

PRODUCT USER GUIDE



**CRIME
SCENE**
INVESTIGATION



Crime Scene Investigation Equipment Ltd (CSI) are a passionate team of professionals, dedicated to developing leading edge technologies in the fight against crime. Our aim is to be the leading provider of cutting edge products/systems, helping to improve criminal detection rates and preserve evidence, providing immediate action, whilst at the same time driving down operating costs.

The mission of CSI is to supply the best solutions possible to our customers in order to make their job safer and easier. It is also our mission to continue to research and develop new tools that allow our customers to detect and apprehend those who choose to live outside the law.

CSI share ideas and know-how with its customers and partners as well as leading experts in the field, to develop and deliver adapted solutions to create better results for Law Enforcement.

CSI

FINGERPRINT KIT

This kit contains a range of fingerprint powders suitable for the development of latent fingerprints on smooth and mainly non-porous surfaces although the powders can be used on paper if the powder is applied within a short time of the paper being touched.

What is a fingerprint?

If you closely examine the surfaces of your fingers, palms and indeed your feet and toes you will observe that there are fine lines covering the areas which normally are in contact with things you touch, hold or stand on.

Friction Ridges:

These fine lines are called friction ridges and if you examine the friction ridges on your hands you will notice that they run mainly parallel to one another but in certain areas they diverge and change direction forming patterns having the forms of loops, whorls and delta shapes. These ridges are not continuous and in fact end and fork and it is the unique sequence of these ridge endings and forks which enable unique identifications of people to be made.

The ridge endings and forks (sometimes called bifurcations) are called minutia and it is the minutia which are marked on fingerprint images by experts to explain identifications.

In Figure 1 types of minutia (crossover, bifurcation, ridge ending and island) are shown but all crossovers, islands etc are combinations of ridge endings and forks. The centre of the pattern is called the core and the delta is indicated. Note that in the case of deltas parallel ridges from three directions converge creating the delta shape. Sweat pores are evenly distributed across the top of each friction ridge.



figure 1

It is the patterns formed by the friction ridges that enable us to divide the main types of fingerprint patterns found on the end joint of each finger into three basic families of patterns.



Arches



Loops



Whorls

If these friction ridges are examined with a good magnifier they form ridges and furrows. At the top of the ridges there are rows of sweat pores through which the sweat gland excrete sweat. It is believed that this feature aids us in gripping objects and in the case of the friction ridges on feet to help prevent slipping.

The main types of fingerprint patterns:

When you develop your own latent prints with this kit you will be able to refer to the chart below (Figure 2) and decide which types of patterns you have on your fingers.

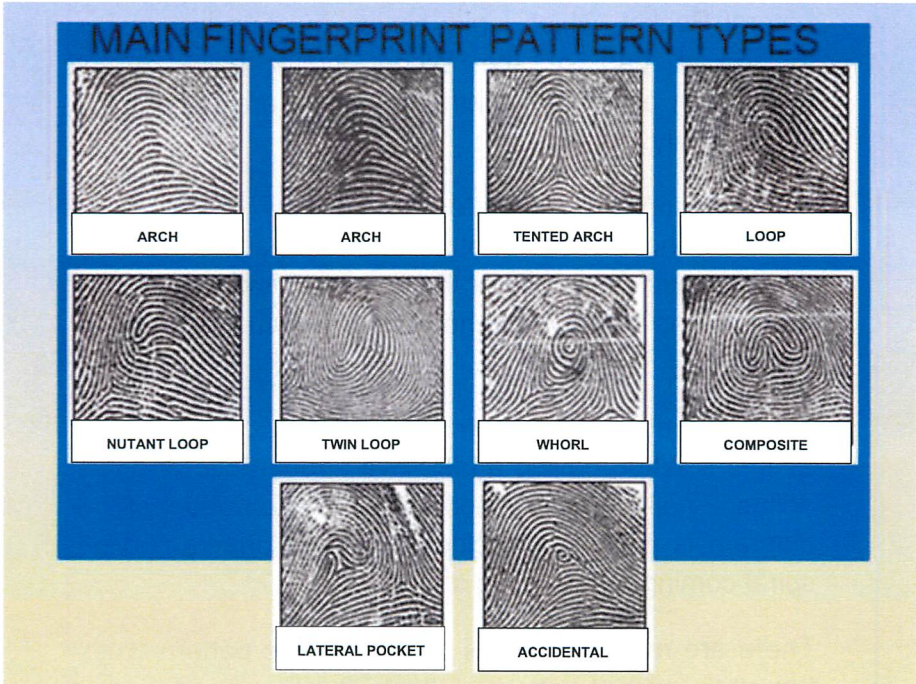


figure 2

On the top row the first three patterns are Arch types, the third one along is called a Tented Arch because it does not recurve like a loop or whorl but the central spine in the pattern looks like a tent pole.

