

	LPU-PM 3a.1 Acid Yellow	
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	<i>Document Manager: Tracee McIntosh</i>	<i>Approved By: Ryan Larrison</i>

3a.1 Acid Yellow 7

3a.1.1 Introduction

Acid Yellow 7 is a protein stain which produces a fluorescent product, making it advantageous on dark colored non-porous surfaces and appears to be fairly sensitive to diluted blood (V. Sears, C. Butcher, L. Fitzgerald). Best results with Acid Yellow 7 present when the surface is lightly stained with blood, though results improve on heavily stained surfaces with extended dyeing times (up to several hours).

3a.1.2 Safety Considerations

3a.1.2.1

Application of Acid Yellow 7 shall be performed in a fume hood.

3a.1.2.2

Acid Yellow 7 solution in aerosol form is potentially explosive. The solution shall not be sprayed.

3a.1.2.3

Standard safety precautions from the SDS available at each worksite for the components in this protocol shall be followed.

3a.1.3 Storage

The reagent may be stored in clear or dark glass or plastic stoppered bottles.

3a.1.4 Preparation

3a.1.4.1 Blood Fixative

- 20 grams 5-Sulfosalicylic acid, dihydrate
- 1000 millimeters distilled water

Mix components with a magnetic stirrer until completely dissolved.

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3a.1.4.2 Acid Yellow 7 Working Solution

- 1 gram Acid Yellow 7
- 700 milliliters of distilled water
- 50 milliliters glacial acetic acid (99%)
- 250 milliliters of ethanol.(98% or higher)

Dissolve the Acid Yellow 7 in distilled water. Add acetic acid and methanol and mix.

3a.1.4.3 Acid Yellow Rinse Solution

Rinse #1

- 50 milliliters glacial acetic acid (99%)
- 250 millimeters ethanol (98% or higher)
- 700 millimeters distilled water

Optional Rinse #2

- Distilled water

3a.1.4 Instrumentation

3a.1.4.1

The use of a light source capable of illuminating in the range of 400-490nm is required. The processed item should be viewed using yellow or light orange goggles.

3a.1.4.2

Photographic collection of the suitable developed latent print is required.

3a.1.5 Controls

3a.1.5.1

A swab of control blood shall be tested with the Acid Yellow 7 solution prior to use. The swab should be viewed under 400-490nm using yellow or light orange goggles.

3a.1.5.2

It may be necessary to test a small area on the evidence that is not critical to the fingerprint analysis to ensure that the substrate will not be adversely affected by the working solution.

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3a.1.6 Procedure

3a.1.6.1 Fixative

For best results, the stains should be fixed prior to application of the dye stain. Application of the blood fixative may be done by placing a piece of dry absorbent paper (filter paper, tissue paper, paper towel) over the surface and applying fixative with a wash bottle. Leave the paper in place 3-5 minutes (depending on thickness of blood) and remove the paper. The color of the blood may change to dark brown.

3a.1.6.2 Acid Yellow 7 application

Acid Yellow 7 working solution is applied to the item by immersing the item in the working solution in a large tray ensuring complete coverage of the area to be examined or by using a wash bottle if the item is too large to immerse. The item should be allowed to rest for 1-3 minutes.

3a.1.6.3 Rinse Solution

The item is then rinsed with the rinse solution until optimum contrast has been observed. Rinse solution #1 removes more background staining. Alternatively, distilled water may be used.

3a.1.6.4 Collection

3a.1.6.4.1

For increased contrast, a white gel lift may be pressed onto the surface for no more than 1 minute. Immediately visualize the impressions using 400-490nm and photograph. Photography must be done within a couple of hours as the dye will diffuse into the gel lift.

3a.1.6.4.2

Lifting with gel lifts may be done repeatedly without re-staining in between lifts.

3a.1.6.4.3

Dried impressions which lose contrast may be re-immersed in the solution, rinsed, and photographed.

3a.1.7 Interpretation of results

The blood impressions will be intensified and additional detail not previously visible may be revealed.

3a.1.8 Minimum Quality Standards and Controls

3a.1.8.1

Shelf life, expiration date, of the purchased reagent shall be used as the destruction date.

3a.1.8.2

Shelf life of the mixed reagent is approximately two years. Control testing shall dictate continued use throughout the two years.

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3a.1.9 Other Related Procedures

Hungarian Red
Amido Black

3a.1.10 Limitations

3a.1.10.1

Acid Yellow 7 should not be used on porous items as the dye normally cannot be adequately removed from the background. Some reported results have been documented on black construction paper and semi-porous paper (A. Atkins).

The application of aluminum powder is not detrimental to the reactivity of Acid Yellow 7 therefore once the surface is dried it is recommended that processing with powder be completed before the application of Acid Yellow 7. For sequential processing superglue should be used before Acid Yellow 7, however superglue processing leaves a layer of superglue over the surface which may inhibit the full reaction of blood reagents. It must be decided which process used first will yield the best results in each case. Best practice if both need to be employed is to superglue, apply Acid Yellow 7, then apply a superglue dye stain. Acid Yellow 7 may prevent subsequent serological examination and therefore may only be used after serological examination of the evidence.

3a.1.11 References

V. Sears, C. Butcher, L. Fitzgerald "Enhancements of Fingerprints in Blood Part 3: Reactive Techniques, Acid Yellow 7, and Process Sequences"; Journal of Forensic Identification, 2005, 55, 6, 741-758.

Atkins "Development of Bloody Latent Prints on Dark Surfaces", presentation PowerPoint, US Army Criminal Investigation Laboratory