

ASB Standard 127, First Edition  
~~2021~~2022

**Standard for the Preservation and Examination of  
Charred Documents**

DRAFT



**ASB**  
ACADEMY  
STANDARDS BOARD

## Standard for the Preservation and Examination of Charred Documents

ASB Approved Xxxxx ~~2021~~2022

ANSI Approved Xxxxxx ~~2021~~2022



**ASB**  
ACADEMY  
STANDARDS BOARD

Academy Standards Board  
410 North 21<sup>st</sup> Street  
Colorado Springs, CO 80904

This document may be downloaded from: [www.asbstandardsboard.org](http://www.asbstandardsboard.org)

*This document is provided by the AAFS Standards Board for free. You are permitted to print and download the document and extracts from the document for your own use, provided that:*

- *you do not modify this document or its related graphics in any way;*
- *you do not use any illustrations or any graphics separately from any accompanying text; and,*
- *you include an acknowledgment alongside the copied material noting the AAFS Standards Board as the copyright holder and publisher.*

*You expressly agree not to reproduce, duplicate, copy, sell, resell, or exploit for any commercial purposes, this document or any portion of it. You may create a hyperlink to [www.asbstandardsboard.org](http://www.asbstandardsboard.org) to allow persons to download their individual, free copy of this document. Your hyperlink must not portray AAFS, the AAFS Standards Board, this document, our agents, associates and affiliates in an offensive manner, or be misleading or false. You may not use our trademarks as part of your link without our written agreement for you to do so.*

*The AAFS Standards Board retains the sole right to submit this document to any other forum for any purpose.*

*Certain commercial entities, equipment or materials may be identified in this document to describe a procedure or concept adequately. Such identification is not intended to imply recommendations or endorsement by the AAFS or the AAFS Standards Board, nor is it intended to imply that the entities, materials, or equipment are necessarily the best available for the purpose.*

## Foreword

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

The AAFS Standards Board (ASB) is an ANSI-accredited Standards Developing Organization with the purpose of providing accessible, high quality science-based consensus forensic standards. The ASB is a wholly owned subsidiary of the American Academy of Forensic Sciences (AAFS), established in 2015 and accredited by the American National Standards Institute (ANSI) in 2016. The ASB consists of Consensus Bodies (CB), which are open to all materially interested and affected individuals, companies, and organizations; a Board of Directors; and Staff.

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

**Keywords:** *forensic sciences, charred documents, preservation, questioned documents, arson, encapsulation, parylene, paper analysis*

## Table of Contents

1	Scope.....	.....
2	Normative References.....	.....
3	Terms and Definitions.....	.....
4	Requirements.....	.....
4.1	Competence.....	.....
4.2	Equipment.....	.....
4.3	Considerations and Limitations.....	.....
4.4	Procedures.....	.....
4.5	Non-destructive Examinations.....	.....
4.6	Destructive Examinations.....	.....
4.7	Reporting.....	.....
	Annex A (informative) Bibliography.....	.....

DRAFT

# Standard for the Preservation and Examination of Charred Documents

## 1 Scope

This document establishes the minimum required procedures used by Forensic Document Examiners (FDEs) in the preservation of, examination of, and reporting on charred documents. This generally includes the examination of charred documents for content (writing, printing), material (paper, cardboard, plastic etc.) and source determination. This does not include chemical examination of documents for accelerants or source of combustion.

## 2 Normative References

The following reference is indispensable for the application of the standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

SWGDOC *Standard for Scope of Work of Forensic Document Examiners*, 2013

## 3 Terms and Definitions

For purposes of this document, the following definitions apply.

### 3.1

#### **bone folder**

A piece of shaped bone or other material, such as plastic or non-stick material, typically used by bookbinders to crease paper and to separate pieces of paper that are stuck together.

### 3.2

#### **charred document(s)**

Document(s) damaged by heat or fire.

### 3.3

#### **digital image processing**

Any activity that develops/enhances a digital image.

### 3.4

#### **parylene processing**

The application of a clear polymer coating on a document(s) within a vacuum chamber to strengthen and stabilize the document(s).

### 3.5

#### **polyester film encapsulation**

A process whereby a document is sealed between two sheets of polyester film to preserve, stabilize, and facilitate handling.

### 3.6

#### **submersion**

The placement of a document(s) into a liquid to facilitate cleaning, unfolding, or separation of the document(s).

## 4 Requirements

### 4.1 Competence

#### 4.1.1 General

Competency in the examination of charred documents, as it relates to this document, is based upon a combination of the requisite knowledge, skills, and abilities acquired through appropriate education, training, and experience specific to forensic document examination.

#### 4.1.2 Requisite Knowledge, Skills, and Abilities

It is critical to have a knowledge base that includes: the materials used in the production of documents; the response of those materials to heat and flame; the processes used to preserve and restore documents, as well as the skills and abilities to analyze, compare, and evaluate case-related items.

### 4.2 Equipment

**4.2.1** The necessary time and facilities shall be made available to complete all applicable procedures and to maintain the condition of the items under examination. The FDE shall conform to the requirements in *SWGDOC Standard for Scope of Work of Forensic Document Examiners, 2013*.

