



LUMINOL PHOTOGRAPHY

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The use of Luminol within the crime scene has proven to be an extremely valuable tool for the detection of blood and the documentation of bloodstain related evidence. The use of Luminol has assisted investigators with clues which normally would have gone undetected.

The photographic documentation of Luminol became necessary for court room presentation as its use in the field increased. The photography of Luminol during its chemical luminescence was once practiced in total darkness using black & white film. Generally speaking, the photographic results were dull and non-descriptive. On many occasions it was difficult to identify what you were viewing.

Current photographic applications have helped to improve the end result of Luminol Photography. Combining the use of several cameras, color films, rulers and "painting with light techniques" crime scene personnel can now capture and produce true and accurate photographic representations of chemically processed bloodstain evidence.

The following pages contain information which will assist you with equipment choices and scene preparation. Following the step-by-step instructions contained within this guide should enable you to adequately set-up your photography equipment, process your test environment and capture your results on film.

These procedures should be practiced several times prior to implementation and proper safety precautions should be in place during chemical processing. Luminol, as with any chemical process, carries certain inherent health risks which should always be taken into account.

LUMINOL EQUIPMENT LIST

Plastic Storage Canisters (35mm Film Containers)
Distilled Water (500 ml each Application)
Capped Mixing Container (For Liquid Agitation)
Funnel
Spray Bottle (500 ml Capacity)

	Name	Supplier and Cost
1:	Luminol 5-Amino-2,3-dihydro- 1,2-phthalazinedione	Kodak or Aldrich Chemicals Approximately \$30.00 for 5g Approximately \$80.00 for 25g
2:	Sodium Perborate (Trihydrate)	Fisher or Aldrich Chemicals Approximately \$13.00 for 100g Approximately \$23.00 for 500g
3:	Sodium Carbonate (Granular)	Fisher or Aldrich Chemicals Approximately \$18.00 for 500g

For additional information and assistance, contact the respective chemical companies at the following locations:

Eastman Kodak Company
Laboratory and Research Products Division or call: 1-(800)-225-5572
Rochester, New York 14640

Aldrich Chemical Company
P.O. Box 355 or call: 1-(800)-558-9160
Milwaukee, WI USA 53201

Fisher Scientific
Corporate Headquarters or call: 1-(412)-562-8300
711 Forbes Avenue, PA 15219

CHEMICAL MEASUREMENT GUIDE

- 1: Weight out 3.5g Sodium Perborate, place into a container (Plastic 35mm Film Canister) and mark as #1.
- 2: Weight out 25g Sodium Carbonate and 0.5g Luminol, place chemicals together in a container and mark as #2.
- 3: Measure out 500 ml of distilled water and place into a capped container. (Regular Tap water will suffice if distilled water is not available)

CHEMICAL MIXING ORDER

- 1: Add Sodium Perborate (Container #1) to capped water container.
- 2: Shake well for 30 - 45 seconds.
- 3: Add Luminol and Sodium Carbonate (Container #2) to water.
- 4: Shake Well until contents appear dissolved. (About 1 or 2 Minutes)
- 5: Allow undissolved contents to settle to bottom of capped container.
- 6: Use a funnel and transfer Luminol solution into a spray mist bottle. (Mixing the chemicals within the misting bottle is acceptable if the design size allows for chemical entrance, adequate product distribution and blending)

****Do not mix either of the listed chemicals with the water until you are prepared to test your evidence; once mixed, the chemical shelf life is arrested and the designed chemical action will begin.****

PHOTOGRAPHIC EQUIPMENT LIST

35mm Film (400 ISO) Color

35mm Film (400 ISO) Black & White

Manual 35mm Camera(s) (With Bulb Capability)

28mm Lens (F 1.8 or F 2.8)

50mm Lens (F 1.8 or F 2.8)

Tripod(s)

Manual Cable Release(s)

Hand Held Flashlight

Ruler (Steel, Paper or Glow Mark)

Masking Tape

Petri Dishes

Indelible Marking Pens (Sharpie)

Black Plastic Trash Bags

... or Dark Colored Blankets (For Ambient Light Blocking at Windows & Doors)

Photoluminescent Adhesive Tape(Glows-in-the-Dark)

Audible/Photoluminescent Timing Device (Optional)

Photo Document Table (Optional)

Color Balance Photo Card (Optional)

TEST ENVIRONMENT PREPARATION

When you determine that Luminol analysis may be used, you must take into account several factors which surround the use of your chemicals. Concern as to their affects upon you, your evidence and the areas to be tested must be considered.

The first and foremost concern is Safety. Always treat the use of chemicals with all due respect and regard for their affects upon human and animal life. Each individual is unique to one another and may react to chemical usage differently. Practice proper safety precautions and keep them in place at all times.

Those using and photographing Luminol should wear eye, nose and throat protection. Those coming in contact with the actual liquid product should also wear gloves and a gown. Those present only as investigative observers should wear nose and throat protection.

Luminol may affect certain serological and genetic marker system style blood tests. It is highly recommended that all evidentiary related blood samples be collected prior to chemical analysis in those situations which are clearly applicable.

Chemical luminescent photography requires timed photographic exposures during diminished depth of field situations conducted in near total darkness. These factors are compounded by low light chemical luminescence and ambient light aggravation.

Due to these photographic concerns, it is important that crime scene personnel document their test environment thoroughly prior to chemical application. It is recommended that detailed notes be taken prior to and immediately following your analysis. The use of voice activated tape recorders may be helpful during your photographic procedures in the dark.

