

EVIDENCE EXAMINATION - ALTERNATE LIGHT SOURCE

Background

A portable alternate light source, such as the Omnichrome FLS 5000, is a tool used by forensic scientists to detect body fluid stains, latent prints and fibers. When high-energy wavelength light illuminates a protein-rich biological stain such as semen, saliva or urine the molecules absorb the energy. The molecules then emit light at a longer wavelength along with heat. The emitted longer wavelength light is termed fluorescence. Blood is a protein-rich biological fluid, however it does not fluoresce. The molecules in blood absorb high-energy light and no emission of longer wavelength light is observable by the ALS method.

Summary of Procedure

With the aid of orange glasses, the human eye observes fluorescence as a bright white area where a semen stain is present. Given that all protein-rich dried stains fluoresce, this test is presumptive. The identified stain(s) are later tested by presumptive and/or confirmatory methods. This examination process is very useful when request for analysis involves large items such as bedding, clothing, towels, automobile surfaces, carpets, furniture surfaces, etc.

Sample Handling

Forensic samples may be in limited supply. Retain sufficient sample for replicate analysis.

Label all samples with complete identifying information.

All biological samples and DNA must be treated as potentially infectious. Appropriate sample handling and disposal techniques should be followed. See:

- **Safety Manual**, *Universal Precautions*
- **Quality Assurance Manual**, *General Sample Control and Forensic Sample Preservation Policy*
- **Analytical Procedures Manual**, **Forensic Evidence Handling**.

Warnings and Precautions

Goggles or shields should be worn to provide eye protection from the intense light coming from the ALS.

Reagents and Materials

See **Appendix B** for reagent preparation

Omnichrome Model FLS 5000

Crime Scene Blue LED Flashlight; LEDwholesalers Crime Scene Blue LED Flashlight 455 460 Nm 3 AAA Torch, 7305blue

Orange glasses

Clothesline

Permanent marker

Sterile micro centrifuge tubes

Bench Paper

Gloves

Lab Coat

KimWipes

Sample handling tools (scissors, scalpel blades, forceps, etc.)

Bleach

Ethanol (100%)

Reagents and Materials – Storage and Handling

All reagents and materials are to be kept under sterile conditions. Store all reagents according to the manufacturers' recommendations.

Do not use reagents beyond the listed expiration dates. Date and initial all reagents when put in use. Record in the **Reagent Log**.

Quality Control

Document results on photograph or diagram of evidence.

Procedure

Site Preparation

1. Select a work area/room that can be completely darkened.
2. Use proper sterile lab technique when examining evidence.
3. Assemble the ALS by inserting the light guide in its receptacle. (Ensure the units ON/OFF switch is turned to the "OFF" position during set-up.)

Note: Preferably, the unit will be set-up on a lab bench for stability, but it is manufactured to be portable. Use at the lab bench may not be appropriate in all situations.

Evidence Examination

1. Remove the item to be tested and position it in an appropriate location. Describe the item and any staining observed with the naked eye under normal lighting conditions in the case notes. Label the item with the case number, Analyst initials and date (if able).
2. Place orange lenses (goggles/glasses) over the eyes.
3. Turn the ALS ON/OFF switch to the ON position. Set the wavelength dial to 450 nm.
4. Turn the room lights OFF.
5. Reposition the light beam to illuminate the forensic evidence item.
6. With a permanent marker circle all areas of fluorescence that are consistent with a semen stain. OPTIONAL: use an identifier for each stain (i.e. A, B, C or 1, 2, 3).
7. Turn the ALS "OFF".
8. Describe all observations in the case notes.

Results and Conclusions

Conclusions are related to the presence or absence of fluorescence.

Comments on Storage

Proceed to presumptive testing of identified areas or return the item of evidence to its original container and follow appropriate evidence handling and chain of custody procedures.

Clean the ALS and return it to storage.

Technical Assistance

For information and assistance regarding the performance or applications, contact Omnichrome 13580 Fifth Street Chino, CA 91719 Phone: 1-909-627-1594
1-800-525-OMNI

LEDwholesalers at Amazon.com, LED ultraviolet flashlights

Reference

FLS 5000 Operating Instruction Manual

R. Saferstein, Forensic Science Handbook, Vol. II