

OSAC PROPOSED STANDARD

2026-N-1052

Standard for the Initial Assessment of Document Evidence

Forensic Document Examination Subcommittee
Pattern/Impression Scientific Area Committee (SAC)
Organization of Scientific Area Committees (OSAC) for Forensic Science



Draft OSAC Proposed Standard

OSAC 2026-N-1052 Standard for the Initial Assessment of Document Evidence

Prepared by
Forensic Document Examination
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Disclaimer:

This OSAC Proposed Standard was developed by the Organization of Scientific Area Committees (OSAC) for Forensic Science. It is a completed work product of the OSAC and has been approved for listing on the OSAC Registry. This OSAC Proposed Standard will be submitted to a standard developing organization and is subject to change.

This OSAC Proposed Standard has completed an open comment period and a rigorous technical and quality review by the originating OSAC unit (e.g., subcommittee), their parent body (e.g., scientific area committee), and the OSAC Standards Review Panel.

OSAC encourages the forensic science community to implement this OSAC Proposed Standard into practice as it represents the best guidance available as approved by the OSAC.

There may be references in this OSAC Proposed Standard to other publications under development by OSAC. This OSAC Proposed Standard may be used by the forensic-science community before the completion of such companion publications.

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Foreword

Forensic document examination is a discipline regarding the authenticity, genuineness, or source of documents that are in question. During the initial assessment of evidence, forensic document examiners are tasked with determining the appropriate document examinations, the sequence of those examinations, and recognizing the potential limiting factors of those examinations being conducted. Critical thinking, knowledge, skills, and abilities by the forensic document examiner (FDE) are necessary in order to preserve the document evidence and assess the document for their method of production. This draft version will be submitted to the ASB - a Standards Developing Organization, which will vet this standard using a consensus process.

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

Keywords: *forensic document examination, forensic document examiner, initial evidence assessment*

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Standard for the Initial Assessment of Document Evidence

1 Scope

This standard provides procedures used by forensic document examiners (FDEs) in the initial assessment of document evidence. It will aid in determining the appropriate examinations to be conducted, assist in recognizing limitations, and determining if the evidence is suitable for further forensic testing. These procedures allow FDEs to observe, note, and record the initial assessment of document evidence.

The initial assessment of evidence depends on the nature of the material submitted. The standard may not cover all aspects of unusual or uncommon document evidence submitted.

No studies have been completed on the performance of this standard. No studies have been conducted to determine error rates of the determination of method of production.

2 Normative References

ANSI/ASB Standard 011 Scope of Expertise in Forensic Document Examination, 2022, First Edition

ANSI/ASB Technical Report 071 Forensic Document Examination Terms and Definitions, 2024, First Edition

3 Terms and Definitions

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

3.1

Amplitude Modulation

Result of halftoning to represent a broad color space using cyan, yellow, magenta, and black, where individual dots are spaced at a fixed distance apart in a grid pattern and have different diameters.

3.2

Burr Striations

Areas of a written line where the ball mechanism is insufficiently inked, resulting in a void area across the line. This can result from the ink stroke direction not allowing the ball to be re-inked as it rotates. These arise from defects in the ball and/or ball housing of a ballpoint pen, debris accumulating on the ball, or the ink not fully covering the ball, leading to an uneven ink line.

3.3

Feathering (writing)

Thin, tapering, or light-colored ink line that occurs at the beginning or end of a stroke, often caused by the pen or writing instrument touching or leaving the paper.

3.4**Feathering (printing)**

When ink is applied to a substrate, it can preferentially wick down or squeeze out along paper fibers. This results in a non-uniform edge, which can be seen with aqueous writing inks and viscous printing inks (e.g., intaglio inks).

3.5**Frequency Modulation**

Result of halftoning to represent a broad color space using cyan, yellow, magenta, and black, where individual dots have the same diameter and non-fixed distances apart.

3.6**Hesitation Marks**

Visible ink thickening or pauses in a line of writing, indicating where the pen slowed or stopped momentarily, but without being lifted from the paper.

3.7**Image Capture Device**

Comprising of an image sensor, a light source, and a network interface, any process where an electronic device is used to create a digital representation of an image and/or document. Device used in the recording of data.

3.8**Railroad Tracks**

Variation in ink density or void of the ink line where the outer edges leave two lines running parallel to one another.

3.9**Trash Mark**

Reproducible, unintended printed marks in areas without obvious text or graphics.

4 Requirements

4.1 It is important that the examiner has the requisite knowledge, skills and abilities acquired through appropriate education, training, and experience in forensic document examinations to assess items of evidence. This assessment may include noting how the evidence items were packaged, condition and accuracy of items received, and suitability of requested examinations and/or other probative examinations.

4.1.1 The procedures in this standard are applicable whether the examination is of questioned and known items or of exclusively questioned items.

4.1.2 These procedures include an evaluation of the sufficiency and limitations of the material available for examination.

4.1.3 The methods employed will depend upon the nature of the material available for examination.

This Proposed Standard will be submitted to a standards developing organization and is subject to change.

4.2 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

4.3 This standard provides the best practices that should be used by forensic document examiners for the visualization, recording, and evaluation of document evidence for examination.

4.4 The FDE shall:

4.4.1 Maintain a chain of custody, based on a written protocol, for all items submitted.

4.4.2 Assess the condition of outer packaging, if appropriate, making note of any unusual marks or damage that could impact the integrity of the evidence.

4.4.3 Review written communications received to determine what examinations are requested and what other examinations could be performed that were not requested. Contact the submitter if necessary and thoroughly document communication.

4.4.4 Preserve the integrity of the evidence for other disciplines. Preserve potentially relevant physical evidence present on a document(s).

4.4.5 Document if the assessment is stopped at any time.

4.5 Equipment

All equipment and apparatus shall be properly maintained and calibrated as required by the manufacturer's specifications and documented as required by the laboratory practices and quality assurance procedures.

The FDE shall have the time, facilities, and equipment necessary to complete all applicable procedures.

The FDE shall conform to the requirements in ANSI/ASB Standard 011, 1st edition, 2022 Scope of Expertise in Forensic Document Examination.

4.5.1 Standard Equipment

The following equipment, tools, and instrumentation are required in the most frequently encountered forensic document problems, and shall be accessible at all times:

4.5.1.1 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.

4.5.1.2 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.

4.5.1.3 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.

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

5 Procedures

Since document evidence can be various types of substrates and created with any type of medium, it is important for the document examiner to determine the pertinent forensic question(s) in order to plan their approach to the case. This standard does not intend to cover all printing processes or writing mediums that may be examined by an FDE. This standard covers more commonly used methods for creating documents.

The following is a plan of action for the preliminary assessment of evidence items. These do not have to be performed in the order given; however, when applicable, the questioned document(s) should be examined before the known documents. The designation of evidence as questioned or known documents may need to be provided by the submitter. The examiner shall endeavor to avoid exposure to potentially biasing information that is not necessary for evaluation purposes. If such exposure occurs, the examiner shall document the information received or reassign it to another qualified examiner.

The examiner shall perform and document all applicable procedures in sections 5.1 through 5.9. Deviations from these procedures shall be documented and explained.

5.1 The FDE shall prepare work surfaces to protect evidence items from contamination and/or loss by keeping the case separate from other cases and keeping a clean/disinfected working surface.

5.2 The FDE shall use appropriate safety apparel or personal protective equipment (PPE) during handling and examination of evidence (e.g., non-cotton gloves and masks) to ensure preservation of documents for other forensic testing that will occur upon completion of the forensic document examination process.

5.3 The FDE shall maintain integrity of the evidence item(s) by proper handling procedures, including:

5.3.1 Avoid making any necessary changes to the document evidence.

5.3.2 Avoid excessive heat, light, and dampness.

5.3.3 Limit handling as much as possible.

5.4 The FDE shall uniquely label, tag, or catalogue each item with the appropriate information to ensure that the items have a distinct description.

5.4.1 The FDE shall separate the questioned from the known documents, if applicable.

5.4.2 The FDE shall preserve and note any trace evidence materials, torn portions, loose items, etc.

5.5 The FDE shall scan, photograph, or photocopy the evidence items to reflect its original size and condition.

5.6 The FDE shall evaluate the physical characteristics of the substrate, including size, color, thickness, weight, surface texture, edges, security features, holes, tears, stains, etc.

5.6.1 The FDE shall evaluate physical appearance and note the condition of the evidence item(s).

5.6.2 The FDE should utilize appropriate lighting during the assessment of the evidence item(s).

5.6.3 The FDE should use magnification to evaluate the microscopic features of the evidence.

5.7 The FDE shall evaluate the physical characteristics of the handwriting, machine printing, or other markings to determine how they were produced.

5.7.1 Characteristics of Writing Instruments

5.7.1.1 Ballpoint pens

Ballpoint pens use a paste-like, non-aqueous ink that dries once the writing instrument is used on a substrate.

