

Glass

One of the more important types of physical evidence which is frequently overlooked by the investigator is glass. Its evidentiary value lies in the fact that there are thousands of different formulae used in the manufacturing of glass.

I. General

Recovered glass samples may be separated into several groups: two of the main groups are window/windshield glass and headlight glass.

EXAMPLE 1: The glass recovered from a broken window at a burglary scene and glass recovered from the clothing and shoes removed from a person suspected of committing the burglary.

EXAMPLE 2: The glass remaining in a broken vehicle headlight assembly and the glass recovered at the scene of a hit-and-run investigation.

Considering these examples, it should be noted that the glass which is recovered from a known source, such as a broken window or a broken headlight, is considered **known** glass. The glass recovered from the clothing and shoes or the hit-and-run scene is considered **questioned** glass.

Comparison of irregularly shaped fractured edges of pieces of glass may reveal a puzzle-like match which indicates that two sources of glass were at one time a part of the same object. It should be noted that tempered float glass, the kind used in vehicles, business windows and doors, and residential shower doors **cannot** be fracture matched as they expand upon breaking.

If a fracture match is not possible, comparison of known glass with questioned glass may reveal similarities in their physical, optical, or chemical properties. This type of examination may result in a class identification. That is, there is more than one headlight or window that will have the same properties as the known headlight or window.

Therefore, specific identification cannot result from measurements of physical, optical, or chemical properties.

It is also possible to determine the direction of force used to break glass by examining stress marks present on the broken edges. In order to do this, it is necessary to reconstruct as much of the original pane as possible. Therefore, **all** glass from the scene must be recovered to reconstruct the item so the point of impact can be determined and detailed examination of the individual fragments can be conducted.

Caution: Observe laws relating to the collection of evidence.

II. Procedure

Fracture matches

- A. Fracture matching is the most positive form of identification. Therefore, it is of utmost importance that all glass fragments be recovered, since it is impossible to know in advance which recovered pieces will mate with one another.
- B. Collect all glass fragments from all sources (i.e., scene, vehicles, clothing, etc.) and package glass from each source separately in order to associate the glass from any one source with the scene.

Chemical analysis

- A. Collected for comparison with glass samples recovered from remote locations or from the clothing to show commonality of chemical composition. (Does not individualize a sample to a single source.)
- B. Recover a sample of glass still in the frame. Glass from the window frame is the only source that can be used as a known for chemical analysis.

Determination of the direction of force

- A. It is preferable to remove the window frame with the remaining glass still in place and to submit it to the Laboratory. If this is impossible and the glass must be removed from the frame, be sure to mark each piece to indicate the “inside” surface or the “outside” surface before removed from the frame. Collect all glass from the window frame.

- B. Glass found in different areas should be recovered and packaged separately. Example: Glass found on the floor inside should be packaged separately from glass found outside. It cannot be overemphasized that glass recovered from different areas should be packaged separately.

Packaging

- A. Package glass pieces in rigid containers such as a plastic specimen bottle. Protect the broken or fractured edges of the pieces of glass from any additional damage or breakage.
- B. The value of the procedure for packaging glass from different sources separately will be nullified if the packaging material tears or breaks allowing transfer of small pieces or fragments of glass between packages. **Do not** package glass in paper, mailing envelopes, cellophane, plastic bags or glass vials.