**4.2.2** Appropriate light source(s) to distinguish fine detail shall be available. Natural, incandescent, fluorescent, light emitting diode (LED), or fiber optic lighting sources are generally used. These may include transmitted, side, and vertical incident lighting.

**4.2.3** Optical or digital magnification necessary to resolve fine detail shall be available. The magnification level and the equipment used to observe the feature(s) should be recorded.

**4.2.4** Image capture device(s) capable of sufficient resolution to record accurate detail shall be available. The equipment used and the resolution needed to observe the feature(s) should be recorded.

**4.2.5** Infrared (IR) image conversion device or system with appropriate light sources and filters for use in infrared reflectance (IRR) and infrared luminescence (IRL) examinations shall be available.

**4.2.6** Ultraviolet (UV) light sources shall be available.

**4.2.7** Measuring devices shall be available, these may include paper micrometer, typewriter grids, rulers, and magnifiers with reticle patterns.

**4.2.8** Polyester film or other encapsulation material, as required.

**4.2.9** Other equipment or devices generally used in the forensic document examination discipline that should be available for the preservation and examination of charred documents, as deemed appropriate by the FDE, may include:

— hand tools (e.g., bone folder, picks, probes, scalpels, spatulas, tweezers);

- atomizer;
- trays, tanks, and pliable screening;
- software for digital image processing;
- other apparatus, such as humidity chamber, laboratory oven, and any necessary chemicals;
- other supplies, such as cotton batting, paper lined boxes, plate glass, or other packaging/preservation supplies.

### **4.3 Considerations and Limitations**

**4.3.1** Items submitted for examination can have limitations that interfere with the procedures in this standard. Limitations can be due to the submission of non-original documents; the condition, quantity, or comparability of the material submitted; or from limited discriminating characteristics. The FDE shall ensure that limitations are noted and recorded.

NOTE This standard may not cover all aspects of unusual, uncommon, or specialized examinations.

**4.3.2** Document examinations should be conducted prior to any destructive processing (e.g., latent prints, DNA, ink chemistry). The FDE shall handle the items as required to avoid compromising subsequent examinations. The results of prior storage, handling, testing, or processing can adversely affect the preservation of the document(s). The document(s) should be immobilized as soon as possible to minimize damage prior to its preservation.

**4.3.3** The procedures in this standard can require destructive changes to an item. Prior to making such changes, the FDE shall obtain and record permission from the responsible party requesting the examination and advise them as to the potential benefits and subsequent limitations of these examinations and the extent of possible physical changes to the document. Destructive examinations are defined in 4.6.

**4.3.4** The FDE shall ensure that material(s) removed from the item under examination shall be documented and may be imaged prior to and after removal, and preserved separately for subsequent examination(s). These materials can be of value and can include staples, other binding devices, other attached documents, and trace materials, to include charred or melted material adhered to the document(s).

**4.3.5** The FDE shall take precautions to prevent disturbance of the charred documents by air circulation in the examination area.

**4.3.6** The FDE shall consider characteristics associated with charred documents may be the result of normal preparation, handling, and storage of the document(s).

**4.3.7** Some charred documents might not have observable physical characteristics, or these characteristics might not be detectable based on the type of examination(s) in this standard. The absence of these characteristics does not support a determination of the condition of the document prior to exposure to heat or flame.

**4.3.8** The FDE shall ensure that images are captured and documented before and after making destructive changes to the evidence or to the images of the evidence. The FDE shall

contemporaneously record the procedures performed to allow for an independent review and assessment of the images by another FDE, including any relevant setting(s) and variable(s) (see *SWGDOC Standard for Use of Image Capture and Storage Technology in Forensic Document Examination*, 2013 for additional information).

#### **4.4 Procedures**

**4.4.1** The FDE shall conduct an initial assessment of the document to determine the appropriate examinations, the sequence of examinations, and the potential limiting factors.

**4.4.2** Subsequent to the completion of the initial assessment, the FDE shall proceed to the applicable examinations. The FDE may discontinue the procedure at any point during the examination. The FDE shall record the reason(s) for a discontinuation.

NOTE The remaining procedures in 4.4 need not be performed in the order listed. Not all procedures may be applicable to the item(s) being examined.

**4.4.3** The FDE shall perform applicable procedures and contemporaneously record examinations performed and relevant observations in the notes. The results and accompanying notes should have sufficient detail to allow for an independent review and assessment of the conclusions by another FDE. The FDE shall include any relevant information, observations, equipment used, methods, evaluations, and conclusions, opinions, or interpretations.

**4.4.4** The observation, examination, and preservation of a charred document(s) can include:

- a) the nature and components of the document(s);
- b) the condition and extent of the charring;
- c) if the document is wet, refer to (ASB Standard 128, *Standard for the Preservation and Examination of Liquid Soaked Documents* - pending publication) for additional information;
- d) determination of the procedures to optimize preservation of the document(s).

