the same source. This extra wire will be used for test cuts and later returned to the contributing agency.

8.0 GENERAL INFORMATION

- 8.1** Evidence shall be returned to the contributing agency. Any deviations to this policy shall be communicated to the contributor in the Certificate of Analysis.
- 8.2** In toolmark cases, you may wish to consult with the toolmark examiners of the ISP Regional Laboratory serving your area.

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