

	<b>IMP-PM 8.0 Known Impressions</b>	
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	Document Manager: Cheryl Lozen	Approved By: Ryan Larrison

## 8.0 Known Impressions

### 8.1 Introduction

The available literature devotes extensive time to descriptions of preparation of known impressions. Ordinarily, there is no single best process, since results depend to such a great extent upon the particular items and conditions of the specific case. Since the various techniques are non-destructive and not sequence dependent, the examiner may choose one by personal preference, and continue to apply additional techniques as necessary to maximize results. These variations in processing techniques typically do not influence the validity of the test procedure.

Procedures listed below, those found in [ANSI/ASB 021 – Best Practices for the Preparation of Test Impressions from Footwear and Tires, 1st Edition 2019](#) and/or those in the References listed below are acceptable methods.

### 8.2 Minimum Standards and Controls

The Standards and Controls for this section are to ensure that the powders, dental stone and lifting materials are suitable prior to their use. Powders should be free flowing, not caked, and the lifting materials should be flexible, not rigid.

### 8.3 Procedure

Test impressions provide a recording of the characteristics already present on the outsole of a shoe. The quality of the comparison directly relates to the quality of the known. The shoes may also be photographed or scanned for documentation purposes.

It may be appropriate to make known impressions with more than one technique, to represent variables possibly involved in the questioned impression. This would include making 2-D or 3-D known impressions. For footwear cases this may also include making impressions while wearing the shoe/boot to portray how the footwear makes contact under weight, or attempting to mimic jumping, kicking and skidding.

#### 8.3.1 Two-dimensional known test impressions

##### 8.3.1.1 Gelatin Lifters

A clear gelatin lifter used with a powdered or inked shoe will provide a quality impression that can be used as a transparency. The white and black gelatin lifters provide test impressions of high contrast. The

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qualities of the gelatin lifting materials, such as their flexibility and softness, allow for a more thorough recording of the detail of the known footwear.

The shoes can be inked, ink rolled or dusted with powder. To ink the outsole, permanent ink of a contrasting color, usually black, is applied to a large ink pad and the shoe outsole is made to contact the ink pad. To ink roll the outsole, fingerprinting ink is rolled on a plate to smooth it out, and then rolled onto the shoe outsole evenly with an ink roller and recorded in the same manner as the permanent ink. To powder the outsole, black fingerprint powder is brushed onto the outsole and the shoe is gently shaken to remove the excess powder.

The gel lifters come with a transparent protective cover that is removed when the impression is ready to be made. There are three ways the known impression can be made: (1) the shoe can be placed on the foot and stepped onto the gel, or (2) the shoe can be placed on a shoe iron and the gel is then rolled onto the sole of the shoe with a clean ink roller, or (3) the shoe can be rolled by hand onto the gel. When rolling the gel onto the sole, avoid stretching the gel which would distort the impression. After the impression is made on the gel, the transparent sheet of plastic is placed back onto the gel to protect the impression. Start at the bottom, match the plastic bottom edge with the gel bottom edge and carefully roll the sheet over the gel. It is important to try to keep the bubbles to a minimum between the plastic and the gel; they may leave spots on the impression. Always mark the item number on the gel lifter which corresponds with the shoe that was used to make the impression, left or right. It is easy to get the print turned around and telling right from left becomes difficult on an unmarked transparent gel lift.

### **8.3.1.2 Handi-Print Adhesives**

The known shoe sole can be inked or powdered (see Gelatin Lifters for procedure). Be careful not to get too many bubbles or wrinkles between the plastic and the tape. Always mark the known impression with the item number or name of the shoe from which the impression was made.

### **8.3.1.3 Silicone and magna powder**

A silicone lubricant is applied to the known shoe sole. Using the weight of a person, test impressions are made by walking or stepping on to a piece of paper. The impression made on the piece of paper is then enhanced with magna powder.

### **8.3.1.4 Overlays**

After using any of the two-dimensional techniques listed above for making known standards on opaque backing, clear overlays can be made and used for comparison to questioned impressions.

