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Technical Procedure for the use of the Super Glue Fuming Wands

1.0 Purpose - This procedure outlines the use of a cyanoacrylate fuming wand as a development procedure.

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

2.1 The Super Glue Fuming Wand polymerizes the latent impression using cyanoacrylate ester applied via the heating of cyanoacrylate ester by a portable butane heat wand. The Super Glue Wand offers a portable means of super gluing an item as well as an alternative method for processing large, stationary or bulky items of evidence. Numerous materials, including plastic bags, weapons, metals, and various other substrates, may be processed using the Super Glue Fuming Wand. Cyanoacrylate ester shall be used as a preliminary process when using subsequent processing techniques. Cyanoacrylate developed latent impressions may be visible without additional process, if so, this detail shall be captured prior to additional process in accordance with procedure for photographic equipment, Image Processing and Recording of All Analytical Data.

3.0 Definitions

- **(ALS)Alternate light source:** Any equipment used to produce light at various wavelengths to enhance or visualize potential items of evidence. ALS equipment readily available in the Latent Evidence Section includes, but is not limited to, the CrimeScope, Mini Blue Maxx, Short and Long Wave lamps and Handscope Xenon (spex) ALS.
- **Ambient light** - Light that is readily available in the office environment (i.e., natural light or light that emanates from an office lighting source).
- **CE** - Cyanoacrylate ester, also known as super glue.
- **Super Glue Fuming Wand** - Any of the multiple, portable, fuming wand units that are used in the processing of non-porous items of evidence with the assistance of cyanoacrylate ester.

4.0 Equipment, Materials and Reagents

4.1 Equipment and Materials


- Super Glue Fuming Wand
- Isobutane Fuel

4.2 Reagents

- Cyanoacrylate Ester (Fuming Cartridge/Tip)

5.0 Procedure

5.1 Prior to the use of the Super Glue Fuming Wand, the Examiner/Technician shall familiarize himself or herself with the manufacturers operation manual on the use of parts listed below:

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- Ignition Button
- On/Off Button
- Control Lever
- Fuel Window
- Fuel Refill Port
- Cartridge Extraction Tool

5.2 Fueling Procedure


- 5.2.1 Make sure the on/off button is in the off position.
- 5.2.2 With the nozzle of the refill can pointed down, press the nozzle into the refill port on the end of the wand handle. The gas will overflow the port when the wand is full.
- 5.2.3 Look at the window just below the control lever to see if the wand has been properly fueled. You should see a clear liquid through the window.
- 5.2.4 Move the on/off button to the on position and allow the isobutane to flow for two (2) seconds and turn to the off position.

5.3 Ignition Procedure

- 5.3.1 Set the lever at 4 and set the on/off button to the ON position.
- 5.3.2 Push the ignition button slowly and hold for approximately three (3) seconds after it clicks. Release the ignition button and look into the barrel of the heat tip. If the wand heat source is glowing, the system is ready for use. If there is no glow after the second attempt to ignite, continue to set the control lever to the next lowest setting until ignition is achieved.
- 5.3.3 Wand temperature can be controlled by moving the gas control toward the off position.
- 5.3.4 To turn the system off, move the on/off button to the OFF position until it clicks.

5.4 Latent Impression Development

- 5.4.1 Examiner/technician shall produce a self-made test print to be processed concurrently with items of evidence. (See section technical procedure for Ensuring Quality Control).
- 5.4.2 After ignition of the wand is complete, grasp one (1) disposable fuming cartridge with the cartridge extractor tool. While pinching the disposable cartridge with the extractor tool, place the small end of the cartridge on the end of the fuming wand. Make sure it fits tightly to prevent it falling off during processing.

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- 5.4.3** Attach screw on disposable fuming cartridges prior to ignition. For additional cartridge use during application pinch the disposable cartridge with the extractor tool, place the small end of the cartridge on the end of the fuming wand and turn wand until cartridge is completely attached.
- 5.4.4** Within thirty (30) seconds, a cyanoacrylate ester vapor stream will begin to appear. Place the wand control lever at a setting that will produce a vapor stream that is approximately one half (1/2) to one (1) inch long before the vapor billows. The more heat applied, the more vapor produced.
- 5.4.5** Hold the fuming wand approximately six (6) to nine (9) inches from item to be processed. Do not hold the wand any closer in order to prevent over-fuming.
- 5.4.6** Pass the wand over the entire desired surface area while maintaining the distance described.
- 5.4.7** Once item has been fumed, allow it to dry.
- 5.4.8** Developed impressions shall be recorded according to the procedure for Recording All Analytical Data and if needed developed further using additional non-porous development techniques.

5.5 Standards and Controls - N/A

5.6 Calibration - See Super Glue Fuming Wand operating manual for further information on controls and specifications.

5.7 Sampling – N/A

5.8 Calculations - N/A

5.9 Uncertainty of Measurement - N/A


6.0 Limitations – The Super Glue Fuming Wand is for used primarily in the processing of non-porous/semi-porous evidence.

7.0 Safety - Always wear gloves during the refueling procedure as skin contact with the isobutane may cause frostbite.

7.1 Never touch the fuming end of the wand during processing as the tip area becomes extremely hot. Allow the unit to cool completely prior to removing spent cyanoacrylate ester tips and storing.

