

Technical Procedures for Processing with RAM

1 Scope

RAM (combination of fluorescent dyes **R**hodamine 6G, **A**rdrox P133D, and **M**BD) is a fluorescent dye used by FBI Laboratory Friction Ridge Discipline personnel to make cyanoacrylate-developed latent prints more visible on all colors of non-porous and semi-porous surfaces.

2 Limitations

Fluorescent compounds will suffer from loss of fluorescent intensity over time; as such, fluorescent prints will be captured as soon as is practicable.

3 Equipment/Materials/Reagents

4-(4-methoxybenzylamino)-7-nitrobenzofurazan (MBD)

Rhodamine 6G (dye content $\geq 99\%$)

Ardrox P133D

Acetone

Methanol

Isopropanol

Petroleum Ether

Acetonitrile

Forensic Light Source(s)

4 Procedures

4.1 Solution Preparation

Personnel will prepare the solutions as follows. Alternative amounts may be prepared, provided the same ratio of chemicals mixed is retained.

4.1.1 Rhodamine 6G stock solution

Combine:

- Rhodamine 6G - 1 g
- Methanol - 1000 ml

Stir until Rhodamine 6G dissolves.

4.1.2 MBD stock solution

Combine:

- MBD - 1 g
- Acetone - 1000 ml

Stir until MBD dissolves.

4.1.3 RAM working solution

Combine in the order listed:

- Rhodamine 6G stock solution - 3 ml
- Ardrex P133D - 2 ml
- MBD stock solution - 7 ml
- Methanol - 20 ml
- Isopropanol - 10 ml
- Acetonitrile - 8 ml
- Petroleum Ether - 950 ml

Caution: DO NOT place on a magnetic stirrer.

4.2 Application

Personnel will complete the following steps in order:

1. Apply solution to item by spraying, dipping, squirting, or painting.
2. Allow item to dry completely.
3. View using forensic light source at wavelengths in the 365 nm to 540 nm range. (Refer to FBI Friction Ridge Discipline Processing Manual, Technical Procedures for Latent Print Processing with Forensic Light Sources.)

For digital capture and photography, see FBI Latent Print Units Processing Manual Preamble.

4.3 Storage

Rhodamine 6G stock, MBD stock and RAM working solutions must be stored in dark glass bottles. RAM working solution can also be stored in a metal can.

Ardrox P133D is stored in its original container or dark glass bottle.

4.4 Shelf Life

Rhodamine 6G stock, MBD stock and Ardrox P133D stock solutions each have an indefinite shelf life.

RAM working solution has an indefinite shelf life provided the reagent checks are satisfactory. If the working solution is separated, shake vigorously. If the solution does not return to suspension, discard the solution.

5 Standards and Controls

See FBI Latent Print Units Processing Manual, Preamble.

6 Safety

See FBI Laboratory Safety Manual for appropriate information.

7 Calculations

Not applicable.

8 Measurement Uncertainty

Not applicable.

9 Sampling

Not applicable.

10 References

Cummings, H., Hollars, M. L., and Trozzi, T. A. "Getting the Most from Cyanoacrylate Dyes". JFI.43(1):37.

FBI Laboratory Safety Manual, Federal Bureau of Investigation, Laboratory Division. Latest Revision.

FBI Friction Ridge Discipline Processing Manual, Preamble, Federal Bureau of Investigation, Laboratory Division. Latest Revision.

FBI Friction Ridge Discipline Processing Manual, Technical Procedures for Forensic Light Sources, Federal Bureau of Investigation, Laboratory Division. Latest Revision.

Trozzi, T. A., Schwartz, R. L., and Hollars, M. L. *Processing Guide for Developing Latent Prints*, FBI Laboratory, Washington DC, 2001.

Rev. #	Issue Date	History
1	10/02/17	Specific section numbers referenced in Preamble removed throughout document. Section 1, latent print personnel added. Section 4 removed and remaining renumbered. Titles for Section 4 and Section 7 modified. Section 5.4, Waste Stream removed. Section 9, generalized. Updated for Biometrics Analysis Unit. References Updated.
2	07/15/21	Replace Latent Print Units with Friction Ridge Discipline. Minor wording changes. Streamline equipment list. Re-organization and re-numbering of sections. Section 4.1 broken into Section 4.1.1, Section 4.1.2, and Section 4.1.3. Section 4.1, added ratio allowance. Section 5, added Preamble reference.

Approval

Redact - Signatures on File

Friction Ridge Discipline
Technical Leader

Date: 07/14/2021

Latent Print Operations
Unit Chief

Date: 07/14/2021

Latent Print Support Unit
Chief

Date: 07/14/2021

Scientific and Biometrics
Analysis Unit Chief

Date: 07/14/2021