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Name of Procedure:

Crystal Violet

Suggested Uses:

Crystal Violet or sometimes referred to as Gentian Violet is a chemical process which can be used to develop latent impressions on the adhesive side of tape. This process can be used to develop impressions on duct tape, masking tape, clear plastic tape, plastic surgical tape, reinforced packing tape, packing labels and black electrical tape.

Equipment Needed to Perform Procedures:

- A - Rubber apron and rubber gloves.
- B - Face shield visor and/or safety goggles.
- C - Dark shatter proof storage container (one liter)
- D - Glass processing tray.
- E - Camera (35 mm, 2 1/4, MP-4, CU5, TC III)
- F - Fume hood

For Black electrical tape, the following equipment will be required:

- G - One (1) Iron
- H - Blotter paper
- I - RC paper (positive photographic paper which has been processed chemically)

Chemicals Needed For Preparation of Chemical Solution(s):

- A - 1 gram of Crystal Violet Crystals
- B - One (1) liter of Distilled Water

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Formula/Directions for Preparation of Chemical Solution(s):

1. Place one liter of distilled water in a dark chemical storage bottle and add 1 gram of crystal violet.
2. Shake the container ensuring all crystal have been dissolved. Thoroughly shake the container prior to each use.

Processing Procedures for Application to Item(s) of Evidence:

Note : The non-adhesive side of the tape should be processed prior to using crystal violet (this will include the super glue and powder processes if applicable).

Duct, Scotch, Packaging Tape and Adhesive side of Labels:

1. Pour a sufficient amount of dyeing solution into a glass processing tray.
2. Soak the tape or label in the dyeing solution for approximately one (1) to two (2) minutes to sufficiently dye the impressions.
3. The item should be rinsed with tap water to remove the excess chemicals and allowed to completely air-dry prior to proceeding.

Black electrical Tape:

1. Repeat the above steps when processing this type of tape; however, the latent impressions will not be visible at this point.
2. Dampen the glossy or emulsion side of the RC paper and place the adhesive side of the tape against the glossy side of the RC paper.
3. Fold the remainder of the RC paper over the tape and cover with blotter paper.
4. Gently iron the blotter paper with a warm iron (Do Not Use Steam).
5. Remove the blotter paper, unfold, and remove the tape from the RC paper to view any developed latent impressions which will be transferred to RC paper.

Laser/Alternate Light Sources Examination:

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1. Often an impression may be weak or may not appear during the above procedures and may be enhanced with the introduction of specialized light from a laser or an alternate light source.
2. This may be accomplished using any standard laser or light source following the above procedures and viewing the item at various wavelengths until the impression fluoresces (See Laser/Alternate Light Sources).

Note: The crystal violet solutions may be reused; however, if any contamination occurs during processing the solutions should be discarded.

Steps to Preserve Developed Impressions:

The most appropriate methods to preserve developed impressions is through photography, using the proper techniques (See Photographic Equipment/Procedures) and/or electronically recording the impressions (See Image Processing). When photographing clear tapes be sure that the adhesive side of the tape is facing the camera to record the correct position of the impression. A piece of paper may be placed behind the impression to improve the contrast of the image on clear or transparent tapes. With black electrical tapes, use positive film or a negative to record the image and reverse from left to right and photographed the negative image with positive paper to record in the correct position. When a laser or alternated light source is utilized, follow normal procedures to record the fluorescent images.

Safety Concerns:

The crystal violet solutions have toxic properties and should be handled with great care. The solutions can be harmful if inhaled or ingested and should always be used in a fume hood when mixing and/or processing evidence. Protective gloves, eye goggles and aprons should be worn at all times as the staining solution will stain clothing and skin.

Storage and Location of Chemicals and Solutions:

The Crystal Violet crystals should be stored in the original shipping container until needed.

The working solutions may be stored in dark non-breakable plastic containers until needed.

Shelf Life:

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Indefinite - both crystals and working solutions.

Other Information:

The process is most effective in developing latent impressions on adhesive surfaces as the dye involved in the chemical attaches to the dead skin cells and some sebaceous materials when the tape and/or adhesive surface comes in contact with the friction ridges.

Subsequent dye staining processes and laser/alternate light source examinations may be utilized after the use of Crystal Violet to develop additional impressions.