

**TENNESSEE BUREAU OF INVESTIGATION**  
*Forensic Services Division*



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Latent Print Standard Operating Procedures  
3.7 Glacial Acetic Acid

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**3.7.1 Scope**

Glacial Acetic Acid is used to develop latent prints on thermal paper, such as receipts. This process can be used as an alternative to ninhydrin and 1,2-Indanedione since thermal paper is sensitive to the solvents and heat used in that procedure.

**3.7.2 Evidence**

This reagent is appropriate for thermal paper (i.e. receipts and paper lottery tickets).

**3.7.3 Safety Precautions/Limitations**

Do not allow the thermal paper come into contact with the glacial acetic acid. Immersion in the liquid will cause the paper to turn black making it difficult or impossible to distinguish any developed ridge detail.

Clear copies of all documents should be made prior to processing.

Use only in fume hood.  
Wear safety glasses/ goggles.  
Handle with rubber gloves.  
Wear lab coat or protective clothing.  
Keep away from open flame, heat or sparks.  
Avoid contact with skin.

**3.7.4 Chemicals**

Glacial Acetic Acid

**3.7.5 Instruments/Equipment**

Beaker  
Tongs  
Safety Equipment

**3.7.6 Preparation**

Glacial acetic acid is purchased.

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**3.7.6.1 Storage**

Glacial acetic acid is stored in its original container in the acid storage cabinet.

**3.7.6.2 Shelf Life**

No expiration date is provided, however a control will be performed prior to use on evidence.

**3.7.7 Controls**

Latent prints are put on thermal paper and processed with glacial acetic acid to ensure that the reagent is working properly.

A positive result is achieved with the development of light gray to black ridge detail.

A negative result occurs when no ridge detail develops.

A control must be successfully performed before using glacial acetic acid on evidence. This control must be documented in the Reagent Logbook as well as the examiner's notes.

If at any time a control test indicates that a reagent is not working properly, the examiner or technician performing the control will properly dispose of that bottle, open a new bottle, and test a new control. Once the control tests appropriately, the glacial acetic acid may be used.

**3.7.8 Procedure**

1. Make copies of documents as needed.
2. Pour glacial acetic acid into a large mouth beaker or other suitable glassware.
3. Using tongs, suspend document over beaker for approximately 20-30 seconds.
4. Observe progress of development.
5. Gentle agitation of glacial acetic acid may be needed during processing to promote vapors.
6. Examine evidence to determine if any ridge detail is present.

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**3.7.8.1 Deviation from Protocol**

A variation in the above procedure may be performed with supervisor approval.

**3.7.9 Interpretation of Results**

Latent prints of comparable value shall be marked and photographed with a ruler included or scanned as soon as possible. Refer to 2.5.2 and 2.5.5 of the Forensic Imaging Standard Operating Procedures Manual for further instruction.

**3.7.10 References**

Jackson, C. A Short Research Project into the Permanence of Thermal Fax Papers. *Abbey Newsletter*. 1989, 13 (8). (Printed with the permission of the Australian Archives, from the AICCM National Newsletter, June 1989, p. 10-11).

Ma, R.; Wei, Q. Chemical Fuming: A Practical Method for Fingerprint Development on Thermal Paper. *Journal of Forensic Identification*. 2006, 56 (3), 364-373.