## **8.3.2 Three-dimensional test impressions**

### **8.3.2.1 Biofoam Impressions**

Biofoam is a material that can be used to obtain three-dimensional standards. This material is a fragile foam material that deforms under minimal pressure to conform to the shape of the shoe deforming it. It is usually used to take impressions of footwear. Once an impression has been made in the Biofoam, a

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dental stone cast can be made of that impression. A known cast or the Biofoam itself makes a good comparison to an unknown or crime scene cast.

Take a Biofoam container out and remove the lid. Make the impression by pressing the shoe into the Biofoam or by putting the shoe on and stepping into the Biofoam. Use as much pressure as you want for any given impression, avoid going through the bottom of the Biofoam. You may then photograph, scan, or use dental stone for documentation of the Biofoam.

### 8.3.2.2 Dental Stone

Put dental stone powder into a gallon sized plastic bag. Use as much dental stone powder as you think is needed to fill the impression. Mix with just enough water to make the dental stone the consistency of pancake batter. Gently pour the dental stone into the Biofoam impression. Carefully agitate the top layer of dental stone to try and remove any air bubbles. The dental stone needs at least one hour of drying before it should be handled and requires 24 hours to dry thoroughly. After the dental stone is dry, remove the cast from the Biofoam and gently clean the cast. Using your finger and a soft brush usually cleans the cast.

### 8.3.2.3 Other

There are other acceptable methods of making 3D impressions that can be used at examiners discretion including, but not limited to: polyvinylsiloxane, Mikrosil, snow, mud, sand, Bubber/Mikrotrak.

## 8.4 Instrumentation

No Critical Instrumentation

## 8.5 Interpretation of Results

The known impression must replicate the outsole sufficiently for comparison. Any apparent differences between the outsole and the known impression should be noted.

## 8.6 References

- 1] Abbott, J. R., *Footwear Evidence*; Charles C. Thomas: Springfield, IL, 1964.
- 2] Baldwin D., *Test Print Study*, ENFSI SPTM Meeting, Stavern Norway, 2005.
- 3] Bodziak, W. J., *Footwear Impression Evidence*, 2nd ed.; CRC Press, Boca Raton, FL, 2000.

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- 4] Bodziak, W.J., *Forensic Footwear Evidence*; CRC Press, Boca Raton, FL, 2016.
- 5] Bodziak, W. J., "Some Methods for Taking Two-Dimensional Comparison Standards of Tires." *J. For. Ident.* 1996, 46(6), pp. 689.
- 6] Cassidy, M. J., *Footwear Identification*; Public Relations Branch of the Royal Canadian Mounted Police: 1980. (Reprinted by Lightning Powder Company, Inc. 1995.)
- 7] Drexler, S.G., "Test Impressions of Footwear Outsoles using Biofoam." *J. For. Ident.* 1994 44(1), pp. 57-70.
- 8] Hilderbrand, D.S., *Footwear, The Missed Evidence*, 3rd ed.; Staggs Publishing, Wildomar, CA, 2013.
- 9] *IAI Recommended Course of Study for Footwear & Tire Track Examiners*; International Assoc. Identification<sup>2</sup>. Mendota Hgts., MN, 2006.
- 10] McDonald, P., *Tire Imprint Evidence*; CRC Press, Boca Raton, FL, 1992.
- 11] Nause, L., and G. Carroll. *Forensic Tire Impression Identification*, Canadian Police Research Centre: Ottawa, ON, Canada, 2001.
- 12] Nause, L. A., M. P. Souliere, "Recording a Known Tire Impression from a Suspect Vehicle." *J. For. Ident.* 2008, 58(3), pp. 305-314.
- 13] Petraco, N., R. Resau, H. Harris, "A Rapid Method for the Preparation of Transparent Footwear Test Prints." *J. For. Sci.* 1982 27(4), pp. 935-937.
- 14] Segerkvist S., Evaluation of Methods Used for Test print Examinations, ENFSI SPTM Meeting, Copenhagen, 2007.

[ANSI/ASB 021 – Best Practices for the Preparation of Test Impressions from Footwear and Tires, 1st Edition 2019](#)