Common characteristics may include:

- Variable indentations of writing line
- Smearing or smudging
- Sister lines
- Burr striations
- Surface accumulation of ink (i.e., gooping, hesitation marks)
- Skipping, short gaps
- Ink doesn't penetrate paper



5.7.1.2 Porous tip and Fiber tip

Porous tip and fiber tip pens are writing instruments without a ball and ball housing using a low viscosity ink flowing through the tip delivering a quick-drying ink line.

Common characteristics may include:

- Little to no indentations of writing line
- Uniform color
- Feathering
- Tapering ending strokes
- Hesitation marks
- Ink penetrates paper



5.7.1.3 Rollerball pens

Rollerball pens use an aqueous ink and are considered a hybrid between fountain and ballpoint pens.

Common characteristics may include:

- Variable indentations of writing line
- Feathering
- Tapering ending strokes
- Bleeding
- Flow-back at ending strokes



5.7.1.4 Gel pens

Water-based gel ink with pigment, which is delivered with a ball mechanism to a substrate.

Common characteristics may include:

- Variable indentations of writing line
- Railroad tracks
- Gooping
- Ink is typically thick, opaque, and good for slick surfaces



5.7.1.5 Fountain or Nib pens

This type of writing instrument contains its own ink reservoir. The nibs are flexible and will separate to deposit liquid ink onto the substrate. This ink will penetrate the paper and air dries.

Common characteristics may include:

- Variable indentations of writing line
- Railroad tracks
- Feathering
- Bleeding
- Flow-back at ending strokes
- Tapering ending strokes
- Ink absorbed into paper
- Shaded ink lines

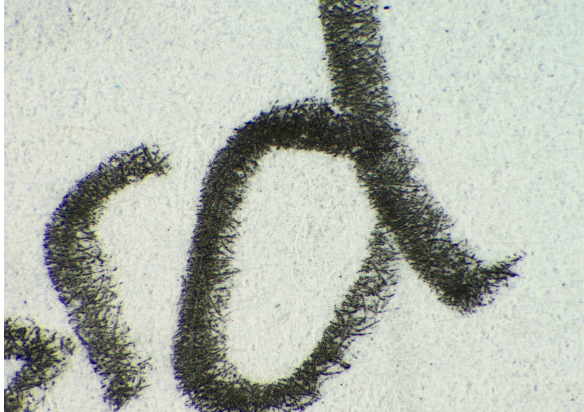


5.7.1.6 Pencils

Pencils can be subdivided into 3 categories: encased graphite, encased color, and mechanical. Encased graphite pencils are made with graphite mixed with clay and waxes. Colored pencils are made of wax and colored pigments. The pressure applied by the writer will cause the graphite or wax residue to be left behind on the writing surface and will not penetrate the fibers. Mechanical pencils have a refillable solid marking core that is not bonded to the outer casing.

Common characteristics may include:

- Variable indentations of writing line
- Sheen
- Erasability
- Smudging
- Incomplete colorant coverage of substrate
- Accumulation of colorant along the paper fibers



5.7.1.7 Other

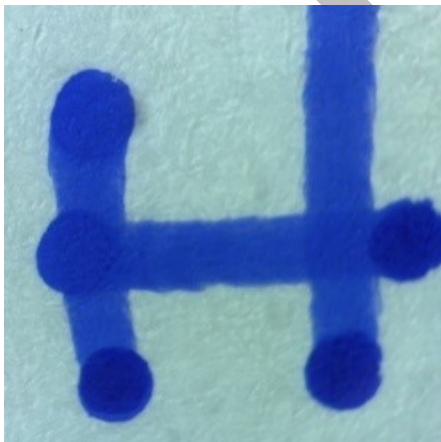
A variety of items can be used in unconventional ways as writing instruments. A spray paint can, paintbrush, lipstick, fingertip, knife, or any other device can also be used to produce writing.

5.7.1.8 Machine Writing

Machine writing is the mechanical movement of a writing instrument driven by a programmed or recorded pattern.

Common characteristics may include:

- Uniform pen pressure
- Blunt beginning and ending strokes
- Constant speed of writing
- Slight tremor



5.7.2 Characteristics of Machine Printing

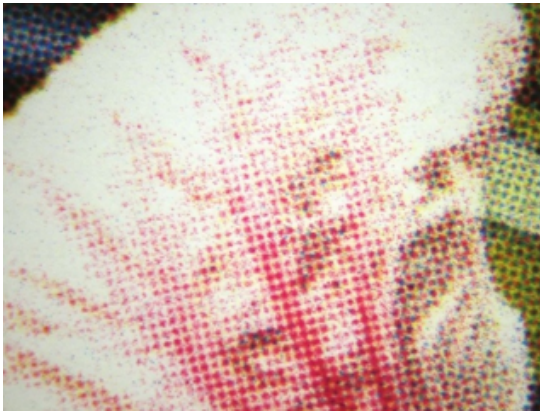
The following includes some commonly used print processes that may produce documents.

