

Technical Procedure for Basic Yellow

1.0 Purpose – This procedure is a non-porous development procedure.

2.0 Scope – This procedure is used in the processing of non-porous evidence that may contain impressions that require developing/enhancing.

2.1 One of the most effective ways to recover latent prints from items of evidence is to use a laser dye followed by a laser or alternate light source examination. Basic Yellow is one of the most effective laser dyes for recovering latent prints on various surfaces. This dye is normally used on non-porous surfaces (e.g., metal, glass, plastic, etc.); however, under certain conditions it can be used on porous or semi-porous surfaces. This dye is extremely efficient in that it is highly fluorescent and can be used with various alternate light sources.

3.0 Definitions

- **Alternate light source:** Any of the multiple forensic light sources readily available in the Latent Evidence Section, including, but not limited to, the CrimeScope, Mini-CrimeScope, TracER Laser, and Ultra-Lite ALS.
- **CE:** Cyanoacrylate ester also known as super glue.

4.0 Equipment, Materials and Reagents

4.1 Equipment and Materials

- Orange filter (goggles and/or camera lens filter)
- Alternate light source
- Fume hood
- Gloves
- Face shield and/or safety goggles
- Plastic applicator bottles or tray for submersion

4.2 Reagents

- Basic Yellow (powder)
- Methanol

5.0 Procedure

5.1 Mixing Procedure

5.1.1 Place 0.005 gram of Basic Yellow (powder) in five hundred (500) mL of methanol. (To approximate this amount, dampen the tip of an unfolded paperclip with methanol and insert it into the chemical bottle. The powder that adheres to the paperclip can then be transferred into the methanol.)

5.1.2 Thoroughly dissolve the Basic Yellow powder in the methanol. Solution is ready for use.

5.2 Application Procedure

- 5.2.1 Forensic Scientists shall produce a self-made test print to be processed concurrently with items of evidence. (See Section Technical Procedure for Ensuring Quality Control.)
- 5.2.2 Apply cyanoacrylate ester to the item of evidence. Basic Yellow adheres to the chlorosis that occurs after processing with CE.
- 5.2.3 Non-porous items: Utilizing the fume hood and gloves, spray or completely submerge the item of evidence in the Methanol/Basic Yellow solution. Allow to air dry.
- 5.2.4 When completely dry, view the item using the CrimeScope, Mini-CrimeScope or TracER Laser. Use goggles to view any fluorescence on the item. Latent prints will fluoresce bright yellow.

Note: Basic Yellow will preferentially adhere to super glued prints, but a certain amount may adhere to the item surface. If too much dye is used, the entire surface will fluoresce and mask the latent print. In this case, rinsing the item with plain methanol will cause the excess dye to wash away and, in most cases, the dye adhering to the latent print will remain.

- 5.2.5 Porous/semi-porous items: Follow the above directions (in 5.1) for Basic Yellow preparation, substituting distilled water for the methanol. Apply this substituted preparation as in 5.2.2.

Note: Porous/semi-porous items shall be superglued prior to treatment; however, these items pose a problem when using Basic Yellow as a solution stain. The dye penetrates the pores of the item, causing overall fluorescence. The latent prints will be masked in this instance and rinsing the excess dye is difficult. The best way to solution stain porous/semi-porous items is to use the water based Basic Yellow solution.

- 5.2.6 Once the item has been sprayed or submerged, it should be rinsed IMMEDIATELY with clear water and scanned with an ALS or Laser.
- 5.2.7 Any latent prints shall be preserved using photography. Camera shall be equipped with an orange filter for print visualization.

5.3 Standards and Controls - N/A

5.4 Calibration - N/A

5.5 Sampling – N/A

5.6 Calculations - N/A

5.7 Uncertainty of Measurement - N/A

6.0 Limitations – Basic Yellow is designed to be used for the processing of non-porous evidence. Some porous/semi-porous items may be processed using this technique based on training and experience.

- 6.1 The cyanoacrylate fuming process is vital to the success of Basic Yellow processing.
- 6.2 Basic Yellow powder has an indefinite shelf life; however, once prepared it has a shelf life of six (6) months.

6.3 All prepared solution shall be stored in dark, shatter-proof bottles. Working solution may be stored in clear spray bottles.

6.4 Basic Yellow powder shall be stored in its original shipping container.

7.0 Safety – The safety concerns regarding Basic Yellow have not been thoroughly investigated and there are varied opinions on the associated health effects of this chemical. The chemical solution shall be applied and treated with extreme care until the full effects are known. As with any chemical, it may cause irritation when in contact with the eyes or skin and may be harmful if inhaled or ingested. The methanol used in this solution is toxic and flammable and shall be handled with extreme care. Protective gloves, eye goggles and aprons shall be worn at all times.

8.0 References

Journal of Forensic Sciences. Vol. 24, 1: 96-100 (1979).

Kent, T. ed. *Manual of Fingerprint Development Techniques: A Guide to the Selection and Use of Processing for the Development of Latent Fingerprints*. Police Scientific Development Branch, London (July 1992).

Laser Enhancement of Latent Fingerprints. Fingermatrix, Inc., Pender Drive, Suite 310 Fairfax, Virginia, 22030. (March 17, 1988): 1-16.

Lee, H.C. “Methods of Latent Print Development.” *Proceedings of the International Forensic Symposium on Latent Prints*. (July 1987): 15 – 24.

Lennard, C.J. and P.A Margot. “Sequencing of Reagents for the Improved Visualization of Latent Fingerprints.” *Proceedings of the International Forensic Symposium on Latent Prints*. (July 1987): 141-142.

Manual of Fingerprint Development Techniques. (January 1986): 2-8.

Manual of Fingerprint Development Techniques: A Guide to the Selection and Use of Processes for the Development of Latent Fingerprints. Scientific Research and Development Branch, London (1986).

Menzel, E.R. “A Guide to LASER Latent Fingerprint Development Procedures.” *Identification News*. (September 1983): 9 – 13.

Menzel, E.R. and J.M. Duff. *Laser Detection of Latent Fingerprints – Treatment with Fluorescers*.

Trozzi, T. A., R.L. Schwartz and M.L. Hollars. *Processing Guide for Developing Latent Prints*. (2000): 1-64.

US Department of Justice. *Chemical Formulas and Processing Guide for Developing Latent Prints*. FBI Laboratory Division, Latent Fingerprint Section (1994).

9.0 Records - N/A

10.0 Attachments - N/A

| Revision History | | |
|-------------------------|----------------|-------------------|
| Effective Date | Version Number | Reason |
| 09/17/2012 | 1 | Original Document |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |