

Standard Method for the Examination and Documentation of Non- Firearm Tools and Toolmarks

*Firearms & Toolmarks Subcommittee
Physics/Pattern Interpretation Scientific Area Committee
Organization of Scientific Area Committees (OSAC) for Forensic Science*

OSAC Proposed Standard

Standard Method for the Examination and Documentation of Non-Firearm Tools and Toolmarks

Prepared by
Firearms & Toolmarks Subcommittee
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Disclaimer:

This document has been developed by the Firearms & Toolmarks Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science through a consensus process and is *proposed* for further development through a Standard Developing Organization (SDO). This document is being made available so that the forensic science community and interested parties can consider the recommendations of the OSAC pertaining to applicable forensic science practices. The document was developed with input from experts in a broad array of forensic science disciplines as well as scientific research, measurement science, statistics, law, and policy.

This document has not been published by an SDO. Its contents are subject to change during the standards development process. All interested groups or individuals are strongly encouraged to submit comments on this proposed document during the open comment period administered by the Academy Standards Board (ASB) (www.asbstandardsboard.org/).

Keywords: *tool, toolmark, physical examination, classification*

This document provides procedures for the examination and documentation of non-firearm tools and toolmarks by a forensic toolmark examiner.

Foreword

This standard test method document was proposed by the Firearms and Toolmarks Subcommittee of the Organization of Scientific Area Committees (OSAC) by submitting a request to the American Academy of Forensic Sciences (AAFS) Academy Standards Board (ASB). This document is intended to provide procedures for the examination and documentation of non-firearm tools and toolmarks by forensic toolmark examiners.

Depending on the intended use of the information provided by the examination, differing levels of examination and documentation may be required. Laboratory policy may inform examiners as to which steps in the process are appropriate.



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1 Scope

This standard provides procedures for the examination and documentation of non-firearm tools and toolmarks by forensic toolmark examiners. Following these procedures, an examiner will be able to document and report the examination of non-firearm tools and toolmarks. This document does not cover the microscopic comparison of toolmarks.

2 Normative References

None

3 Terms and Definitions

3.1

Non-Firearm Tool

Any tool that is not a firearm

3.2

Non-Firearm Toolmark

Any toolmark produced by a tool other than a firearm.

4 Requirements

4.1 Equipment and Materials

Caliper

Camera

Casting material

Engraver or scribe

Personal protective equipment

Ruler and/or tape measure

Stereo microscope and/or comparison microscope

Various light sources

4.2 Test Preparations

4.2.1 Use appropriate personal protective equipment when handling evidence contaminated with chemical and/or biological hazards.

4.3 Documentation

4.3.1 Document the examination. Acceptable forms of documentation include, but are not limited to, worksheets, laboratory notes, sketches, photographs, or a combination thereof.

4.4 Evidence Handling

4.4.1 Document the condition of the evidence packaging as received and mark the packaging in accordance with laboratory protocols.

4.4.2 Mark the evidence for identification in accordance with laboratory protocols. Care should always be taken to ensure no markings interfere with or damage areas of interest, such as those that may be used for comparison.

4.5 Initial Examination

4.5.1 Conduct a preliminary examination of the tool, toolmarked item, and/or toolmark cast and document the condition as received, including any damage observed. If severely damaged, no further examination may be possible. For items that are suitable for further examination, proceed with the steps in section 4.6 that are appropriate for the item type.

4.5.2 Document the presence and location of any pertinent foreign or trace material, to include material transfer on the working surface of the tool. Collect and preserve any such material in accordance with laboratory policy.

4.5.3 Some toolmarked items may be too large or unwieldy to examine microscopically. In these instances, a cast of the toolmark may be produced for microscopic examination. Casts may also be produced to improve the visibility of the toolmark under the microscope, especially with translucent or highly reflective materials.

4.6 Physical Examination and Documentation

4.6.1 Documentation of the tool shall include the following, if known:

- Brand
- Type of tool (e.g. hammer, bolt cutters)
- Model, if known or indicated
- Action type(s) (e.g. cutting, prying, pinching, shearing)
- Size
- Dimensions/shape of working surface(s)
- Manufacturing process of working surface(s)
- Damage to the working surface(s)

It may be necessary and/or appropriate to label the tool working surface(s) to facilitate documentation.

4.6.2 Documentation of the toolmark and/or cast shall include the following, if known:

- Description of item bearing the toolmark(s)
- Location and orientation of toolmark(s)
- Composition of substrate(s) (e.g. steel, plastic, wood)
- Dimensions/shape of the toolmark(s)
- Type (impressed and/or striated)
- Direction of tool movement
- Tool action type, if discernible (e.g. cutting, prying, pinching, shearing)
- Presence or absence of potential individual characteristics and their value for microscopic comparison.

4.7 Test Reports

The test report shall include a description/physical classification of any tools, toolmarks, and/or casts of toolmarks that are examined, as appropriate.

Annex A
(informative)

Bibliography

- 1] Association of Firearm and Tool Mark Examiners Technical Procedures Manual, November 2015
 - 2] Association of Firearm and Tool Mark Examiners Glossary, 6th Edition, Version 6.120414
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