
TECHNICAL INFORMATION

LumaVision™ Luminol Companion Illuminator Kits Catalog Nos. LVL1000, LVL2000

INTRODUCTION

Luminol has proven its effectiveness at the crime scene for more than half a century. This unmatched chemical formulation is the most effective method for locating minute traces of blood (sensitivity of 1:1,000,000)—even after the crime scene has been *cleaned*.

The advantages of using Luminol are numerous: it is non-destructive to subsequent DNA profiling; it is a relatively safe compound if used according to directions; and it is simple to mix and apply. But the luminescence caused by Luminol, when it comes into contact with blood, must be viewed in near-total darkness.

Luminol creates luminescence as it oxidizes the iron component of blood, but it does not differentiate between human and animal blood. Weak stains produce weak luminescence—so, the darker the area, the easier it will be to view this phenomenon. The darkened area, however, makes it extremely difficult to see what you are doing or where you are spraying.



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LumaVision™ uses **RED**, not white light, and red light sharpens night vision. When using LumaVision™, your eyes adjust to the darkness and when luminescence occurs, you see it immediately. While the LVL2000 Kit contains the LumaVision™ Light and all of its attachments, Luminol 8 is included with the LVL1000 Kit.

CAUTIONS

- Before using this kit, consult the appropriate Material Safety Data Sheets (MSDS) found on our website at www.sirchie.com/support.
- Wear protective gloves and goggles when handling and using the reagent. Luminol16 and Luminol8 are irritants. Avoid contact with the skin and eyes.
- Harmful if swallowed, inhaled or absorbed through the skin. Use with adequate ventilation or wear respirator. Avoid contact with the eyes.
- Luminol is a 2-part compound: Luminol “A” a toxic powder; Luminol “B” a non-toxic solution. When Luminol “A” and “B” are mixed together, a toxic solution results and should be handled accordingly.
- Use Luminol as a means of locating invisible bloodstains. DO NOT use on visible blood. Although it has been proven that luminol can be used to locate traces of blood without compromising the potential for DNA typing, samples of visible blood stains should be taken prior to processing with Luminol .¹

USES OF LUMINOL

Use Luminol to locate traces and patterns of blood that are *not* visible to the naked eye. Luminol is effective in finding traces, tracks, or prints on dark carpet, in areas suspected of having been washed, in cracks and crevices in walls and floors, and in sink traps. Luminol may reveal important patterns such as bloody shoe soles or spatters. **NOTE:** *It is important to consider more obscure sources of bloodstain evi-*

¹A.M. Gross et al., “The Effect of Luminol on Presumptive Tests and DNA Analysis Using the Polymerase Chain Reaction,” Journal of Forensic Sciences, 44 (1999), 837.

dence. For example, a suspect's shoes or his vehicle may show traces of blood weeks after having been in contact with blood at the crime scene. Patterns may be recorded with photography or videotaping.

PROCEDURE

The LumaVision™ light features 6 powerful **RED** Light Emitting Diodes (LEDs) in its primary beam and 2 **YELLOW** LEDs in its secondary beam which are driven by 3 AA-type alkaline batteries that offer 10-12 hours of continuous light at brightest setting. The primary LEDs provide red light intensity from maximum brightness to fully dimmed. The secondary LEDs provide yellow light intensity from fully dimmed to bright. Both the primary and secondary beams offer slow-medium-fast or S.O.S beacons, and signal/morse code. Refer to LAMP OPERATION on how to achieve the different settings.



Primary Beam



Secondary Beam

Battery Power and Installation

The LumaVision™ is equipped to warn you when the battery power becomes insufficient. The secondary LEDs will flicker while the primary LEDs maintain the highest level of brightness allowed by the batteries. A rapid flicker of the primaries indicates that the batteries are ready to be replaced. To temporarily get rid of this warning, dim the brightness level. When the batteries can no longer support the dimmest level of light, the secondary flashing warning will come back on.

1. Using a coin or similar object, pop open the battery case lid (Fig. 1).
2. Install the batteries while observing the proper polarity as shown on the battery case lid (Fig. 2). Snap the battery case lid closed.



FIGURE 1



FIGURE 2

Lamp Configuration

1. The LumaVision™ has several configurations for crime scene and laboratory usage. The lamphead aligns with the corresponding keyhole in the battery case (Fig. 3). Tighten the thumb wheel finger tight to insure that the electrical contacts on the lamphead engage with the contacts of the battery case.
2. With the lamphead secured on the top side of the battery case, the light source is now setup for freestanding (table-top) or hand-held use (Fig. 4).
3. To install the belt clamp for belt-mounted use, screw the thumb wheel of the clamp into the battery case (Fig. 5).
4. For hands-free (tabletop) operation, install the lamphead on the side of the battery case (Fig. 6). Be certain the key and keyhole are aligned properly. Tighten the thumb wheel finger tight. For headlamp use, position the plastic clip of the headband and snap in place (Fig. 7). Adjust the headband as needed for a comfortable fit.



FIGURE 3



FIGURE 4



FIGURE 5



FIGURE 6



FIGURE 7

LAMP OPERATION

The LumaVision™ Light is equipped with a single push button for primary (**RED**) and secondary (**YELLOW**) beam operation in which the intensity can be dimmed or brightened. Both the primary and secondary beams offer slow-medium-fast or S.O.S beacons, and signal/morse code. The lamphead is capable of 180° rotation (Fig. 8).

