



Latent Print Section
Basic Yellow 40 (BY40)
Forensic Analysis Division



1. Processing evidence using Basic Yellow 40 (BY40)

1.1 Scope

- 1.1.1 This document details the procedure for mixing and using BY40 on forensic materials by the Latent Print Section of the Houston Forensic Science Center (HFSC).

1.2 Equipment, Materials, and Reagents

- 1.2.1 BY40 (1.0 gram)
- 1.2.2 Methanol (500 mL)
- 1.2.3 Equipment: balances, beakers, graduated cylinders, magnetic stirrer and stirring bar, funnel, storage bottles, and plastic applicator bottles, tray, or container for submersion
- 1.2.4 Safety Equipment: yellow or orange goggles, fume hood, gloves

1.3 Safety

- 1.3.1 Examiners/Technicians shall wear appropriate personal protective equipment (PPE) while preparing and using BY40.
- 1.3.2 Fume hood use is required when preparing and applying BY40.
- 1.3.3 See applicable Safety Data Sheet (SDS).

1.4 QA/QC

- 1.4.1 A Quality Control Check must be performed before any evidence processing may begin and before any stock solution is placed into service.
- 1.4.2 To test the prepared solution, place a small amount of the prepared BY40 in a container and expose it to the ALS using a blue to blue green wavelength of light (415 nm to 485nm). A positive and passing result will be if the BY40 fluoresces.
- 1.4.3 To test that the working solution is staining the cyanoacrylate ester residue, apply BY40 to the test strip used as a quality control check during cyanoacrylate ester fuming. A positive and passing result will be if the latent print fluoresces.

1.5 Procedure

- 1.5.1 BY40 is a luminescent dye stain that is applied to items of evidence after cyanoacrylate ester fuming which stains the cyanoacrylate ester residue.
- 1.5.2 The application of BY40 may be applied by dipping, spraying, or swabbing with cotton.
- 1.5.3 Excess BY40 reagent can be rinsed from the items of evidence using tap water.
- 1.5.4 Items that have been processed with BY40 are viewed under blue to blue green ALS light.



1.5.5 Developed latent prints will fluoresce under a blue to blue green ALS and are viewed with yellow or orange goggles, depending on best contrast.

1.6 Preparation of BY40/Methanol

1.6.1 Stock Solution

1.6.1.1 Using a magnetic stirrer, slowly add 1 gram of BY40 crystals to 500 milliliters of methanol and stir until the BY40 is dissolved.

1.6.1.2 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 and initials
- Batch Number

1.6.2 Working Solution

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

1.7 Records/Results

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

1.7.2 Reagent test results are recorded in the Latent Print Laboratory Reagent Log.

1.8 Storage

1.8.1 Store solution in a plastic bottle/sprayer.

1.9 Shelf Life

1.9.1 Six months

1.10 References

Champod, C., Lennard, C. Margot, P. and Stoilovid, M. (2004). "Fingerprints and Other Ridge Skin Impressions." *CRC Press Boca Raton*.

Lee, H. and Gaensslen, R. (2001). "Advances in Fingerprint Technology Second Edition." *CRC Press Boca Raton*.