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Basic Yellow 40

TECHNICAL NOTES

Background

Basic Yellow 40 (Maxilon Flavine 10GFF) is a highly fluorescent dye stain which stains cyanoacrylate-developed latent prints. When illuminated with an ultraviolet lamp or Forensic Light Source, latent prints fluoresce brightly, and weakly-developed latent prints that could not be seen under normal viewing conditions may be easily seen and photographed. Basic Yellow 40 is very sensitive to ultraviolet light and can be used with a simple long-wavelength ultraviolet lamp. It is often used by police agencies that cannot afford to purchase a more expensive Forensic Light Source.

Safety

As with all chemicals, always read the MSDS (material safety data sheet) to learn about the safe handling and health hazards of each chemical. With Basic Yellow 40, it is recommended that rubber gloves and safety glasses be worn. When combined with any of the solvents listed below, the solution should be mixed and used in a fume hood. When examining the evidence with a light source, wear protective goggles. Be familiar with the light source and know which goggles to wear under all circumstances.

Mixing Instructions

Basic Yellow 40 is a yellow powder that needs to be dissolved before using. The simplest dilution is 2% Basic Yellow 40 in reagent alcohol. In other words, 2 grams of Basic Yellow 40 in 1000 ml of reagent alcohol. This dilution can be adjusted to make it stronger (add another 1 to 2 grams of Basic Yellow 40) or to make it weaker (only add 1 gram of Basic Yellow 40 to 1000 ml of reagent alcohol).

Glue Fuming

Before using Ardrox, it is necessary to glue-fume the piece of evidence. It is recommended to under-fume rather than over-fume. If heavy white residue is present on the background surface or heavy white latent prints are developed, the Ardrox may stain the entire surface and the latent prints will appear as bright glowing globs with no ridge detail when illuminated with a light source. The use of fast-acting, chemical catalysts or accelerator

pads is not recommended, as the process can develop heavy, white residue before the reaction can be stopped.

Place a few drops of liquid glue or a Hard Evidence™ Pouch in a closed container, such as the Portable Fuming Chamber, with the evidence and a cup of warm water. Allow the evidence to remain about ten minutes before checking. To check the progress of the fuming without opening the lid of the Fuming Chamber, place a black latent print backing card in the tank with test prints on it. When these test prints are just becoming visible, remove the evidence from the chamber to stop the process.

Fuming under vacuum with a Coleman Vacu-Print™ will help to eliminate the problems associated with over-fuming. This method will develop latent prints without excessive residue coating the surface of the evidence, and it will be easier to handle the evidence. For additional information on the Coleman Vacu-Print™ vacuum fuming chamber and glue fuming processes, the Technical Note on Glue Fuming can be found on our website.

Because there is no residue buildup on the evidence, dye-staining for fluorescent examination is more effective. Dyes such as Rhodamine 6G and Ardrex adhere to the glue residue on the item. When there is excessive buildup of the glue residue, the dye stains all of it, causing the entire surface to fluoresce, perhaps obscuring ridge detail. With a vacuum process, items of evidence, such as garbage bags do not have to be opened up. The fumes will coat all of the surfaces. Also, items such as soda cans, screwdrivers and handguns can be placed inside the chamber with the items touching each other. It is not necessary to leave space between each item.

Application

In a fume hood, apply the Basic Yellow 40 solution by submerging the evidence in a tray or container. "Washing" the solution over the surface using a chemical wash bottle can also be done. Catch the runoff solution in a clean tray and use it again. **DO NOT SPRAY THIS SOLUTION.** Leave the solution on the surface for about one minute. Then, rinse the item with running tap water. Allow the item to air-dry before examining with a light source.

Because some surfaces may absorb reagent alcohol, it is recommended to test a small section of the surface first with the Basic Yellow 40 solution. If that section totally fluoresces after rinsing and drying, the alcohol has absorbed in the surface and will cause the entire object to fluoresce if treated with this solution.

Examination

Dim the room lights and shine the light from the Forensic Light Source or ultraviolet lamp over the surface of the object. A long-wavelength ultraviolet lamp with a moderate to high intensity output can be used effectively to illuminate latent prints developed with Basic Yellow 40. Photograph the visualized latent prints. For those using a variable wavelength Forensic Light Source, examine the evidence using 450 to 480 nm wavelength of light and view with orange goggles. Also examine the evidence with 365 nm wavelength of light and view with clear goggles.

Photography

To photograph the fluorescent-developed latent prints, duplicate the arrangement by which the best contrast was viewed with the eye. Use the wavelength, the color of viewing

goggles and the angle of the light source to obtain the best photograph. Include a fluorescent scale in the photograph.

Additional Reading

Advances in Fingerprint Technology edited by Dr. Henry Lee and Dr. R. E. Gaensslen

Friction Ridge Skin: Comparison and Identification of Fingerprints by James F.

Cowger

Manual of Fingerprint Development Techniques by the British Home Office, second edition

Fingerprint Detection by Fluorescence Examination by the British Home Office

Ordering Information

Catalog No. 1-0044 Basic Yellow 40, 25 grams

Catalog No. 6-3847 Adhesive Fluorescent Scales, 2 in (50mm), pack of 50

Catalog No. 6-3816 6 inch Fluorescent Scales, cardstock, pack of 10

Catalog No. 6-3885 INCH "L" Shaped Scale, Fluorescent, cardstock, pack of 5

Catalog No. 8-5008 COWGER/*Friction Ridge Skin*

Catalog No. 8-5015 HOME OFFICE/*Manual of Fingerprint Development Techniques*, 2ND edition

Catalog No. 8-5039 HOME OFFICE/*Fingerprint Detection by Fluorescence Examination*

Catalog No. 8-5041 LEE/*Advances in Fingerprint Technology*