5.7.2.1 Toner

Toner printing is machine produced printing where colorant particles are adhered to a substrate using electrostatic or magnetic properties.

Common characteristics may include:

- Lack of impressions on substrate
- Fine particles or debris in non-image areas
- Fine particles which compromise the printed areas
- Use of four-color [cyan, magenta, yellow, black (CMYK)] half-tone patterns
- Colorants which appear to rest on top of the substrate surface and may produce a shadow under side lighting
- Amplitude modulation
- Presence of yellow dots
- Trash marks
- Repeating defects (e.g., a defect that appears every ~3 inches down a page)
- Printing that appears glossy or melted under microscopy examination



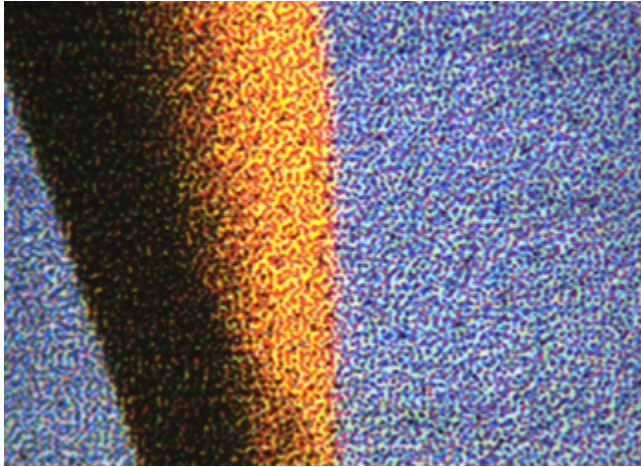
5.7.2.2 Inkjet

Inkjet printing is machine-produced printing from a liquid or solid that is jetted onto a substrate.

Common characteristics may include:

- Lack of impressions on substrate
- Feathering
- Bleed into paper fibers
- Small droplets of liquid which may appear to blend into a broad array of colors
- Satellites
- Black fortification (black colorant under printed with CMY)
- Enhanced substrate fiber contrast
- Clean non-image areas
- Frequency modulation
- Misaligned printed graphics or text
- Colorants that appear to absorb into the substrate surface or provide no visible profile under side lighting
- Banding

- 384
- Typically, a fixed number of colorants (4-color (CMYK), 6-color)



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387 5.7.2.3 Dye sublimation

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389 Dye Sublimation, also referred to as Dye Diffusion, is a modern print process that involves digital

390 computer printing techniques that utilize heat to vaporize inks to the substrate.

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392 Common characteristics may include:

- 393
- Blurry (difficult to focus under a microscope)
 - Flat
 - Shiny
 - Amplitude modulation
 - Applied to photographic quality paper or plastic
 - Generates photograph-like image quality
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402 5.7.2.4 Commercial Printing

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404 Commercial printing refers to the process of producing a large volume of printed materials using

405 large-format printing machines. These processes use specialized printing techniques, materials,

406 and equipment to create high-quality products. There are several types of commercial printing

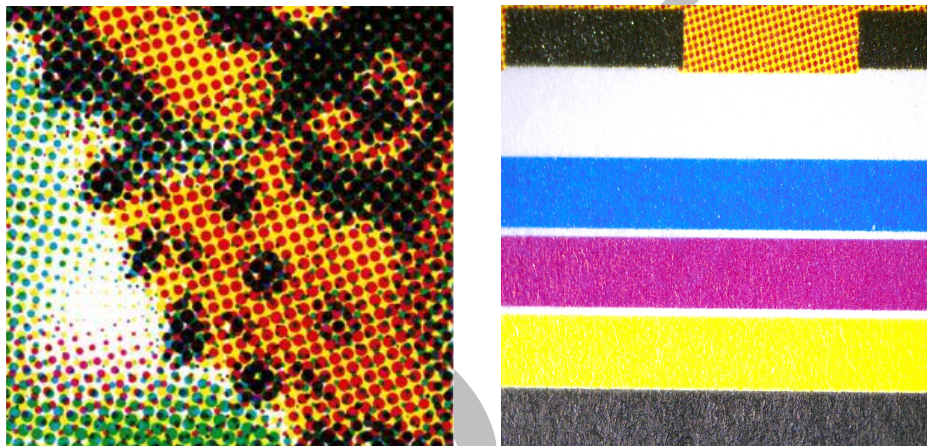
407 available.

