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## Technical Procedure for the use of the Cyvac M

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

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

**2.1** The Cyvac M polymerizes the latent impression using cyanoacrylate ester in a heated, vacuum environment. The vacuum will eliminate background moisture and allow the cyanoacrylate ester to attach to the components of the latent impression thus eliminating the over-fuming that may occur with manual cyanoacrylate ester techniques. Numerous materials, including plastic bags, weapons, metals, and various other substrates, may be processed using the Cyvac M. Cyanoacrylate ester shall be used as a preliminary process when utilizing subsequent processing techniques. Fluorescent dye staining, in conjunction with Laser examinations, is dependent on the proper use of cyanoacrylate ester fuming techniques.

### 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, and TracER Laser.
- **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.
- **Cyvac M:** The Cyvac M unit available within the Latent Evidence Section that assists in the processing of non-porous items of evidence with the assistance of cyanoacrylate ester in a heated, vacuum environment.

### 4.0 Equipment, Materials and Reagents

#### 4.1 Equipment and Materials

- Cyvac M

#### 4.2 Reagents

- Cyanoacrylate Ester (Bottle/Vial)

### 5.0 Procedure

**5.1** The Forensic Scientist using this piece of equipment shall adhere to all operating procedures outlined in the Cyvac M instructions manual.

**5.2** Store fuming bar outside the chamber. Temperature of the fuming bar shall be ambient (20 °C to 30 °C) at the start of the processing run.

**5.3** Insert item(s) of evidence into the chamber by hand.

**5.4** Place foil dish(es) in the fuming bar and place 5-10 drops of cyanoacrylate ester (super glue) in each dish..

**5.5** Place the fuming bar into the chamber.

**5.6** Replace end cap on the chamber and secure using door lever.

**5.7** Verify that the chamber bleed valve is closed.

**5.8** Turn the vacuum pump to ON using the switch.

**5.9** Observe the vacuum gauge to ensure that the air in the chamber is being evacuated. Pump will automatically stop at the appropriate pressure set by the manufacturer.

**Note:** Pump will automatically restart if the vacuum pressure varies from optimum.

**5.10** Allow the item(s) to remain under vacuum for at least 20 minutes.

**Note:** Some items may require a longer processing time; however, this period of time does not compromise the test value.

**5.11** Turn vacuum pump to OFF using the switch.

**5.12** Open the chamber bleed valve to equalize pressure.

**5.13** Remove chamber end cap and remove cyanoacrylate source.

**5.14** Leave item(s) in the chamber for approximately 10 minutes.

**5.15** Remove item(s) and allow to rest for 24 hours.

**Note:** The additional 24 hour rest allows for full setting of cyanoacrylate ester.

**5.16** Examine item(s) for developed latent prints using subsequent processing techniques.

**5.17** Any developed latent prints must then be preserved using the method described in the Steps for Preserving Developed Impressions.

**5.18** Conditioning of Evidence - This lengthy procedure is only required when evidence is extremely dry. In this case, evidence shall be conditioned pursuant to the operating procedures outlined in the Cyvac M instructions manual.

**5.19 Standards and Controls** – Forensic Scientists shall produce a self-made test print to be processed concurrently with items of evidence.

**5.20 Calibration** – See Cyvac M operating manual for further information on controls and specifications.

**5.21 Sampling** – N/A

**5.22 Calculations** – N/A

**5.23 Uncertainty of Measurement** - N/A

**6.0 Limitations** – Cyvac M is for use in the processing of non-porous evidence.

**6.1** The cyanoacrylate ester fuming process is vital to subsequent treatment with fluorescent dyes and laser and/or alternate light source examinations (see Fluorescent Dyes and Laser/Alternate Light Sources).

**6.2** Refer to the Cyvac M operating manual for further information on maintenance, controls and specifications.

**7.0 Safety** – Proper purging of the system is necessary as the fumes may cause some irritation when in contact with the eyes or skin and may be harmful if inhaled or ingested. Protective goggles, gloves, and apron/lab coat shall be worn during processing. Additionally, cyanoacrylate ester is an adhesive/glue. Care shall be taken to avoid application to unintended surfaces.

**7.1** The exhaust hose must always be routed through a fume hood or an acceptable ventilation system.

## 8.0 References

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**9.0 Records – N/A**

**10.0 Attachments – N/A**

Revision History		
Effective Date	Version Number	Reason
09/17/2012	1	Original Document
10/31/2013	2	Added issuing authority to header
02/27/2015	3	5.4 – Removed reference to t-strap and added door lever
03/30/2017	4	Header Update – Removed Digital reference.
01/19/2018	5	Updated issuing authority in header 5.1 & 5.15 - Moved requirement for test print to “Standards and Controls.”
02/01/2019	6	Changed numbers to numerals only instead of spelled out throughout document Added “ester” after “cyanoacrylate” throughout document 3.0: removed UltraLite ALS Added 5.3, 5.4, and 5.5 to add steps of putting superglue in the chamber 5.10: added note 5.11: added step of turning off pump; removed note