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**Standard for Examination and Documentation of
Footwear and Tire Impression Evidence**

DRAFT



Standard for Examination and Documentation of Footwear and Tire Impression Evidence

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Foreword

The order of examination is intended to be inventory, analysis, comparison, evaluation, and verification. It is recognized that some steps may not have clearly defined starting and ending points and that steps may need to be revisited at various times in the examination.

Completion of a training program and experience in these skills are essential to understanding and applying the principles outlined in this standard.

This document was revised, prepared, and finalized as a standard by the Footwear and Tire Consensus Body of the AAFS Standards Board. The draft of this standard was developed by the Footwear and Tire Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science.

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All hyperlinks and web addresses shown in this document are current as of the publication date of this standard.

Keywords: *methodology, examination, footwear impression, footwear, tire, documentation and conclusions, interpretation.*

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Standard for Examination and Documentation of Footwear and Tire Impression Evidence

1 Scope

This standard provides the examination process and minimum documentation requirements for relevant observations and conclusions/interpretations encountered during footwear/tire tread examinations. The required documentation as outlined in this standard will allow for an appropriate review.

This document is not all inclusive of the examinations that may be requested or conducted.

2 Normative References

The document contains no normative references. See Annex A, Bibliography for other references.

3 Terms and Definitions

For purposes of this document, the following definitions apply.

3.1 analysis

Consists of the assessment and documentation of the quality and quantity of the observed class characteristics and characteristics of use of an unknown impression and known footwear or tire impression.

3.2 characteristics of use

Consists of both wear and randomly acquired characteristics (RAC).

3.3 comparison

Consists of an examination of correspondence and/or non-correspondence between items, unknown and known.

3.4 evaluation

Consists of the consideration of data observed in the comparison and the weight of the correspondence and/or non-correspondence between two items, unknown and known.

3.5 suitability

Is the determination reached during the analysis phase after considering the quality, quantity, and specificity of features observed; to include class characteristics, characteristics of use, and limiting factors in an unknown impression in order to proceed with the examination process.

3.6 verification

Consists of another expert, trained to competency, conducting an independent analysis, comparison and evaluation of the items, unknown and known.

4 Examination and Documentation

4.1 General

Documentation shall be a complete record of the observations made during the examination process to support conclusions reached. Documentation shall be recorded contemporaneously throughout the examination process. The type of documentation (narrative, photographs, annotations, etc.) that is used to meet this standard may vary based on the complexity of the evidence. Data or features used in the comparison process shall be annotated. The minimum threshold includes narrative and photographic documentation. The documentation shall comply with the requirement in this standard so that another footwear or tire examiner could interpret the data and the basis of the opinion of the original examiner.

NOTE The minimum training requirements for the footwear tire examiner can be found in ANSI/ASB Standard 095, *Standard for Minimum Qualifications and Training for a Footwear/Tire Forensic Science Service Provider*.

Consideration shall be taken regarding the preservation of observed forensic evidence, other than footwear or tire impressions, on examined items.

4.2 Inventory

4.2.1 The inventory of an unknown footwear or tire impression should be conducted prior to the inventory of a known footwear or tire.

4.2.2 Initial observations shall be conducted for items of evidence (to include both unknown impressions and known footwear or tires separately) and include documentation of the following, when available:

- a) original packaging;
- b) original packaging condition;
- c) collection information including, but not limited to:
 - 1) date of recovery, and
 - 2) recovery location of impression;
- d) inventory of contents and assignment of identifiers to each item of evidence; and
- e) description of contents to distinguish from other similar items:
 - 1) recovery method, and
 - 2) evidence discrepancies.

4.3 Analysis

4.3.1 The analysis of an unknown footwear or tire impression shall be conducted prior to the analysis of a known footwear or tire. If the examiner is exposed to a known footwear or tire prior to analysis of the unknown, the exposure shall be recorded in the notes.

4.3.2 The analysis of unknown footwear or tire impressions shall include, but is not limited to, documentation of the following (if needed or utilized):

- a) sample preparation (e.g., cleaning the cast);
- b) examination quality photographs;
- c) processing techniques;
- d) account for observed impressions;
- e) suitability of observed impressions;
- f) for each suitable impression annotate and document:
 - 1) quality of impressions;
 - 2) class characteristics:
 - i. manufacturing information;
 - ii. observed features, shapes and patterns;
 - 3) interferences/limitations;
 - 4) characteristics of use.

4.3.3 The analysis of a known footwear or tire shall include documentation of the following (if needed or available):

- a) sample preparation (e.g., swabbing, collecting trace evidence, etc.);
- b) date of collection;
- c) overall and examination quality photographs of known footwear or tire;
- d) condition of outsole or tread;
- e) class characteristics:
 - 1) manufacturing information;
 - 2) observed features, shapes and patterns;
- f) characteristics of use.

4.3.4 Documentation of the analysis shall correspond to the complexity of the examination. Factors to consider in evaluating complexity include but are not limited to: distortion, substrate, matrix, quality and quantity of impression.

4.4 Comparison

4.4.1 During the comparison, the unknown impression, known footwear or tire as well as any and all test impressions shall be included in the examination.

4.4.2 If significant non-correspondence (e.g., different tread design) is observed during the comparison the examiner may move to the evaluation; test impressions of the known footwear or tire are not necessary.

4.4.3 If correspondence is observed between the unknown impression and the known footwear or tire, at least two test impressions should be recorded. Additional test impressions may be necessary to capture a range of deposition factors.

4.4.4 Documentation of test impressions shall include the following:

- a) manner in which they were prepared;
- b) matrix; and
- c) substrate.

4.4.5 The documentation of comparison shall include, but is not limited to, the following:

- a) method of comparison;
- b) quality and quantity of data observed:
 - 1) class characteristics,
 - 2) characteristics of use (if reproduced).

Inspection of the known can provide valuable information regarding the context of the questioned impression; therefore, contemporaneous documentation should reveal observations formed prior and post-examination of the known.

4.4.6 Documentation of the comparison shall correspond to the complexity of the examination and should include markings of correspondence or non-correspondence of class characteristics and characteristics of use, where applicable.

4.5 Evaluation

An evaluation of the information documented during the comparison of the unknown and known shall be conducted. Documentation of the evaluation shall include, but is not limited to the following:

- identity of examiner;

- date;
- identification of items used; and
- conclusion/interpretation reached.

4.6 Verification

4.6.1 A verification shall be conducted when the evaluation conclusion/interpretation includes evidence that supports the proposition of a same source association. A verification should be conducted for all other evaluation conclusion/interpretations.

Examiners are encouraged to employ methods to minimize cognitive bias during the verification process.

4.6.2 Examiners performing verifications shall adequately document their examinations. This applies to their documentation of the analysis, comparison, and evaluation phases.

4.6.3 Documentation of the verification shall correspond to the complexity of the examination and shall include, but is not limited to, the following:

- identity of verifying examiner;
- date;
- identification of items used;
- conclusion/interpretation reached; and
- methods to minimize cognitive bias, as applicable.

4.6.4 The agencies responsible for footwear and tire casework shall have conflict resolution procedures. If the conclusion/interpretation of the original examiner changes after the verification, this change shall be documented.

4.7 Report

A final report shall address all items of evidence examined and state results and conclusions accurately, clearly, unambiguously and in an unbiased manner.

Annex A **(informative)**

Bibliography

This is not meant to be an all-inclusive list as the group recognizes other publications on this subject may exist. At the time this standard was drafted, these were the publications available for reference. Additionally, any mention of a particular software tool or vendor as part of this bibliography is purely incidental, and any inclusion does not imply endorsement.

- 1] Academy Standards Board (ASB). ANSI/ASB Standard 095, *Standard for Minimum Qualifications and Training for a Footwear/Tire Forensic Science Service Provider*. First Edition, 2020¹.
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SWGTTREAD documents can be downloaded from:

<http://treadforensics.com/index.php/standards/u-s/standards-swgttread>

¹ http://www.asbstandardsboard.org/wp-content/uploads/2020/08/095_Std_e1.pdf

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