OSAC 2022-N-0033 Standard for Processing Evidence for the Detection of Friction Ridge Impressions

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Physics/Pattern Scientific Area Committee
Organization of Scientific Area Committees (OSAC) for Forensic Science

OSAC Proposed Standard Standard for Processing Evidence for the Detection of Friction Ridge Impressions

Prepared by
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This OSAC Proposed Standard was written by the Organization of Scientific Area Committees (OSAC) for Forensic Science following a process that includes an open comment period. This Proposed Standard will be submitted to a standards developing organization and is subject to change.

There may be references in an OSAC Proposed Standard to other publications under development by OSAC. The information in the Proposed Standard, and underlying concepts and methodologies, may be used by the forensic-science community before the completion of such companion publications.

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Introduction

1.1. This document has been developed to improve the quality and consistency of friction ridge examination practices.

1.2. This document is the recommended broad class processing techniques to be applied when processing evidence for the detection of friction ridge impressions. The specific processing techniques applied are determined by the FSP based on the specific processes that are appropriate for each particular substrate and matrix combination.

1.2.1. The processes applied by each FSP shall be based on the efficiency and limitations of the process, availability of resources, the circumstances of the case, and the type and condition of the evidence.

1.3. In this document, the following verbal forms are used: "*shall*" indicates a requirement, "*should*" indicates a recommendation; "*may*" indicates permission; and "*can*" indicates a possibility or capability.

2. Scope

2.1. This document provides the standard requirements for the processing of evidence for the detection of friction ridge impressions.

2.2. This document does not address the photography or digital enhancement of friction ridge impressions or the validation of the various processing techniques, necessary equipment, or storage requirements.

3. Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1. Forensic Light Source: A filtered light source that may be fixed or tunable to a variety of spectral ranges.

3.2. Forensic Service Provider (FSP): A forensic science entity or forensic science practitioner providing forensic science services.

3.3. Sequential Processing: the application of chemical and/or physical friction ridge development techniques in a specific order to target specific constituents of friction ridge impressions which may be visualized for examination and to maximize the preservation of the friction ridge detail during each process. FSP policy and capabilities dictate the full spectrum of sequential processes available to examiners and a minimum standard for their application.

4. Processing Considerations

4.1 The FSP shall apply processing techniques in the sequences (i.e., sequential processing) prescribed in this document, from least destructive to most destructive, for the detection of friction ridge impressions.

4.1.1 The FSP may supplement and/or deviate from the sequences for the detection of friction ridge impressions in certain situations. Some examples of when the FSP may supplement and/or deviate from the sequences are:

- The item does not react to a processing technique as expected (i.e. dry plastic vs soft plastic, thermal paper).
- The item of evidence has an obvious known contaminant such as blood or grease.
- The processing technique has not been validated to perform sufficiently in certain environmental conditions.
- The size of the item does not allow for a specific processing technique that aligns to the required sequence.
- The FSP has evaluated the efficacy and limitations of the processing technique, availability of resources, the circumstances of the case, and the type and condition of the evidence.

4.1.2 The FSP shall document deviations from the sequences.

4.2 Prior to applying specific processing techniques to evidence, the FSP shall assess the potential for negative implication to other types of examinations. Some potential negative implications to consider are:

- Forensic Light Source(s), such as short-wave ultraviolet (UV) light source, and the potential negative impact on DNA examinations.
- Cyanoacrylate Dye Stains and the potential negative impact on adhesive side processing, Questioned Documents, Drug Chemistry, and Trace Evidence examinations.
- Porous Chemical Processing and the potential negative impact on thermal paper and Questioned Documents examinations.
- Powder and the potential negative impact on electronic evidence examinations.

4.3 The FSP shall preserve detected friction ridge impressions prior to applying the next processing techniques within the processing sequence.

4.4 The FSP shall establish appropriate health and safety practices, along with universal precautions to ensure the safety of personnel while maintaining the integrity of the evidence.

5. Processing Sequences

Many items of evidence consist of more than one physical property (e.g., a porous envelope with a glassine window). In those situations, the FSP shall apply the processing techniques using sequences appropriate for the relevant areas in a manner that does not negatively impact other areas of the evidence.

NOTE: Guidance related to application, formulation, and optimization of specific processing techniques can be found in the UK Home Office Fingerprint Source Book.

5.1 Non-Porous

5.1.1 Visual

5.1.2 Forensic Light Source(s)

5.1.3 Cyanoacrylate Fuming

5.1.4 Contrast, such as Dye Stain, Forensic Light Source(s), and/or Powder

5.2 Porous

5.2.1 Visual

5.2.2 Forensic Light Source(s)

5.2.3 Amino Acid Stain: 1,2-Indanedione

5.2.3.1 If 1,2-Indanedione is not practical, other options include 1,8-Diazafluoren-9-one and Ninhydrin

5.2.4 Sebaceous Stain: Physical Developer

5.2.4.1 If Physical Developer is not practical, another option is Oil Red O

5.3 Semi-Porous

5.3.1 Visual

5.3.2 Forensic Light Source(s)

5.3.3 Cyanoacrylate Fuming

5.3.4 Powder

5.3.5 Amino Acid Stain: 1,2-Indanedione

5.3.5.1 If 1,2-Indanedione is not practical, other options include 1,8-Diazafluoren-9-one and Ninhydrin

5.3.6 Contrast, such as Dye Stain, Forensic Light Source(s), and/or Powder

5.4 Adhesive

5.4.1 Visual

5.4.2 Forensic Light Source(s)

5.4.3 Adhesive Side Powder

6. References

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7. Appendix A: Change Log

Version	Date	Change