5.7.2.4.1 Offset Lithography

This is the most common commercial print process, resulting in high-quality images and large print volumes. Offset lithography is a planographic print process that yields a flat image with uniform ink coverage of the printed areas. Each individual color has a separate printing plate.

Common characteristics may include:

- Flat image- not recessed or raised
- Sharp edges, crisp lines
- Consistent color, uniform in density
- Clean non-image areas
- Amplitude modulation
- Half-tone color reproduction which is occasionally supplemented by Pantone® colors
- Screen angles resulting in rosette pattern formations on color printouts



5.7.2.4.2 Letterpress

Letterpress is one of the oldest commercial print processes. It is a relief process in which the image areas of a plate are raised above the non-image background. Letterpress uses high viscosity, thick pasty inks that are placed under pressure against a substrate. This direct process causes the ink to be squeezed out around the edges of the printing plate.

Common characteristics may include:

- Sharp, crisp
- Halo/outline at edges from the ink squeezing out to the edges under the plate's pressure
- Indented surface on printed side & embossed surface on reverse
- Used in the numerical sequencing/serialization of documents

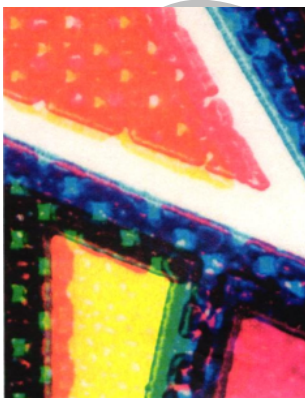


5.7.2.4.3 Flexography

Flexography is an inexpensive relief print process and is a widely used technique mainly used to produce packaging materials on thin substrates. Flexography is a direct process that uses flexible, rubber plates to transfer the fast-drying ink to various substrates.

Common characteristics may include:

- Squeegee effect - More defined halo/outline at edges [than Letterpress]
- Different densities in ink
- Vibrant colors
- Used on thin tape or plastic films to provide brand markings



5.7.2.4.4 Intaglio

Intaglio is a high-quality print process that utilizes plates that are hand-engraved or chemically etched by a machine to produce images or text. Intaglio uses a thick, viscous ink that resides in the grooves etched in the surface of the plate and high pressure is used to transfer the ink to the substrate.

Common characteristics may include:

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- Feathering
- Shadowing
- Raised surface
- Embossing on the reverse



5.7.3 Characteristics of Other Markings

5.7.3.1 Stamps

A stamp is a hand-marking device capable of making an inked impression using a manual relief process. A variety of die materials that include, but are not limited to, vulcanized rubber, laserable rubber, photopolymer, gel, and metal (ANSI/ASB 117) can be used to create the raised stamp surface. They can be classified by the location of the ink source: hand-stamps, self-inking stamps, pre-inked stamps, and flat-die stamps. Characteristics of stamp impressions depend on a variety of factors such as the type of ink, die material, and size of the stamp.

Common characteristics may include:

- Squeegee effect
- Even ink coverage
- Rounded beginnings & endings of letters
- Uneven outline of letter
- Feathering or bleeding of ink on edges of letters
- Bleeding through paper (oil-based ink)
- Lack of indentations

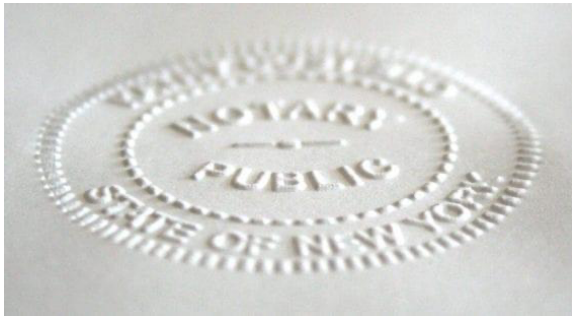


5.7.3.2 Seals

Seals are raised markings on a substrate that historically signify a document is authentic and has some value. A seal can be impressed in a soft material like clay or wax, or a seal can be impressed in the substrate without the use of ink (dry seal). The major techniques used to create seals are hand-punched or by mechanical, computer, or laser engraving.

Common characteristics may include:

- Raised surface
- Embossing on the reverse



5.8 The FDE shall determine which examination(s) will be necessary given the evidence items submitted.

5.8.1 The FDE shall ensure that all pertinent forensic questions will be answered in the examinations and these examinations do not have to be completed in any particular order.

5.9 After completion of the initial assessment, the examiner shall proceed to the appropriate procedure and/or standard for the specific examination processes.

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Annex A

517

(informative)

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Bibliography

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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.

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