VIRGINIA DEPARTMENT OF FORENSIC SCIENCE

EVIDENCE HANDLING & LABORATORY CAPABILITIES GUIDE

TRACE EVIDENCE: PAINT

Contact Information

If you have any questions concerning the Trace Evidence laboratory examination capabilities or evidence handling procedures, please call the Training Section or the Trace Evidence Section at the Forensic Laboratory that services your area.

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PAINT ANALYSIS OVERVIEW

Painted surfaces are encountered frequently at crime scenes in the form of vehicles, architectural structures, tools, bicycles, boats and many other items. When two objects come in contact with one another and at least one of these objects is painted, a transfer of the paint may occur. This transferred paint can be compared to a known sample from near the point of damage to provide a link between the two objects. Painted surfaces tend to be repainted over time providing a characteristic history of layer structure.

Large paint fragments may be physically fitted or fracture matched together providing an identification of the fragments as having come from that specific source. In the absence of a physical fit, the color, texture, type, layer sequence and chemical composition of known and questioned paints are compared and a conclusion rendered. Additionally, in cases with no suspect vehicle, it may be possible to at least provide an investigative lead as to the color and metallic/nonmetallic type of paint present from recovered paint. If the questioned paint is suitable, then the Paint Data Query (PDQ) database may be searched and vehicular information provided as to the possible makes, models and year range that used the questioned paint.

CAPABILITIES AND SERVICES

Identification of material as paint

Comparison of questioned paint particles to known paint samples

Fracture matches of paint fragments

Determination of color/make/model/year ranges from recovered vehicular paint

COLLECTION GUIDELINES

ITEM – Known or Questioned Paint Samples

METHOD – If practical, submit the painted item in its entirety or remove a portion of the item for submission. This allows the lab to perform the questioned paint recovery. Wrap these samples in paper and, if small enough, place the paper wrapped item in a paper bag for submission.

Otherwise, use a previously unused scalpel blade or razor blade to cut or chip paint from the item. Cut all the way to the substrate (wood, metal, plastic, etc.) with the goal of keeping all layers intact. Do not scrape or shave the paint. The combined size of all particles in a known sample should approximately cover an area the size of a nickel. Collect all transferred/questioned paint. The size of the transfer will dictate how large this sample will be.

Collect known samples from an undamaged portion of each area/panel/surface that is damaged or from where paint transfer may have occurred. Package each area sampled in a

separate properly folded paper evidence fold placed into another container such as an envelope for submission.

Paint particles may be packaged in a properly folded paper evidence fold or another leak proof container such as a plastic sample jar or pillbox which is then placed into another container such as an envelope for submission.

Large paint particles such as those from the scene should be packaged in a way to prevent breakage such as in a small box. When a possible source of the large paint particles is located, collect the entire area including the substrate for a fracture match exam.

Whole automotive bumpers, tailgates, bicycles and other large items may be submitted as long as the damaged area is protected by sealing over/around it with paper.

DISCUSSION - It is not uncommon for adjacent automotive panels or the door and doorjamb of a building to be painted differently. Some variation in paint may also be found within a single panel or small area. Therefore, it is important to collect the known samples as close to the damaged area(s) as possible.

ITEM – Paint Smears on Automobile Panels and Other Surfaces

METHOD – Care should be taken to preserve a paint smear in as close to the original condition as possible. Submit the painted surface in its entirety or remove a portion of the item for submission, preserving the smear for recovery by lab personnel. If a saw is used to remove a portion of a surface, ensure that no trace evidence transfer is lost by placing paper under the surface being cut. If the surface is metal, avoid cutting too close to the transfer area as heat will be produced and conducted along the metal possibly altering the transfer paint. Cut several inches away from the area of interest. Wrap these samples in paper and, if small enough, place the paper wrapped item in a paper bag for submission.

If it is not practical to submit the item containing the smear, then use a previously unused scalpel blade or razor blade to cut or chip paint from the item. Cut all the way to the substrate (wood, metal, plastic, etc.) with the goal of keeping all layers intact. Do not scrape or shave the paint. Paint particles containing smears may be packaged in a properly folded paper evidence fold or another leak proof container such as a plastic sample jar or pillbox.

