

The Science of Fingerprints

Classification and Uses



UNITED STATES DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION

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Reactive Surfaces Ltd. LLP

Latent Impressions

Each ridge of the fingers, palms, and soles bears a row of sweat pores which in the average person constantly exude perspiration. Also, the ridges of the fingers and palms are in intermittent contact with other parts of the body, such as the hair and face, and with various objects, which may leave a film of grease or moisture on the ridges. In touching an object, the film of moisture and/or grease may be transferred to the object, thus leaving an outline of the ridges of the fingers or palm thereon. This print is called a latent impression, the word "latent" meaning hidden, that is, the print many times is not readily visible.

Latent impressions, regardless of the area of the ridges present, are of the greatest importance to the criminal investigator as identification of them may solve the crime and result in successful prosecution of the subject. Consequently, every effort should be made to preserve and *identify* them.

Visible prints in mediums such as blood, grease, dirt, or dust are equally important to the investigator but, strictly speaking, are not latent impressions but rather patent impressions; meaning impressions that are exposed, not hidden.

A search of the crime scene should be conducted in a logical manner. Points of entry and exit should be examined, along with surfaces or objects disturbed or likely touched during the commission of the crime. The specialist should wear a pair of light cloth gloves and handle an object only insofar as is necessary and then only by edges or surfaces which are not receptive to latent impressions. A record of the exact location of a print on an object and of the object itself should be made, since these facts may be of the utmost importance in any trial resulting from the investigation. Care should be taken to prevent other individuals present at the crime scene from handling any object until the fingerprint specialist has completed his/her examination for latent prints.

Portable articles removed should be labeled or marked so that they may be readily identified thereafter.

The beam of a flashlight played over the surface of a non-porous object will frequently show the location of latent impressions, although this is not an infallible test for their presence.

Evidence should be examined as soon as feasible after its discovery.

Following the location of any latent prints at the scene of a crime, the prints of all persons whose presence at the place under inspection

has been for legitimate purposes should be excluded from further attention. It is advisable, therefore, during the initial stages of an investigation where latent prints are found, to secure the inked prints of all members of the household, the employees, and any police or other officials who may have touched the objects on which the latent impressions were found. Inked prints taken for this purpose are referred to as elimination prints.

Due to the fragmentary nature of most latent prints, it is not possible to derive a classification which makes a file search practicable. A latent impression may be identified, however, by comparison with the prints of a particular suspect.

Inked fingerprints taken for comparison with latent impressions should be as legible and as complete as possible, including the areas not essential to classification, since identifications are often made with these areas. Inked palm prints taken should likewise be complete and clear and should include impressions of the finger joints. Persons not experienced in latent print comparisons should not attempt to evaluate latent fragments, since the area necessary for an identification may be extremely small compared to that of an average inked fingerprint.

Articles which are to be transported by mail or express should be so packed that the surface bearing latent impressions are not in contact with other surfaces. This may be accomplished by mounting the articles on a piece of fiber board or plywood. The board should then be secured in a box so that the objects will not touch or be shaken against the sides in transit. The package should be plainly marked "Evidence," to prevent inadvertent handling on opening. Cotton or cloth should never be placed in direct contact with any surface bearing latent prints.

Any number of paper or cardboard specimens may be placed in a single protective wrapper, since contact with other surfaces does not harm latents on such objects. Lifts, negatives and photographs are readily enclosed with letters.

An explanatory letter should accompany all evidence. If it is necessary to pack the evidence separately, a copy of the letter should be placed in every package so that the recipient will know immediately the importance of the contents. All items of evidence should be marked and described exactly in the accompanying letter so that they will not be confused with packing material of a similar nature, and to provide a check on what the package should contain.

In addition, the letter should include for record purposes a brief outline of the crime, i.e., type, date and place of occurrence, and names of victims and subjects. If suspects are named for comparison, sufficient descriptive data should be set out to permit location of their fingerprint records. This information, in preferential order, comprises the individual's complete name, aliases, FBI number, prior arrest number, date of prior arrest or fingerprinting, fingerprint classification, date and place of birth, and physical description.

Evidence is preferably forwarded by registered mail or any means providing records of dispatch and receipt.

Elimination or suspect fingerprints are best enclosed with the evidence itself, with a notation as to the type of prints forwarded.

CHAPTER XIV

Powdering and Lifting Latent Impressions

The sole purpose in "developing" a latent impression is to make it visible so that it may be preserved and compared. Various powders and chemicals are used for this purpose. When a latent print (patent print) is plainly visible, it should be photographed before any effort is made to develop it.

No attempt should be made to brush or apply powder to prints in dust or bloody prints, as this will almost surely destroy them. Objects which have been wet or immersed in water may still bear identifiable latent impressions. Before any examination is attempted, however, the object must be dried.

Powder brushed lightly over a latent-bearing surface will cling to grease or moisture in the ridges of a latent print, making it visible against the background. Obviously, a powder should be used which will contrast with the color of the surface. Photographic contrasts should also be considered.

A gray powder and a black powder are adequate for latent print work. Many fingerprint powders of various colors and compositions are available from fingerprint supply houses but none are superior to the gray and black.

A very small amount of powder is placed on the brush for application to the surface. Once the contour of a print is visible, the brush strokes should conform to the direction of the ridges. All excess powder should be brushed from between the ridges. Too much powder and too little brushing are the chief faults of beginners.

Gray powder is used on dark-colored surfaces. It is also used on mirrors and metal surfaces which have been polished to a mirror like finish, since these surfaces will photograph black with the fingerprint camera.

Black powder should be applied to white or light-colored surfaces.

Aluminum powder affords the same contrast as the gray. Gold and red bronze powders, although of a glittering appearance, will photograph dark and should consequently be used on light-colored surfaces. Dragon's blood powder is a photographically neutral powder and may be dusted on either a light or dark surface.

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