

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

Friction Ridge Subcommittee

Physics/Pattern Scientific Area Committee

Organization of Scientific Area Committees (OSAC) for Forensic Science





Draft OSAC Proposed Standard

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

Prepared by
Friction Ridge Subcommittee
Organization for Scientific Area Committees (OSAC) for Forensic Science

Version: 1.0 April 2022

Disclaimer:

This OSAC Proposed Standard was written by the (subcommittee) of the Organization of Scientific Area Committees (OSAC) for Forensic Science following a process that includes an <u>open comment period</u>. 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.

Any identification of commercial equipment, instruments, or materials in the Proposed Standard is not a recommendation or endorsement by the U.S. Government and does not imply that the equipment, instruments, or materials are necessarily the best available for the purpose.



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

Table of Contents

2			
3	1.	Introduction	1
4	2.	Scope	1
5	3.	Terms and Definitions	1
6	4.	Special Considerations	2
7	5.	Processing Sequences	3
8	6.	Appendix A: Change Log	4
9			
10			



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

Introduction

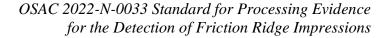
- 1.1. This document has been developed to improve the quality and consistency of friction ridge examination practices.
- 1.2. This document is the recommended broad class processing techniques to be applied when processing evidence for the detection of friction ridge impressions. The specific processing 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.



OSAC
Organization of Scientific Area
Committees for Forensic Science

4. Processing Considerations

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.

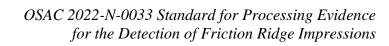
 Cyanoacrylate Dye Stains and the potential negative impact on adhesive side processing, Questioned Documents, Drug Chemistry, and Trace Evidence examinations.

Porous Chemical Processing and the potential negative impact on thermal paper and Questioned Documents examinations.
 Powder and the potential negative impact on electronic evidence

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

examinations.

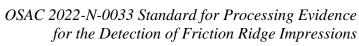
4.4 The FSP shall establish appropriate health and safety practices, along with universal precautions to ensure the safety of personnel while maintaining the integrity of the evidence.





5. Processing Sequences

100							
101	Many items of evidence consist of more than one physical property (e.g., a porous envelope with						
102	a glassine window). In those situations, the FSP shall apply the processing techniques using						
103	sequences appropriate for the relevant areas in a manner that does not negatively impact other						
104	areas of the evidence.						
105	areas or the c	vidence.					
106	NOTE: Cuidence related to application formulation and artimization of annuities						
107		NOTE: Guidance related to application, formulation, and optimization of specific processing techniques can be found in the UK Home Office Fingerprint Source Book.					
	processing tec	chinques can be found in the OK Home Office Phigerprint Source Book.					
108 109	5.1 Non-Poro	5 1 Nov. Doggood					
	J.1 Noll-Fold	us					
110	5 1 1	Viewal					
111	5.1.1	Visual					
112	7.1.0						
113	5.1.2	Forensic Light Source(s)					
114	7.1. 0						
115	5.1.3	Cyanoacrylate Fuming					
116							
117	5.1.4	Contrast, such as Dye Stain, Forensic Light Source(s), and/or Powder					
118							
119	5.2 Porous						
120							
121	5.2.1	Visual					
122							
123	5.2.2	Forensic Light Source(s)					
124							
125	5.2.3	Amino Acid Stain: 1,2-Indanedione					
126							
127		5.2.3.1 If 1,2-Indanedione is not practical, other options include					
128		1,8-Diazafluoren-9-one and Ninhydrin					
129							
130	5.2.4	Sebaceous Stain: Physical Developer					
131							
132		5.2.4.1 If Physical Developer is not practical, another option is Oil Red O					
133							
134	5.3 Semi-Porous						
135							
136	5.3.1	Visual					
137							
138	5.3.2	Forensic Light Source(s)					
139							
140	5.3.3	Cyanoacrylate Fuming					
141							
142	5.3.4	Powder					
143							





	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	3.6 Contrast, such as Dye Stain, Forensic Light Source(s), and/or Powder					
5.4	Adhes	Adhesive					
	5.4.1	Visual					
	5.4.2	Forensic Light Sour	ce(s)				
	5.4.3	Adhesive Side Powe	der				
6. I	References						
	rprint Sourcebook v2 (second edition). United Kingdom: Home Office Centre for Applied Science and nology. 2018.						
	ingerprint Sourcebook. Washington, D.C.: U.S. Department of Justice, Office of Justice Programs, National te of Justice. 2011.						
diazaf	t, V., Materazzi, S., Iuliano, G., and Niola, L. (2015), "Evaluation and comparison of 1,2-indanedione and 1,8-luoren-9-one solutions for the enhancement of latent fingerprints on porous surfaces", Forensic Science ational (254), pp 205-214.						
	Elad, M., Liptz, Y., Bar-Or, K. L., and Almog, J. (2017), "1,2-Indanedione - A winning ticket for developing marks: A validation study", Forensic Science International (271), pp 8-12.						
	ji, A. and Beaudoin, A. (2006), "Oil Red O Versus Physical Developer on Wet Paper: A Comparative Study," nal of Forensic Identification, Vol 56 (1), pp 33-52.						
	ma, J., Aumeer-Donovan, S., Lennard, C. and Roux, C. (2008), "Evaluation of the Fingermark Reagent Oil Red a Possible Replacement for Physical Developer", Journal of Forensic Identification, Vol 58 (2), pp 203-237.						
Simmons, R. K., Deacon, P. and Farrugia, K. J. (2014), "Water-Soaked Porous Evidence: A Comparison of Processing Methods", Journal of Forensic Identification, Vol 64 (2), pp 157-173.							
indan	Wallace-Kunkel, C., Lennard, C., Stoilovic, M., and Roux, C. (2007), "Optimisation and evaluation of 1,2-indanedione of use as a fingermark reagent and its application to real samples", Forensic Science International (168), pp 14-26.						
7. A	Appen	dix A: Change	Log				
	Version	Date	Change				