

Lifting Two-Dimensional Impressions With Dental Stone.

One of the long-term problems faced by Scenes of Crime and Forensic Identification Officers has been the difficulty of lifting visible or developed impressions from textured substrates.

The skin on fingers and palms is sufficiently flexible that it will conform to irregularities. The impressions can then be developed with fingerprint powders but when an attempt is made to lift the impressions with regular fingerprint tape the resulting lift is often worthless.

Regular fingerprint tape will not conform to the shape of the uneven substrate and impressions lift unevenly, usually leading to patchy useless impressions.

Stretchy tape or rubber lifters work in some cases but they are both quite expensive alternatives and the suitability of the lift being dependent upon the ability of the technician to force the lifting material down into every undulation in the substrate. Often it is not possible to ensure that all parts of the impression will be recovered. Another method is to use elastomer materials to lift the powdered impressions. These materials are too expensive to use for anything larger than a finger impression and they also have a short shelf life.

Det. Cst. Wade Knaap of the Toronto Police Service has developed a method that works extremely well, is cheap, easy to use and available in most forensic identification units – Dental Stone.

Knaap was at a crime scene and wanted to lift impressions from a textured counter top. He found that the elastomer material in his kit had frozen and crystallized and was of no use. In desperation he turned to the only other material available to him at the time, dental stone. Without any real expectation that it would work, or that he would even be able to remove it from the counter top, he mixed and poured a small amount of dental stone over the developed impression. After it had cured he found that it readily came loose from the substrate and when he turned it over to examine the impression he found that the resulting lift was excellent.

Knaap and Det. Edward Adach did some further research and found that the method works on most substrates. They also discovered that the lifted impression appeared to be permanently embedded in the stone and not susceptible to being rubbed off. In addition to a lift being taken the original impression is still preserved on the substrate. Markings made with a pen, pencil or dry erase marker, are lifted along with the impression to preserve continuity. Permanent marker does not lift.

The process is simple to use.

Mix a sufficient amount of dental stone with water to give a consistency that will flow easily

- pour it over the powdered and marked impression
- allow it to cure.
- slide it off the substrate (It will readily separate from irregular

substrates, smooth substrates
may require more force)

When casting impressions the size of footwear, or larger, you may find it advisable to build a containment wall so that the dental stone does not flow and form a large pool.

Such a cast would have thin edges that are susceptible to damage when being handled during examination and in court. Using a containment wall ensures that the edges of the cast have sufficient thickness to provide the desired strength.

White dental stone gives the best contrast with lighter coloured dirt/grease impressions. Buff is satisfactory with black fingerprint powder.

As with any opaque lifting material the impression is laterally reversed.

The dental stone lifting process fills a gap in the ability to retrieve impressions from textured surfaces. It is much cheaper than stretchy tape or rubber lifters and does an equal or better job of lifting the impression. However, storage of the lifted cast is more cumbersome than with tape lifts.