B92 Tape-Dependent Latent Print Development

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Learning Overview: After attending this presentation, attendees will better understand which latent print processing techniques are best suited for initial development of latent prints on the adhesive side of a variety of pressure sensitive tape types.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by creating a tape-dependent listing of complementary processing methods which offer a consistent, straightforward approach to developing latent prints upon initial processing of the adhesive side of tape.

As a commonly encountered source of forensic evidence, tape samples are processed for latent prints which may be present on both the non-adhesive backing and the sticky, adhesive side of tape. Improving the quality of latent prints developed on the adhesive side of tape is a necessary endeavor for the advancement of evidence processing.

A comparative study of dye stains, powders in suspension, and one-step fluorescent technique was conducted to determine the optimal pairing of development method and tape sample. The clarity of latent prints produced at three intervals of age were evaluated for development on the adhesive side of duct tape, electrical tapes (black and blue), and cellophane tapes (clear packing, brown packing, and Scotch® Magic™ tape). Nine processing methods (alternate black powder, Basic Yellow 40, gentian/crystal violet, Liqui-Drox, powder in suspension, Rhodamine 6G, Sticky-Side Powder, TapeGlo™, and Wetwop®) were tested on each included tape type and evaluated for quality of print development after samples had been aged for 24 hours, 2 weeks, and 6 weeks.

The evaluation and scaling of each process and tape combination was completed two ways: 1) Processed samples were subjectively analyzed by latent print examiners and rated on a pre-defined 0 to 3 scale for clarity as it pertains to the overall ridge development, as well as the visible presence of Levels I, II and III friction ridge detail; and 2) Processed samples were rated for clarity utilizing the FBI's Latent Quality Metrics (LQMetrics) software. Numerical scalings were objectively assigned in determining the overall quality and clarity of the latent prints produced by the test methods. The overall sensitivity of each processing technique was thus analyzed for quality of developed latent prints and effectiveness of the technique at processing varying qualities of samples.

This presentation will advance the field of latent print examination by providing a list of tape types and complementary processing methods. Tailoring a straightforward approach to each type of tape sample decreases the chances that latent prints will remain undeveloped by processing with a suboptimal method. The decrease in unsuccessful initial processing will also lead to faster turnaround for tape-based casework processing. In whole, this study moves towards structuring the latent print analysis of tapes to increase successful development of latent prints upon first examination through educating examiners on the comparative values of multiple processing techniques in developing latent prints on the adhesive side of a variety of tape types.

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Tape, Adhesive, Latent Prints

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