



Latent Print Section

Rhodamine 6G

Comparative & Analytical Division



1. Processing evidence using Rhodamine 6G (R6G)

1.1 Scope

1.1.1 This document details the procedure for mixing and application of R6G on forensic materials by the Latent Print Section of the Houston Forensic Science Center (HFSC).

1.2 Equipment, Materials, and Reagents

1.2.1 R6G (1.0 gram)

1.2.2 Methanol (1 L)

1.2.3 Distilled Water (1 L)

1.2.4 Equipment: Balances, beakers, graduated cylinders, magnetic stirrer and stirring bar, funnel, storage bottles, LASER, ALS, and plastic applicator bottles or tray for submersion

1.2.5 Safety Equipment: orange filter goggles, fume hood, gloves, lab coat

1.3 Safety

1.3.1 Examiners/Processors shall wear appropriate personal protective equipment (PPE) while preparing and applying R6G.

1.3.2 Fume hood use is required when preparing and applying R6G.

1.3.3 See applicable Safety Data Sheets (SDS).

1.4 Preparation of R6G/Methanol

1.4.1 Stock Solution

1.4.1.1 Using a magnetic stirrer, slowly add 1 gram of R6G crystals to 1 liter of methanol and stir until the R6G is dissolved.

1.4.1.2 Place the appropriate safety label and information on the bottle. Proper labeling should include:

- Name of Reagent
- Date of Preparation
- Date of Expiration (if applicable)
- Preparer's name or initials
- Batch Number

1.4.2 Working Solution

1.4.2.1 Dilute a portion of the stock solution with additional methanol to preference.

1.4.3 The date of expiration for batch solutions of R6G will be six months from the date of preparation of the stock solution.

1.5 Preparation of R6G/Water Based



1.5.1 Stock Solution

1.5.1.1 Using a magnetic stirrer, slowly add 1 gram of R6G crystals to 1 liter of distilled water and stir until the R6G is dissolved.

1.5.1.2 Place the appropriate safety label and information on the bottle. Proper labeling should include:

- Name of Reagent
- Date of Preparation
- Date of Expiration (if applicable)
- Preparer's name or initials
- Batch Number

1.5.2 Working Solution

1.5.2.1 Dilute a portion of the stock solution with additional distilled water to preference.

1.5.3 The date of expiration for batch solutions of R6G will be six months from the date of preparation of the stock solution.

1.6 Procedure

1.6.1 R6G is a luminescent dye stain that is applied to items of evidence after cyanoacrylate ester fuming which stains the cyanoacrylate ester residue.

1.6.2 R6G may be applied by dipping, spraying, or swabbing with cotton.

1.6.3 R6G may be prepared with methanol or water. The preparation shall be determined based on the substrate of the forensic materials. Items coated with varnish should be treated with water-based R6G.

1.6.4 Excess R6G reagent can be rinsed from the items of evidence using either methanol or distilled water, depending on the mixed reagent applied.

1.6.5 Items that have been processed with R6G are viewed under LASER/ALS light.

1.6.6 Developed latent prints will fluoresce under LASER/ALS and are viewed with orange goggles.

1.7 QA/QC

1.7.1 R6G/Methanol

1.7.1.1 A quality control check must be performed when a new reagent container is opened and placed into service.

1.7.1.2 A quality control check of in service reagents must be performed once a week.

1.7.2 R6G/Water Based

1.7.2.1 A Quality Control check must be performed before use each day and before the reagent is placed into service.

1.7.3 To test the prepared solution, place a small amount of the prepared R6G in a container and expose it to the LASER. A positive and passing result will be if the R6G fluoresces.



1.7.4 To test that the working solution is staining the cyanoacrylate ester residue, apply R6G to the test strip used as a quality control check during cyanoacrylate ester fuming. A successful Quality Control Check is one in which the positive test result is achieved when the latent print is visible when viewed with the LASER.

1.8 Records/Results

1.8.1 Processes used are documented in the case examiner's/processor's case notes via the Laboratory Information Management System (LIMS).

1.8.2 Reagent test results are recorded in Qualtrax.

1.9 Storage

1.9.1 Store solution in a plastic bottle/sprayer.

1.10 References

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

Defense Forensic Science Center, *CILA LP 52.2, Rhodamine 6G*, 11 December 2013

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Processing Guide for Developing Latent Prints, Federal Bureau of Investigation, USA, 2001.

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