

IMPRESSIONS INVESTIGATION: SHOE PRINT ANALYSIS

Pattern and impression evidence includes any markings produced when one object comes into contact with another object, such as tool marks, tire tracks, and shoe prints.

LAB ACTIVITY

Dental Stone Casting - 3D Impression

Dental stone is utilized to cast three-dimensional impressions. It contains gypsum, which allows for a harder and more durable cast than other casting materials.

Materials (per pair of students)

- 2 pounds of dental stone
- Scale
- Plastic ziptop bag
- 8–12 oz of water
- Tongue depressors
- Ruler
- Camera

Procedure

1. Photograph the shoe impression from a 90° angle with different flash angles to properly document the evidence.
2. Weigh approximately two pounds of dental stone into a plastic bag.
3. Add 8–12 oz of water to the bag containing the dental stone.
4. Securely seal the bag and mix until the consistency of the dental stone is evenly blended and without clumps. The mixture should resemble pancake batter.
5. Pour the dental stone directly into the impression and allow it to sit until cured, approximately 30–45 minutes. You may need to smooth out the mixture with a tongue depressor.
6. Once the dental stone has hardened, gently remove and clean the casting.
7. Photograph the casting.

2D Inked Impression

Inking shoes provides examiners with a known print to compare to shoe prints left at the crime scene.

Materials

- Known shoe
- Black printer's ink
- Ink roller
- White paper
- Ruler
- Camera

Procedure

1. Using an ink roller, roll black ink onto the sole of the shoe until it is covered with a thin, even layer of ink across all areas.
2. Place your hand inside the shoe and press it onto white paper in a motion that mimics the motion that would be made if the shoe were being walked in (i.e., heel to toe).
3. Photograph the inked shoe print.
4. Document any observed individual or class characteristics.