The Nutant Loop is a loop which droops at the top and this pattern only has one delta. Check it against the Lateral Pocket, which looks similar but has two deltas making it part of the Whorl family because by convention all patterns with two deltas are part of the Whorl family of patterns.

In the Twinned Loop pattern notice how one loop re-curves alongside one another and this pattern has two delta shapes either side of the pattern. A twinned loop is regarded as part of the whorl family because it has two deltas.

The next pattern to the twinned loop is easy to describe as it is a Whorl having a bulls-eye appearance and two deltas. Finally the tiny Whorl pattern at the bottom of the diagram is called an Accidental having one re-curving spiral coming off two delta shapes.

There are many variations of these basic pattern types but all fingerprint patterns fall into the broad categories shown in the diagram figure 2.

There are two types of sweat gland under the skin, these are called the endocrine and sebaceous glands. The mixture of sweat from these glands varies according to a person's diet, how much exercise they are doing and whether or not they are warm or cold. When a person runs hard the sweat excreted can be almost pure water whereas when a person is at rest after a heavy meal in a warm room fats, lipids, urea and amino acids can be excreted from the pores.

Fingerprint powders stick to traces of these substances left as latent prints by the friction ridge structure. When you apply fingerprint powder to a brush it is important to shake off most of the powder before you dust an object to develop latent prints as it is important to carefully develop marks so as not to clog the spaces between the ridges.

If you over powder a mark(s), keep a clean brush available so you can carefully brush out the excess powder. You need to make the detail of the print as clear as possible before attempting the lift.

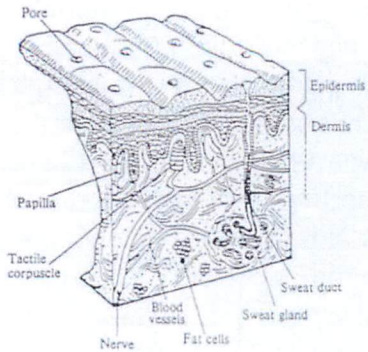


figure 3

Figure 3 shows the structure of the skin below the friction ridges. Notice the outer layer of skin is called the epidermis and this is constantly renewed throughout life retaining the same fingerprint patterns you were born with and

minor injuries will not disturb the friction ridge structure but a deep seated injury to the layer below called the dermis will cause a scar which will be more permanent and will show up in subsequent prints taken.

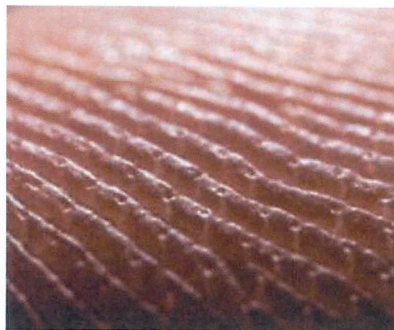


figure 4

The picture in figure 4 shows the friction ridge structure with the sweat pores on top.

Using the CSI Fingerprint Kit

Many types of powder are available for the development of latent fingerprints. This kit includes some of the most popular powders.

With fresh fingerprints the aqueous component of the fingerprint contributes significantly to the adhesion of powders.

With older fingerprints, when most of the water has evaporated, powders adhere principally to the fatty deposits of the sebaceous sweat content.

The effectiveness of powdering is variable depending on the chemical and physical nature of the powder, the type of applicator and the care and expertise of the operator.

Fingerprints developed with powders are usually lifted with a special adhesive tape, stuck onto a plastic sheet or card and then photographed. This kit contains all the necessary equipment for lifting and preserving the marks found.

There are many types of powder and several methods of application. The effectiveness of the various combinations differs considerably and are particularly dependent on operator expertise.

The powders in this kit ***MAY BE*** used on any surface which is relatively smooth and clean. However we ***DO NOT*** advise using on surfaces which are wet, very rough or dirty.

INSTRUCTIONS FOR USE:

Before use, please familiarise yourself with the current MSDS (Material Safety Data Sheet) and take account of any guidelines for safe use. (For the latest details please check our website). Wear the protective gloves and face mask supplied. Wash hands regularly and always before eating.

Granular Powders: Apply powder to the surface with a light brushing action using one of the animal hair brushes supplied. The powder should be applied sparingly to the fingerprint and the excess removed with a few light strokes. With deposits such as furniture polish or general grime a less sensitive powder may sometimes be more effective. This will reduce the chances of the clogging, or filling-in of fingerprint ridge detail.