**4.4.5** For multiple-page documents or a charred mass, the FDE shall attempt to separate and flatten the pages using appropriate equipment, such as bone folders, picks, probes, and tweezers. It may be necessary to humidify, submerge, or otherwise stabilize the documents. Various methods, such as humidifying, atomizing, submerging, or fuming, may be used to apply water or other solvents or binders.

**4.4.6** For a single-page document, the FDE should consider flattening or unfolding the document for examination, encapsulation or other stabilization processes, such as parylene processing.

**4.4.7** Other forensic examinations may be conducted as required.

#### **4.5 Non-destructive Examinations**

**4.5.1** The FDE shall ensure that applicable non-destructive procedures be performed.



**4.5.2** The FDE shall visually examine all sides of the item(s) macroscopically and ~~microscopically~~ assess the submitted item(s) to determine a need for further examination. The FDE shall perform all necessary further examinations.

**4.5.3** The FDE shall record observations, measurements, or both in the case notes, which can include but are not limited to the following:

- a) condition of charred document(s)/mass as received;
- b) type of media (e.g., paper, cardboard, plastic);
- c) visualized writing, or other markings;
- d) color;
- e) extent of charring;
- f) fastening and binding materials;
- g) manufacturing processes, packaging, or other characteristics that can aid in determination of source;
- h) trace materials present with the document; and
- i) miscellaneous characteristics might aid in determination of content.

**4.5.4** The FDE shall examine the document using various optical techniques and light sources, such as oblique lighting, transmitted lighting, UV, IRR, and IRL.

**4.5.5** The FDE shall ~~examine~~ record the document with an imaging ~~technique~~ technique, such as photography or digital image processing.

**4.5.6** A measurement scale shall be included in the image area when photographing a submitted item.

**4.5.7** Capture conditions, including resolution, color, and bit depth, shall be permanently recorded, within the metadata or otherwise, when a submitted item is scanned.

**4.5.8** The FDE shall record visualized entries relevant to the requested examination.

**4.5.9** The FDE may attempt to decipher and transcribe any visualized entries.

**4.5.10** The FDE shall analyze and compare the observed features and characteristics of the document to known items (if available), and evaluate the findings.

**4.5.11** The FDE shall determine the need for destructive examinations. If unnecessary, discontinue examinations, reach a conclusion(s), and report accordingly.

## 4.6 Destructive Examinations

**4.6.1** Destructive examinations are those that damage or otherwise change the item. They should be performed only after non-destructive methods have been exhausted. All findings shall be recorded in the case notes. Consideration should be given to the order in which destructive examinations are performed.

**4.6.2** Prior to conducting destructive testing, the FDE shall consult the responsible party and explain the potential benefits and limitations of the testing. The outcome of the consultation shall be recorded.

NOTE Destructive testing may consume the item(s) or otherwise limit subsequent examinations by any party.

**4.6.3** The use of destructive examinations can interfere with other types of forensic examinations (for example, chemical analysis of ink or latent print examinations).

**4.6.4** The FDE shall ensure the item is imaged before and after the use of destructive techniques as outlined in 4.3.8.

**4.6.5** When using solvents, the FDE shall ensure they are used appropriately. This may require that testing be performed prior to general application to each item in order to determine the best course of action.

CAUTION Exposure to solvents, in an attempt to counteract the obscuring substance, can have a deleterious effect on inks, toner, or the substrate. Refer to the Material Safety Data Sheet (MSDS) for proper application and any health and safety effects.

**4.6.6** The FDE shall conduct other forensic document examinations as appropriate (e.g., handwriting comparison, typewriter comparison), resulting from observations made during or after destructive processing.

**4.6.7** Results from the procedures in this standard can be formed after the examination(s) have been conducted. The number and nature of examination(s) are dependent on the material being evaluated.

**4.6.8** Results of the above examinations, comparisons, and evaluations shall be reported accordingly.

## 4.7 Reporting

**4.7.1** Reports generated as the result of the procedures used in this standard shall be complete and thorough. The report shall contain the stated purpose of the examination(s), the examination(s) conducted, observations, conclusions and/or opinions, limitations and sources of uncertainty (as applicable), and includes the method(s) used. Address the following, if applicable:

- a) if any characteristics indicative of charred documents, extent of charring, or determination of source, were observed;
- b) if any writing, entries, or markings were decipherable;

- c) the presence of any text or description of the writing, entries, or markings;
- d) the description of other materials such as packaging, binding materials, trace materials, etc.;
- e) images of the writing, entries, or markings;
- f) method of preservation/packaging.

DRAFT

## **Annex A** **(informative)**

### **Bibliography**

The following bibliography is not intended to be an all-inclusive list, review, or endorsement of literature on this topic. The goal of the bibliography is to provide examples of publications addressed in the standard.

- 1] ASB Standard 128, *Standard for the Preservation and Examination of Liquid Soaked Documents – pending publication*)
- 2] SWGDOC *Standard for Use of Image Capture and Storage Technology in Forensic Document Examination*, 2013

DRAFT

DRAFT



**ASB**  
**ACADEMY**  
**STANDARDS BOARD**

Academy Standards Board  
410 North 21st Street  
Colorado Springs, CO 80904

[www.asbstandardsboard.org](http://www.asbstandardsboard.org)