Technical Procedure for the use of the Cyanovac

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 Cyanovac polymerizes the latent impression using cyanoacrylate ester in a vacuum environment. The vacuum will eliminate background moisture and allow the Ccyanoacrylate ester to attach to the components of the latent impression thereby 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 Cyanovac. 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 (ALS):** Any of the multiple forensic light sources readily available in the Latent Evidence Section including, but not limited to, the CrimeScope (CS), Mini CrimeScope (MCS), TracER Laser, and Ultra-Lite 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).
- **Short tube:** Any of the Cyanovacs located in the Latent Evidence Section that are upright in nature and designated for use with shorter items of evidence.
- **Long tube:** Any of the Cyanovacs located in the Latent Evidence Section that are horizontal in nature and designed for use with longer items of evidence.
- **CE:** Cyanoacrylate ester, also known as super glue.
- **Cyanovac:** Any of the multiple Cyanovac units (long or short tube) that assist in the processing of non-porous items of evidence with cyanoacrylate ester in a vacuum environment.

4.0 Equipment, Materials and Reagents

4.1 Equipment and Materials

- Cyanovac (short or long tube)

4.2 Reagents

- Cyanoacrylate ester (Bottle/Vial)

5.0 Procedure

5.1 Items to be processed in the Cyanovac must first be examined visually in ambient lighting conditions and then with the use of an alternate light source (CS, MCS).

5.2 Remove the end cap from the Cyanovac chamber by releasing the elastic T-straps.

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

Note: Items may touch each other and the sides of the vessel without significant effect on processing. Large flexible items such as garbage bags must be unfolded to the degree possible, but need not be fully spread. Sealed items, such as zip top plastic bags or sealed plastic or metal containers must be opened in order to prevent rupture due to vacuum environment.

5.4 Place 5 to 10 drops of cyanoacrylate (super glue) in a foil dish and place into chamber.

5.5 Verify that the o-ring is present in the end cap. Ensure that it is not broken or dry-rotted.

5.6 Replace end cap on the chamber and fasten using elastic T-straps.

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 20 minutes.

Note: Some items may require a longer processing time; however, this period of time will 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.

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

5.19 Calibration – See Cyanovac operating manual for further information on controls and specifications.

5.20 Sampling – N/A

5.21 Calculations – N/A

5.22 Uncertainty of Measurement - N/A

6.0 Limitations – Cyanovac is for use in the processing of non-porous evidence.

6.1 The cyanoacrylate 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).

7.0 Safety – Proper purging of the system is necessary as the fumes may cause 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.

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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
03/30/2017	3	Header Update – Removed Digital reference.
01/19/2018	4	Updated issuing authority in header 5.1 & 5.18 - Moved requirement for test print to "Standards and Controls."
02/01/2019	5	Used the term "Cyanoacrylate Ester" instead of "Cyanoacrylate" throughout document 3.0: Added abbreviation for ALS, CrimeScope and Mini CrimeScope Changed number references to be numerals only instead of spelled out throughout document