Your notes should include information which lists the respective colors of your test subject and its surroundings. This information may be needed during your photo printing processes.

Consideration as to the effects of gravity is commonly overlooked during preparation procedures. Bloodstain evidence upon vertical surfaces will revert to the liquid state when saturated with Luminol. You must be in place and ready to photograph vertical surfaces immediately.

Horizontal surfaces may collect Luminol in the form of puddles which can cause over saturation. This normally will result in bloodstain expansion which is clearly evident in footwear, sole and hand impression documentation. Luminescent activity may also be lost during heavy saturation incidents.

With just these concerns in mind, each situation should be evaluated and processed with a slow and deliberate approach. Forethought must be given to each situation and their respective effects upon additional procedures and subsequent chemical applications.

Once you have committed to this process, it can not be stressed enough that documentation of your scene and test environment is crucial. Overall and set-up photographs prior to chemical analysis are mandatory. Measurements, sketches, color references and an accurate scene description prior to, during and after Luminol processing are all key factors in what will lead you toward a complete and accurate scene analysis for the detection of blood.

Remember, you are dealing with PHOTOGRAPHY and mechanical failure can occur. A photo has been said to be worth a thousand words. If you don't have the picture, please be kind to yourself. Be able to paint one with detailed notes, measurements, descriptions and sketches.

STEP # 1

Once determination has been made to use Luminol, photograph your test area and/or items with and without a scale of measurement. Document your scene with notes and sketches, obtaining various measurements for your crime scene sketch. (This sketch should be independent of all other sketches)

STEP # 2

Determine the location of your test area within the scene and consider your camera placements, lens choices and camera angles. (Vertical vs Horizontal) Shut off all lights and determine if your test area is effected by ambient light interference from windows, doors, etc. **If affected, use your black plastic trash bags or blankets to cover these areas**

STEP # 3

Set your cameras in place upon their tripods. Look through your camera's view finder. Mark the physical locations which you are able to observe through the view finder. Use tape (Vertical Surfaces) or clear plastic petri dishes. (Floors/Furniture) Document what you see in your notes and measure this area. Obtain camera lens vs subject matter measurement.

STEP # 4

Become familiar with the area which you have marked off. Turn off all lights and determine if you can illuminate your subject matter with your flashlight using momentary activation. Determine the best area to conduct this technique and verify that it is not between the location of your camera lens and your subject matter. In situations where ambient light leakage can not be completely stopped, you may not need flashlight illumination.

STEP # 5

Once you have completed steps 1 through 5, load your film and set your ISO. Advance your film, using the shutter release cable. Verify that your film is loading properly and the cable is functioning properly. Advance to frame three (3). Your film negatives require a long leader, eliminating photo processing interpretation. **DO NOT CUT NEGATIVES** when developed.

STEP # 6

Look through your view finder. Verify your camera placement using your scene markings. Use your light meter and set your camera accordingly. (Photograph your color scale card)

STEP # 7

Photograph your subject matter at this point with and without a scale of measurement. These are your reference photographs. Reset your camera to Bulb and open your aperture. (F1.8 or F2.8)

STEP # 8

Mix your Luminol. Once mixing has been completed, shroud your applicator bottle with black colored paper/plastic or a similar dark item to block the inherent luminescence of the chemical.

STEP # 9

Make your flashlight ready and verify all camera settings and positions under ambient lighting conditions. Verify that your film has been advanced and your camera is ready. Have your appropriate measurement devices nearby for subsequent photographs. Turn off all lights and verify that ambient lighting conditions have not changed. Make your timing device ready. (90 Seconds)

STEP # 10

After all verifications have been made (Steps #4 through #10) you are ready to test your subject matter. With all lights off, apply your chemical. Once luminescent activity occurs, open your shutter and lock your cable release in place, starting your timed exposure. **Expose your film at this point starting with your longest exposure first and work your way to your shortest exposure, if applicable**

STEP # 11

Your first luminescent photograph should be without scale placement and without flashlight illumination. Once you have completed your first photograph, immediately advance your film and start your second photograph. (If using two cameras, stop camera #1 and continue with camera #2) Camera #1: 90 Seconds - Camera #2: 105 Seconds

STEP # 12

This step will be a duplication of the first exposure time with the addition of your flashlight illumination and scale placement, if desired. The flashlight will be added at the end of your exposure, for only one or two seconds.

STEP # 13

This step will be conducted similar to those procedures listed in Steps #13 and #14, however you will place your scale into your subject area and illuminate it using your flashlight technique. **If your ruler is Photoluminescent (Glow-in-the-Dark) the additional flashlight illumination may not be necessary**

When your luminescent activity is observed to cover a large area and it displays information concerning pattern distribution, it is recommended that these areas be outlined with your marking pens for future reference and additional measurements. (Sketch/Visual Analysis) These marks should only be made when you have completed all photographic procedures.

STEP # 14

Move your camera equipment to your next test area and repeat Steps #1 through #15. When your film is developed, **DO NOT CUT NEGATIVES**

It should be noted that there will be situations in which Luminol is used to search for blood without the privilege of any other information. In this particular instance, you should be prepared to photograph your results even though you can not fully set up for the photographic process. Once you observe luminescent activity, mark your areas and start your photographic process, step-by-step.

Keep in mind that at any point during your analysis, you may elect to discontinue your Luminol process and collect the evidence for further testing within your laboratory environment. Carpets, rugs, furniture, linen, clothing and motor vehicle related items can all be removed and processed at a later date, if necessary.