DISCUSSION – Paint smears are typically fragile. If possible, it is generally best to allow the examiner to collect the smear directly from the object. This allows the examiner to microscopically examine the smear in its entirety and most easily identify the portions of the smear most suitable for analysis. Plastic or rubber objects can be easily cut to collect large portions containing the smear.

ITEM – Tools Containing Possible Paint Transfer

METHOD – Protect the area with suspected transfer by wrapping the area in paper, taking care to ensure the tool does not break or punch through the paper. If practical, place the tool with the paper protected area into a paper bag for submission. If latent prints and/or DNA are

being considered for the handling end of the tool, secure the tool in a rigid box with zip ties to preserve this type of fragile evidence.

DISCUSSION – Paint transfer to tools is often small and may only be detected using a microscope; therefore, the area of suspected transfer must be protected from loss or further damage.

ITEM – Clothing from a Pedestrian Hit-and-Run Victim or Sheet Used to Wrap/Transport Victim.

METHOD – Air dry bloody or wet items prior to submission in controlled conditions on or over clean butcher paper. Wrap items in clean butcher paper which is then placed in a paper bag for submission.

DISCUSSION – The victim's clothing can be an excellent source of trace evidence, therefore care must be taken to avoid loss of microscopic trace evidence from the clothing. The clothing will be visually and microscopically examined and then scraped to collect debris in order to recover trace materials including paint. Recovered paint can be compared to known samples from a suspect vehicle. If the suspect vehicle is not known, it may be possible to provide color, make, model and year ranges of potential suspect vehicles. The laboratory will prioritize hit and run fatality cases with no suspect vehicle to attempt to provide investigative information as quickly as possible. Call the lab to alert personnel to these cases.

ITEM – Spray Paint or Other Paint Used to Vandalize or Conceal Evidence

METHOD – Collect the entire can of suspected paint. If the can of paint is not already protected from drying out, replace the lid on the can or transfer a small amount of the liquid paint to a glass jar or glass vial.

Collect questioned paint samples from the location of the vandalism for comparison by following the method described above for known or questioned paint samples.

If no spray paint can is located, the clothing and/or shoes thought to have been worn during the spraying of the paint may be submitted to search for minute particles (not readily visible, requires use of microscope) from the aerosolized source.

DISCUSSION – The can of spray paint is preferable for submission, when possible, due to variation of shaking and mixing conditions which affect the chemistry of paint left on the substrate. Alternatively, clothing or shoes will be microscopically examined and/or scraped to collect debris in order to recover any microscopic paint particles. Recovered paint can be compared to the paint on an object to demonstrate proximity to the spraying of the paint.

ITEM – Paint Balls

METHOD – If already dry, submit the item containing the paint ball "paint" by wrapping in paper and placing in a paper bag. If still wet, swab the area containing the paint ball "paint" with cotton swabs which are then placed in plastic bags. Place intact or expended paint balls in plastic bags.

DISCUSSION - Paint balls are not technically paint. They are made out of food-grade water soluble materials. Expended paint balls or paint ball "paint" can still be compared to known paint balls.

SUBMISSION REMINDERS

DO NOT use tape when collecting paint.

Include on the Request for Laboratory Examination form (RFLE) the color, make, model and year for all vehicles from which paint is collected.

A properly folded paper evidence fold is the best container for packaging paint evidence.

Collect paint which contains all layers by cutting all the way to the substrate (wood, metal, cement). Do not shave or scrape paint from a surface.

For known samples, collect enough intact paint particles that will cover approximately the surface area of a nickel.

Collect a known sample of paint directly adjacent to the suspected transferred paint.

Do not submit the scalpel blade or razor blade used to collect the paint sample.

If two painted objects come in contact with one another always be alert to the potential of an interchange of paint that may or may not be visible to the naked eye and collect samples from both sources.