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# Physical Evidence Bulletin

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## Glass Evidence

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### Purpose

The value of glass fragments as evidence is not always fully recognized. Windows, automobile glass, broken bottles, and other glass objects may be crucial evidence in burglary, murder, hit-and-run and many other types of crime.

The Physical Evidence Bulletin is a guideline intended for law enforcement agencies for the collection and submission of evidence to BFS Laboratories. Physical Evidence Bulletins are not intended to be used in lieu of training in the collection of evidence.

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### Analysis and results that may be obtained

The Bureau of Forensic Services (BFS) provides analytical support to law enforcement agencies through the examination of glass.

A person standing in close proximity to glass when it is broken may pick up fragments of the broken glass, particularly on clothing and shoes. For example, the clothing of burglary suspects, in cases where windows have been broken, will often retain microscopic glass fragments. In hit-and-run incidents, headlight lenses can be broken. Other vehicle windows can be broken as the result of collisions and other crimes such as shootings. Both the scene of the incident and clothing items of participants may have glass fragments.

There are several types of glass examination:

- Pieces of broken glass of sufficient size can form a physical fit, thereby making a definitive association (for example, the glass came from a particular window and no other).
  - Glass fragments of many sizes, including microscopic, can be compared. This analysis may give an indication of common origin but is not an absolute identification.
  - It may be possible to determine the side of impact to a window or the direction from which a bullet was fired at a window. It may also be possible to determine the sequence of multiple breaks (such as from bullets).
  - If a glass object has been exposed to fire, it may be possible to determine if it broke as a result of the heat or by mechanical force.
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## Precautions

Depending upon the case circumstances, other evidence may be present. An investigator may need to consider latent prints, toolmarks, broken glass, shoe/tire prints, blood stains, saliva, and other trace evidence. See the Physical Evidence Bulletins for the collection and preservation of other types of physical evidence.

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## Collection, marking, and packaging

### **General Packaging Considerations:**

Place samples into appropriately sized containers; e.g., do not put very small items into very large envelopes. Containers may be vials (glass vials should not be used for glass evidence), metal or cardboard pillboxes, or paper bindles placed into envelopes. Plastic should not be used for the packaging of small/loose trace evidence due to static electricity. Do not pack with cotton or other protective material directly touching the object. All edges/corners of envelopes should be sealed to prevent sample loss.

Do not package wet evidence. Clothing or objects containing glass evidence should be air dried prior to packaging. Items may be wrapped in paper and then placed into an appropriate container. Do not wrap items on a table top without first thoroughly cleaning that surface. Avoid cross contamination between evidence and reference samples.

If evidence is collected by tape lifting, use only low tack/low adhesive tapes. Package tape lifts in clear page protector sheets, plastic or Kapak bags. Do not allow tape to adhere to itself or adhere to other packaging materials such as brown paper bags or cardboard. Do not use fingerprint lift tape.

### **Fragments of Microscopic Size:**

These fragments are not visible to the naked eye. They are usually found on articles of clothing, including shoes, but may be on other objects such as tools or bullets. Handle these items minimally and wrap in paper if possible.

### **Large Visible Fragments:**

These fragments have the possibility of a physical fit in addition to comparison of composition. Therefore, collect all the fragments present to permit reconstruction.

### **Determination of the nature (e.g. heat) or direction of the breaking force:**

Collect all fragments. Depending upon the amount and size of the glass, place it in a sealed paper bindle or a folded and sealed paper or plastic bag. If glass is submitted for the purpose of determining the direction of impact of a bullet or other fracture analysis, record which side of the glass was the outside of the window, and which side was inside. If the collected glass is broken out of the window, remove a piece left in the window and record which side was the outside and which was the inside. **Package this reference piece separately.**

### **Comparison Samples:**

A large, representative sample of the source of broken glass must always be submitted for a comparison of composition. If the broken glass is from a vehicle with multiple broken windows, a representative sample from each broken window must be collected. If the broken glass is from a bottle or other container, the reference sample should include, if possible, samples from the neck, center, and base.

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**Submission of evidence to the laboratory**

Label the container with the agency case number, item number, and brief description as appropriate. Tape seal the container; date and initial the seal. Submit evidence to the laboratory along with a completed Physical Evidence Submission Form (BFS-1) and, if available, a case report or case summary.

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**For further information and additional resources**

Please contact your regional BFS laboratory with any further questions that you may have.

For a list of regional laboratories please go to:

[http://ag.ca.gov/bfs/pdf/bfs\\_brochure.pdf](http://ag.ca.gov/bfs/pdf/bfs_brochure.pdf) or <http://ag.ca.gov/bfs/>

To locate the most current Physical Evidence Bulletins please go to:

<http://ag.ca.gov/ci/reference/reference.php#peb>

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