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# Ardrox Fluorescent Dye

## TECHNICAL NOTES

### Background

Ardrox 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. Because Ardrox is very sensitive to ultraviolet light, it can be used by 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 Ardrox, 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

Ardrox is a thick, yellow liquid. It is recommended that it be diluted before using. The simplest dilution is 2% Ardrox in methanol (2 ml of Ardrox in 100 ml of methanol). This dilution can be adjusted to make it stronger (add another 1 to 2 ml of Ardrox) or to make it weaker (only add 1 ml of Ardrox to 100 ml of methanol).

Another suggested alternative solution is to add 1 ml of Ardrox to 95 ml of isopropyl alcohol (2-propanol) and add 5 ml acetonitrile.

### 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 globes 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 Ardrex 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, but it is not as effective as soaking. Catch the runoff solution in a clean tray and use it again. **DO NOT SPRAY THIS SOLUTION.** A one- to three-minute soaking in the Ardrex solution should be long enough. Rinse the item with running tap water. Allow the item to air-dry before examining with a light source.

An alternative rinse solution may consist of 10 ml of acetic acid in 100 ml of methanol. This may be more effective in rinsing the excess residue from the background without damaging the latent prints. As before, allow the item to air-dry before examining with a light source.

## **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 Ardrex. Photograph the visualized latent prints. For those using a variable wavelength Forensic Light Source, examine the evidence using 450 to 480 nm light and view with orange goggles. Also, examine the evidence with 365 nm wavelength of light.

## **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  
***Fingerprint Detection by Fluorescence Examination*** by the British Home Office  
***An Introduction to Lasers, Forensic Lights and Fluorescent Fingerprint Detection Techniques*** by Dr. E. Roland Menzel

### **Ordering Information**

Catalog No. 1-0048 .....	Ardrox, one quart
Catalog No. 1-4700 .....	Coleman Vacu-Print™ Table-Top Chamber
Catalog No. 1-4702 .....	Vacuum Pump/Motor
Catalog No. 1-4501 .....	Loctite® Liquid Glue, 1 oz.
Catalog No. 1-4510 .....	Hot Plate for fuming
Catalog No. 1-4600 .....	Hard Evidence™ Pouch
Catalog No. 1-2100 .....	Black Reversible Backing Cards, 3" x 5"
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. 8-5039 .....	HOME OFFICE/ <i>Fingerprint Detection by Fluorescence Examination</i>
Catalog No. 8-5041 .....	LEE/ <i>Advances in Fingerprint Technology</i>
Catalog No. 8-5043 .....	MENZEL/ <i>Intro to Lasers, Forensic Lights &amp; Fluorescent Fingerprint Detection</i>