3.8 Gentian Violet

3.8.1 Introduction

Gentian violet (crystal violet) is a sensitive stain, which reacts with epithelial cells, and other portions of latent print residue transferred upon surface contact. The presence of sebum appears to serve as an excellent transfer medium for sloughed epidermal cells and as a result, gentian violet is usually effective on surfaces, which readily hold the deposited sebum, such as the adhesive side of tapes. The high sensitivity of gentian violet produces an immediate reaction upon skin contact; therefore, leak proof gloves are required for examinations. Accidental staining of hands is relatively harmless but usually cannot be de-stained. Disappearance of discoloration is a result of cell sloughing.

Gentian violet on yellow adhesive tape and transferred from black adhesive tape

3.8.2 Safety Considerations

Gentian Violet

This procedure involves hazardous materials. This procedure does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this procedure to establish appropriate safety and health practices and determines the applicability of regulatory limitations prior to use. Proper caution should be exercised and the use of personal protective equipment should be considered to avoid exposure to dangerous chemicals. Consult the appropriate MSDS for each chemical prior to use.

3.8.3 Preparations

Higher concentrations are sometimes used, but increased amounts of gentian violet are difficult to dissolve and can create an increased background discoloration.

3.8.3.1 Aqueous

- Dissolve 1.0 grams of gentian violet in 100ml of distilled water.

3.8.3.2 Solvent

- Dissolve 5.0 grams gentian violet in 50ml ethanol
- Add 500ml distilled water
- After mixing, allow to stand in dark bottle for 24 hours

3.8.4 Instrumentation

See General Instrumentation

3.8.5 Minimum Standards & Controls

Dye stains, such as Gentian Violet, work by discoloring latent impressions composed of epithelial cells and sebum. Due to their inherent ability to stain and discolor these materials, there is no need for test impressions to be done prior to evidence application.

3.8.6 Procedure or Analysis

- Immerse item to be processed in the working solution in a large tray.
- Allow the item to remain completely immersed for approximately 30 seconds while agitating.
- Remove the item from the working solution and rinse excess stain from the item by washing with a gentle flow of cold tap water.
- This process may be repeated until optimum contrast is reached between the impressions developed and the background.
- Photograph any developed impressions.

3.8.7 Interpretation of Results

Developed latent impressions on light colored tapes should be photographed directly. Contrast may decrease as the substrate dries. Stained impressions, which fade as the tape dries may be improved by immersing the tape in a tray of clear water and photographing the impressions while the tape is submerged.
Dark-colored tapes may not present sufficient contrast to permit photographic recording of the actual impression. Prior to the sticky side tape powder technique a method which attempted to transfer the gentian violet stain to a glazed paper surface was one of the only methods available to attempt to visualize impressions on dark tape. While this method can be successful, the improved success with the sticky side tape powder technique makes the sticky side tape powder technique the preferred method when processing dark colored tapes when gentian violet will not produce the needed contrast.

3.8.8 Minimum Quality Standards And Controls

See Standards

3.8.9 Other Related Procedures

Sticky Side Tape Powder Technique

3.8.10 References

- Arima, T. "Development of Latent Fingerprints on Sticky Sur¬faces by Dye Staining or Fluorescent Brightening"; Identi¬fication News, February 1981.
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