Magnetic Powders: Dip the magnetic applicator into a container of powder and withdraw, shaking slightly, to remove excess powder. A brush-like clump of powder should have adhered to the applicator. Draw the applicator over the surface to be examined. Take care not to let the head of the applicator make contact with the surface being examined. Hold the applicator over the powder container and deactivate by withdrawing the magnet and the powder will fall back into the container. Excess magnetic powder can be recovered from the area treated and returned to the container in the same way.

Please note that a low power ultraviolet lamp will help fluoresce, both the granular and magnetic fluorescent powders in this kit.

Lifting the Print: Simply peel off the backing sheet from the Hinge Lifters, to reveal the adhesive side of the tape. Either roll or press the tape firmly onto the surface which you have dusted, to lift the print. Slowly remove the tape from the surface and stick down on the backing sheet avoiding any air bubbles. The Hinge Lifters are supplied with Black, White or Clear backing sheets to enable a good contrast depending on the colour of the powder you are using. The tape should be examined in good illumination to ensure that where possible there are 'no air bubbles' where the tape is not making good contact. Breathing on some developed fingerprints before laying on the tape may improve the lifting of the powder. Please take a look at our website and there you can find all of the equipment used in the forensic examination of crime scenes. You can expand your scenes of crime kit with safe products and further your understanding of the work of the Crime Scene Investigator (CSI).

<http://www.csiequipment.com>

IMPORTANT INFORMATION

When using this product please keep in mind the following important safety information:

Always wear the protective clothing (gloves/apron, mask) supplied. When you have finished using the kit put the items back in the carrying case provided.

Always keep the lid tightly closed on the powders when not in use. It is also good practice to only have one powder pot open at any one time, when in use. In addition, if you are working in a drafty area, put the lid back on the pot in case it gets blown over. The pots are light and therefore subject to being knocked or blown over easily.

Should the powder spill out onto a surface it can easily be cleaned up with a soft damp cloth. However if the powder falls onto a carpet we suggest the following cleanup procedure.

- 1.) Vacuum up as much of the powder as possible. **DO NOT** rub the carpet as the powder may spread.
- 2.) Remove the remaining powder by carefully soaking it up with a damp sponge. Again **DO NOT** rub the carpet as the powder may spread.
- 3.) To clean deep down into the carpet to get at powder on the fibres, a slightly moistened cotton bud usually does the trick.

HEALTH & SAFETY

Keep away from heat/Sparks/open flames/hot surfaces.
No Smoking!

Keep away from sources of ignition. No Smoking!

Use powders in a well ventilated area

Always keep the lid tightly closed when not using the powders

Avoid contact with eyes. If this occurs rinse thoroughly with water.

If in eyes hold eye open and wash thoroughly with water.

Remove contact lenses, if present and continue to rinse eyes.

If swallowed drink plenty of water. Do not induce vomiting unless directed to do so by suitably trained medical personnel.

If on skin wash off with soap and water. If on clothing, take off the clothing and wash.

For a full data sheet on these products please visit www.csiequipment.com/msds

CONTENTS LIST

For replacement products please check out our website or contact our sales office.

This kit contains:

- # 86806 - CSI Carrying Case with foam insert
- # 86807 - User Manual
- # 86808 - Magnetic Wand
- # 86809 - Fingerprint Brush x 2
- # 86810 - White Fingerprint Powder
- # 86814 - Fluorescent Red Fingerprint Powder
- # 86815 - Fluorescent Green Fingerprint Powder
- # 86816 - Fluorescent Yellow Fingerprint Powder
- # 86820 - Red Magnetic Fluorescent Powder
- # 86821 - Green Magnetic Fluorescent Powder
- # 86825 - Black Magnetic Fingerprint Powder
- # 86826 - Silver Magnetic Fingerprint Powder
- # 86830 - Hinge Lifters Black x 4
- # 86831 - Hinge Lifters White x 4
- # 86832 - Hinge Lifters Clear x 4
- # 86835 - Protective Gloves (1 pair)
- # 86836 - Protective Disposable Apron
- # 86837 - Protective Face Mask

Fingerprint powders in other colours and larger quantities are available for purchase. Please check our website or contact our sales office for further details.

**Crime Scene Investigation
Equipment Ltd manufacture and
supply the following:**

Barrier &
Warning Tapes

Brushes - Fingerprint

Casting & Moulding Materials

Chemical Treatment

Cleaning & Disinfection

Drug & Blood
Identification

Evidence Collection

Fire & Explosive Detection

Inks & Inking Systems

Gifts & Promotional Items

Lamps & Lighting
Equipment

Lifting Tapes

Magnification & Optical

Medical, Sexual & Post
Mortem Equipment

Photographic Supplies

Powders - Fingerprint

Protective Clothing
& Accessories

Reference Books

Specialist Equipment

Ultra Violet Products

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