8.0 References

Besonen, J.A. "Heat Acceleration of the Superglue Fuming Method for Development of Latent Fingerprints." *Identification News*. (1983): 3–4.

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Bessman, C.W., et al. "A Comparison of Cyanoacrylate Fuming in a Vacuum Cabinet to a Humidity Fuming Chamber." *Journal of Forensic Identification*. Vol. 55, 1: 10–35 (2005).

Cummings, H., M. Hollars and T. Trozzi. "Getting the Most from Cyanoacrylate Dyes." *Journal of Forensic Identification*. Vol. 43, 1: 37-43 (1993).

Day, K.J. and W. Bowker. "Enhancement of Cyanoacrylate Developed Latent Prints Using Nile Red." *Journal of Forensic Identification*. Vol. 46, 2: 183-187 (1996).

Deobald, G.W. "The Effect of Cyanoacrylate Fuming on Firearms Examinations." *Identification Canada*. (1992): 4-13.

Fallano, J.F. "Alternatives to Alternate Light Sources: How to Achieve a Greater Print Yield with Cyanoacrylate Fuming." *Journal of Forensic Identification*. Vol. 42, 2: 91-95 (1992).

Fertgus, R.E. *Latent Print Destruction and Superglue Stabilization*. Florida Division of the International Association for Identification. (1993): 7.

Froude Jr., J.H. "The Super Glue Fuming Wand: A Preliminary Evaluation." *Journal of Forensic Identification*. Vol. 46, 1: 19-31 (1996).

Howorka, H., and K. Kretschmer. "Experimental Study of Using Cyanoacrylate Ester Vapor for Developing Latent Fingerprints." *Forensic Science International*. Vol. 46: 31-32 (1990).

Kendall, F.G. and B.W. Rehn. "Rapid Method of Super Glue Fuming for the Development of Latent Fingerprints." *Identification News*. (June 1982): 3-4.


Kendall, F.G. "Superglue Fuming for the Development of Latent Fingerprints." *Identification News*. (May 1982): 3-5.

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).

King, W.R. "The Effects of Differential Cyanoacrylate Fuming Times on the Development of Fingerprints on Skin." *Journal of Forensic Identification*. Vol. 59, 5: 537–544 (2009).

Kobus, H.J., R.N. Warrenner and M. Stoilovic. "Two Simple Staining Procedures Which Improve the Contrast and Ridge Detail of Fingerprints Developed with "Super Glue" (Cyanoacrylate Ester)." *Forensic Science International*. Vol. 23: 233-240 (1983).

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

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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.

Llewellyn Jr., P.E. and L.S. Dinkins. "A New Use for an Old Friend." *Journal of Forensic Identification*. Vol. 45, 5: 498-503 (1995).

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).

Mazzella, W.D. and C.J. Lennard. "An Additional Study of Cyanoacrylate Stains." *Journal of Forensic Identification*. Vol. 45, 1: 5-18 (1995).

Menzel, E.R., et al. "Laser Detection of Latent Fingerprints: Treatment with Glue Containing Cyanoacrylate Ester." *Journal of Forensic Sciences*. Vol. 28, 2: 307-317 (April 1983).

Mock, J.P. "Cyanoacrylates and Heat – A Word of Caution." *The Identification Section*. Vol. 3, 3 (June 1985).

Olsen, R. and M.F. Shonberger. "A Slow-Reacting Catalyst for Cyanoacrylate Fuming." *Journal of Forensic Identification*. Vol. 45, 6: 651-653 (1995).

Sahs, P. T. and R.J. Wojcik. "Moisture Catalyst for Cyanoacrylate Fuming." *Identification News*. (September 1984): 9.

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

Watkin, J.E., et al. "Cyanoacrylate Fuming of Latent Prints: Vacuum versus Heat/Humidity." *Journal of Forensic Identification*. Vol. 44, 5: 545-556 (1994).

Weaver, D.E and E.J. Clary. *A One Step Fluorescent Cyanoacrylate Fingerprint Development Technology*. State of Alaska Scientific Crime Detection Laboratory Research Team.

Wilkinson, D.A. and A.H. Misner. "A Comparison of Thenoyl Europium Chelate with Ardrex and Rhodamine 6G for the Fluorescent Detection of Cyanoacrylate Prints." *Journal of Forensic Identification*. Vol. 44, 4: 387-406 (1994).

9.0 Records - N/A

10.0 Attachments - N/A



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REVISION HISTORY

CURRENT VERSION	EFFECTIVE DATE	SUMMARY OF CHANGES
1	2016/07/01	Original Version
2	2018/04/01	Naming and definition of ALS modified, change issue date to effective date, revision table, and rev# to ver#. Remove duplicate statement about storage. Add addition instruction for screw on type wand.

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