



TENNESSEE BUREAU OF INVESTIGATION

Forensic Services Division

Microanalysis Standard Operating Procedures Manual

Tire Make and Model Determination

Shoe and Tire Make and Model Determination

1. Scope

The purpose of this examination is to provide investigating officers and district attorney generals with possible shoe and/or tire makes and models from shoe and/or tire impression(s) left at a crime scene. This requires the use of resources including but not limited to shoe and tire publications, online resources, and the shoe and tire treads available in the SoleMate FPX database.

2. Terms and Definitions

See Microanalysis Standard Operating Procedures: *Footwear Impression Analysis and Comparison* and *Tire Impression Analysis and Comparison* for applicable terms and definitions.

3. References

SWGTHREAD – Scientific Working Group for Shoeprint and Tire Tread Evidence

See Microanalysis Standard Operating Procedure for *Footwear Impression Analysis and Comparison* and *Tire Impression Analysis and Comparison* for further references in shoe and/or tire impression analysis.

4. Examination Procedures

4.1. Evidence Types

Photographs, digital images, casts of shoe and/or tire impressions, objects that contain a shoe and/or tire impressions, or lifts of shoe and/or tire impressions.

4.2. Instruments and Equipment

See Microanalysis Standard Operating Procedure for *Footwear Impression Analysis and Comparison* and *Tire Impression Analysis and Comparison* for instruments and equipment.

4.3. Reagents and Chemicals



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See Microanalysis Standard Operating Procedure for *Footwear Impression Analysis and Comparison* and *Tire Impression Analysis and Comparison* for reagents and chemicals using in processing shoe and/or tire impressions.

4.4. Reagent Preparation

See Microanalysis Standard Operating Procedure for *Footwear Impression Analysis and Comparison* and *Tire Impression Analysis and Comparison* for reagent preparation.

4.5. Procedural and Chemical Precautions

See Microanalysis Standard Operating Procedure for *Footwear Impression Analysis and Comparison* and *Tire Impression Analysis and Comparison* for precautions.

4.6. Limitations

Examination of the questioned impression, in order to supply investigative information (i.e. type of shoe and/or tire, manufacturer, model or general type), is limited to the tread patterns in the SoleMate FPX database, *Tread Assist* software, internet search results, and *Tire Tread Guide*.

Retread tire information is limited.

4.7. Procedure

Document submitted samples according to *Microanalysis Quality Assurance Policy*.

See Microanalysis Standard Operating Procedure for *Footwear Impression Analysis and Comparison* and *Tire Impression Analysis and Comparison* for the analysis of submitted shoe and/or tire impressions.

Using the Tread Assist and/or SoleMate FPX Software

Determine if the impression from the scene is consistent with any shoes and/or tires located on the internet, within the software and/or tire guide books. If they are inconsistent, then the analysis is complete and a report is generated.

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If the impression is consistent with tread pattern(s) within the “Tread Design Guides”, SoleMate FPX software, or found online then it is recommended that a known shoe and/or tire or an image of a known shoe and/or tire be located and compared to assure accuracy of determination. Photographs shall be taken of this shoe and/or tire and included as part of the case file notes.

5. Measurement Traceability

No measurements are involved in this examination.

6. Reference Materials

SoleMate FPX software database
Yearly “Tread Assist” Software, Bennett Garfield Publications
Yearly “Tread Design Guides, Nancy Garfield Chychrun publisher.
Yearly “Who Makes it and Where” tire directory, Bennett Garfield Publications
Online resources

7. Reports

A list of possible shoe and/or tire makes and models are provided to the requesting officer by telephone (after technical review) and by official report. The report should always state the limitations of the software and reference guides. (Ex. Physical analysis of the cast revealed it to have a tread design similar to (list of makes/models). However, there may be other brands with this tread design.