



TENNESSEE BUREAU OF INVESTIGATION

Forensic Services Division

Latent Print Standard Operating Procedures

3.4 Cyanoacrylate Fuming

3.4.1 Scope

Cyanoacrylate, also known as Super Glue, is used to develop latent prints on evidence with non-porous surfaces and some semi-porous surfaces. The fumes from the glue adhere to the latent print residue left on the evidence. Cyanoacrylate processing also prepares the surface of the evidence for acceptance of powders and dye stains.

3.4.2 Evidence

Any non-porous items, such as glass, plastics, and metals may be fumed with cyanoacrylate. Semi-porous items, such as glossy cardboard boxes or magazines, may also be fumed with cyanoacrylate.

3.4.3 Safety Precautions/Limitations

Non-porous gloves and a laboratory coat are recommended.

Avoid contact with skin and eyes.

Proper ventilation of Super Glue fumes is essential. A respiratory mask may be used when a fume hood or Super Glue chamber is not practical or available.

Caution should be used with hot plates to not overheat to the point cyanide vapors can be produced (approximately 400°F).

Over fuming may result from evidence being in contact with Super Glue fumes too long. It is characterized by thick whitening over the area. The evidence should be monitored in order to avoid over fuming.

Cyanoacrylate can be removed with water, acetone, or acetonitrile.

3.4.4 Chemicals/Reagents

Cyanoacrylate Ester (Super Glue)
Super Glue cartridges
Butane



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3.4.5 Instruments/Equipment

Aluminum foil dish
Fuming chamber
Hot plate
Beaker
Fume wand
Cyanoacrylate Blowing Contraption (CBC)

3.4.6 Preparation

Cyanoacrylate is purchased.

Cyanoacrylate may be stored in the freezer or refrigerator prior to opening.

3.4.6.1 Storage

Once opened, cyanoacrylate may be stored in the refrigerator.

3.4.6.2 Shelf Life

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

3.4.7 Controls

One or more latent prints are placed on a non-porous non-evidence item, such as a plastic bag or microscope slide. Cyanoacrylate fumes are applied to the item.

A positive result is indicated by the presence of visible white colored latent prints on the item.

A negative result is indicated by the absence of visible white colored latent prints on the item.

A control must be successfully performed when a new bottle of cyanoacrylate is opened. This control must be documented in the Reagent Logbook. A control must be performed concurrently with evidence to ensure the cyanoacrylate is working properly. This control must be documented in the examiner's notes.



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If at any time a control test indicates that the cyanoacrylate 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. This control must be documented in the Reagent Logbook. Once the control tests appropriately, the cyanoacrylate may be used.

3.4.8 Procedure

3.4.8.1 Procedure for Fuming Chamber

1. Place the evidence into the chamber. Evidence should be suspended or standing in a way to ensure all surfaces are exposed.
2. Preheat hot plate 3-5 minutes.
3. An accelerator, such as a beaker of warm water, may be placed in the chamber in order to create humidity within the chamber.
4. Place a small amount of glue in aluminum foil dish. The aluminum foil dish may be preheated if desired.
5. Place dish onto hot plate.
6. The chamber as well as vents should be closed.
7. Fuming times from 3-5 minutes are typically sufficient.
8. Turn off hot plate and vent fumes from chamber for 10-15 minutes.
9. The evidence shall be visually examined before continuing with another process.

3.4.8.2 Procedure for Processing Vehicles

1. Items of evidence from the vehicle selected for processing may be left inside as long as all applicable surfaces are exposed. These items should be submitted to the Evidence Receiving Unit for additional processing.
2. Place hot plate in floorboard of vehicle.
3. Pre-heat hot plate 3-5 minutes.
4. Place small amount of Super Glue in aluminum foil dish.
5. Place aluminum container on hot plate.
6. Close all vehicle doors and windows.
7. Observe its progress.
8. Turn off hot plate.
9. Ventilate properly for 10-15 minutes.



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10. Visually examine the evidence and the interior of the vehicle.

3.4.8.3 Procedure for Processing Vehicles with the CBC

1. Items of evidence from the vehicle selected for processing may be left inside as long as all applicable surfaces are exposed. These items should be submitted to the Evidence Receiving Unit for additional processing.
2. Place tube of Cyanoacrylate Blowing Contraption (CBC) through window of car. Seal open area around tube with tape to prevent leakage of Super Glue fumes.
3. Preheat CBC for approximately 3-5 minutes.
4. Place small amount of Super Glue in aluminum foil dish.
5. Place aluminum dish on heater inside CBC and close lid.
6. Observe its progress approximately 3-5 minutes.
7. Turn off CBC.
8. Ventilate properly.
9. Visually examine the items for latent prints.

3.4.8.4 Fuming wand

The fuming wand may be used for applying cyanoacrylate to items. It is especially useful at crime scenes or with vehicles.

The fuming wand will be used as directed in the instruction manual supplied with the fuming wand.

3.4.8.5 Cyanoacrylate fuming for deceased

When possible, fuming deceased individuals with cyanoacrylate for the presence of latent prints should take place at the medical examiners' office. If possible, the body should not be refrigerated prior to fuming.

Determine what areas of the body should be preserved for other types of testing, such as DNA, prior to fuming a cadaver.

1. Preheat CBC for approximately 3-5 minutes.
2. Place small amount of Super Glue in aluminum foil dish.
3. Place aluminum dish on heater inside CBC and close lid.
4. The curved attachment piece should be connected to the hose.

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5. The attachment should be placed against the skin for 10 to 15 seconds and then moved to another area.
6. The body shall be visually examined for any identifiable latent prints before another process is conducted, such as dusting.

3.4.8.6 Deviation from Protocol

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

3.4.9 Interpretation of Results

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

3.4.10 References

CBDIAI. "Cyanoacrylate Ester." Retrieved from <http://www.cbdiai.org/Reagents/cyano.html>

Federal Bureau of Investigation. Revised 2000. "Cyanoacrylate Fuming (Microburst Method)." Processing Guide for Developing Latent Prints. Federal Bureau of Investigation, Washington, D.C., p. 18.

Federal Bureau of Investigation. Revised 2001. "Cyanoacrylate Fuming (Microburst Method)." Processing Guide for Developing Latent Prints. Federal Bureau of Investigation, Washington, D.C., p. 28-29.

German, Ed. Revised July 2001. "Latent Print Examination of Skin." Retrieved from <http://onin.com/fp/printsonskin.html>

Futrell, Ivan. July 1996. "Hidden Evidence: Latent Prints on Human Skin." United States Attorneys' Bulletin: Trial Techniques: Collecting, Analyzing and Presenting Evidence, 44 (3). Retrieved from http://www.justice.gov/usao/eousa/foia_reading_room/usab4403.pdf