**INDIANAPOLIS-MARION COUNTY FORENSIC SERVICES AGENCY**

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## EVIDENCE SUBMISSION GUIDELINE #11

# TOOLMARK EVIDENCE

**INTRODUCTION:** Toolmark identification is a discipline of forensic science which has as its primary concern to determine if a toolmark was produced by a particular tool.

A tool is an object used to gain mechanical advantage. A tool can also be thought of as the harder of two objects which when brought into contact with each other, resulting in the softer one being marked. There are basically two types of toolmarks: impressed (also called compression marks) and striated marks.

Impressed or compression marks are produced when a tool is placed against an object and enough pressure is applied to the tool that it leaves an impression in the object. The class characteristics (shape) can suggest the type of tool used to produce the mark. The individual characteristics, if present, can be used to identify the tool with the mark.

Striated toolmarks are produced when a tool is placed against an object softer than itself and with pressure applied, the tool is moved across the object producing a scrape. The parallel surface irregularities produced by this scraping action are known as a striated toolmark. These are also referred to as friction marks, abrasion marks and scratch marks.

Some toolmarks are a combination of both features. 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 produce invaluable links to suspects in a crime.

### SPECIAL PRECAUTIONS

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 are usually found near the points of entry or exit. Notes 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.

**NOTE:** A tool should **NEVER** be fitted into an impression to see if it could have made the mark. This could render laboratory analysis useless.

### PHOTOGRAPHY

Two types of photographs are necessary for courtroom presentation as well as for investigative purposes.

1. Overall photos depicting the entire scene and the object which bears the toolmark.
2. Close-up photos showing the detail of the toolmark. These photos should contain a scale and are used for identification and orientation only.

**NOTE:** Photos cannot be used for actual comparisons.

Photographs should depict the physical location and arrangement of the door, window, etc. bearing the mark. 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 should be submitted, with the evidence, for examination.

## RECORDING TOOLMARK EVIDENCE

Toolmarks should be completely documented prior to removal or casting. Notes, sketches and photographs must accurately reflect the position of all toolmarks to a fixed reference point, and should depict the height from the floor or ground.

## TRACE EVIDENCE

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.) Requested fingerprint and trace examinations will be performed prior to the toolmark examination.

On painted surfaces, bearing toolmark evidence, sample scrapings of the paint should be submitted to the laboratory 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.

Toolmark evidence should be packaged so 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 or the loss of, or contamination of trace evidence. Do not place evidence tape over the working surface of the tool.

## REMOVAL AND MARKING OF EVIDENCE

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.

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.)

If the mark appears on large items, it may be possible to remove the area containing the mark. 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.

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.

Including your photographs will greatly enhance the situation for the examiner.

**CASTS/MOLDS**

If an actual item cannot be submitted for toolmark examination, a cast/mold can be made. A suitable material for this purpose is Mikrosil (distributed by Kinderprint Co., P.O. Box 16, Martinez, CA 94553). This is a two-part substance which reproduces the fine detail needed for microscopic comparison. 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. Do not place multiple casts/molds together in a single container. Each cast should get a separate item # and be packaged individually. In toolmark cases, you may wish to consult with the Toolmark Examiners of the Indianapolis-Marion County Forensic Services Agency (Crime Lab) at (317) 327-3670.

Evidence Submission Guideline #11 adapted from Indiana State Police Laboratory Physical Evidence Bulletins.

ESG #11
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