Primary Beam 6 LEDs

- **ON/OFF**—Press and release the push button, turning the light on at its brightest intensity level. Press and release again to turn the unit OFF.
- **BRIGHTNESS CONTROL**—With the lamp ON, press and hold the push button to dim the beam's intensity level. Release the button at desired brightness. (There will be a “blink” when the lamp has reached the lowest lighting level.) To turn OFF the light, press and release the button.
- **SAFETY BEACONS**—With the lamp ON, press and hold the push button past the brightness control “blink” to access the safety beacons. This feature cycles circularly (slow-medium-fast-S.O.S.) and will repeat if you continue to hold. Release button at desired beacon. To exit this mode, press and release the button, turning the light OFF.
- **SIGNAL/MORSE CODE**—The light will operate as a push button only light for signaling. To activate this feature, rapidly turn the light ON and OFF until it will not stay on when hold is released (approx. 4 times). To exit this function, press and hold until the light will not stay on (approx. 3 seconds).



FIGURE 8

Secondary Beam 2 LEDs

- **ON/OFF**—Press and hold the push button, turning the light on at its dimmest level. Press and release to turn the unit OFF.
- **BRIGHTNESS CONTROL**—With the lamp OFF, press and hold the push button to brighten the beam’s intensity level. Release the button at desired brightness. (There will be a “blink” when the lamp has reached the highest lighting level.) To turn OFF the light, press and release the button.
- **SAFETY BEACONS**—Press and hold the push button past the brightness control “blink” to access the safety beacons. This feature cycles circularly (slow-medium-fast-S.O.S.) and will repeat if you continue to hold. Release the button at desired beacon. To exit this function, press and release the button, turning the light OFF.
- **SIGNAL/MORSE CODE**—(Recommended for the expert user only.) The light will operate as a push button only light for signaling. It is a little tricky activating this feature. Press and hold the push button until the secondary lights barely come on (approx. 1 sec.) and quickly press the button again to turn OFF. Repeat this approximately 4 times. If you were successful in activating this function, the secondary lights will turn ON at maximum brightness when the button is pushed and will not stay on when released. To exit this function, press and hold until the light will not stay on (approx. 3 seconds).

PREPARATION OF LUMINOL

Luminol 8, included in the LVL1000 kit, should be prepared at the crime scene just prior to use. To mix Luminol 8, pour the “A” powder into the “B” solution, replace the bottle cap on the solution, and shake the bottle until the powder is completely dissolved. Install the spray head.

1. Even though the luminescence produced by Luminol is best seen in total darkness, you can illuminate the work area with the LumaVision™ in order to maintain high vision and aid in the processing of the scene.

2. Spray Luminol liberally on any suspected object or area and extinguish the light. Blood produces a lasting bluish-white glow. This luminescence will fade with time, but successive applications of Luminol will restore the intensity of the luminescence. **NOTE:** *When applying Luminol, brief pin-points of light may occur even without the presence of blood (see IMPORTANT NOTE to follow).*
 - a. To test sink traps for blood traces, fasten a piece of cotton to the end of a coat hanger or piece of stiff wire and lower it into the trap. Remove the cotton from the trap, and spray it with reagent in total darkness. If a positive reaction occurs, remove the trap and drain the remaining water into a suitable evidence container for analysis at the crime laboratory.
3. After locating suspected bloodstains, setup your camera for proper photographic documentation. Mark areas giving positive reactions (using chalk or markers to outline areas after viewed in the dark) for further evidence gathering efforts.

IMPORTANT NOTE: *Luminol 8 is a presumptive test capable of giving FALSE POSITIVES and FALSE NEGATIVES.*

- **FALSE POSITIVES**—Major sources of false positives (a glow when no blood is present) are the presence of chemical oxidants, catalysts, and salts of heavy metals such as copper and nickel. Common substances such as iodine, rust, household bleach, formalin, and plant peroxidases such as those found in horseradish, citrus fruits, bananas, watermelon, and numerous vegetables might give false positives.
- **FALSE NEGATIVES**—False negatives may occur if the hemoglobin has been destroyed or masked by a foreign substance such as oil or grease. Another possibility is that the Luminol solution has weakened due to its having been mixed and then stored for period of time. The Luminol solution should be prepared just prior to use and any unused quantity should be disposed of properly.



The area to be searched and treated with Luminol is illuminated by the RED light of the LumaVision™. The inset is the resultant bloody footprint found.



No. LVL1000

LVL1000 CONTENTS:

- 1- LVL100 LumaVision™ Light
- 1- Headband
- 2- LUMINOL8A Chemical Packets, 12.5gm ea.
- 1- Belt Clip
- 2- LUMINOL8B Mixing Solution, 8 oz. each
- 3- AA Alkaline Batteries
- 1- Detachable Pump Sprayer
- 1- Molded Carrying Case w/ precut foam insert



No. LVL2000

LVL2000 CONTENTS:

- 1- LVL100 LumaVision™ Light
- 1- Headband
- 1- Belt Clip
- 3- AA Alkaline Batteries
- 1- Molded Carrying Case w/ precut foam insert