OSAC RESEARCH NEEDS ASSESSMENT FORM

Title of research need: Assessment of composition and variability of modern formulations of non-float glass sources (e-coatings, PED glass, container, etc)

Keyword(s): Glass, variability, elemental analysis, databases

Submitting subcommittee(s): Trace Materials **Date Approved:** 6/12/2025

Background Information:

1. Does this research need address a gap(s) in a current or planned standard? (ex.: Field identification system for on scene opioid detection and confirmation)

Broken glass is a common evidence type submitted for forensic analysis. There is a strong scientific foundation for the methods of analysis and interpretation of glass in forensic science. However, this foundation is based primarily on studies using flat (also known as float) glass, typically from architectural or automotive sources. While float glass is a critical source of physical evidence, other sources of glass, such as container glass, personal electronic device (PED) glass, or glass with coatings have yet to be studied in as much depth as the conventional float glass. Furthermore, these non-float sources introduce additional variables that the established methods for examining float glass do not necessarily account for (e.g., possible heterogeneity, differences in thickness depending on location sampled, unknown elemental compositions, rapidly changing formulations). The lack of studies focused on non-float glass limit potential examination and interpretation of these sources in forensic laboratories, and additional research on these materials could result in the development of new standards for interpretation of glass evidence.

2. Are you aware of any ongoing research that may address this research need that has not yet been published (e.g., research presented in conference proceedings, studies that you or a colleague have participated in but have yet to be published)?

Members of the glass task group are currently working on addressing this research need.

3. Key bibliographic references relating to this research need: (ex.: Toll, L., Standifer, K. M., Massotte, D., eds. (2019). Current Topics in Opioid Research. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88963-180-3)

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4. Review the annual operational/research needs published by the National Institute of Justice (NIJ) at https://nij.ojp.gov/topics/articles/forensic-science-research-and-development-technology-working-group-operational#latest? Is your research need identified by NIJ?

Yes, knowledge of the composition and variability of non-float glass sources is critical for the development of shared forensic glass databases, which relates to the NIJ research need "Construction of new and updating of existing databases with properties of manufactured materials."

5. In what ways would the research results improve current laboratory capabilities?

Identifying the composition and variability of modern formulations of non-float glass sources can lead to improved measurement precision and improved laboratory practices, both of which can provide support to the practitioner when defending their results in court.

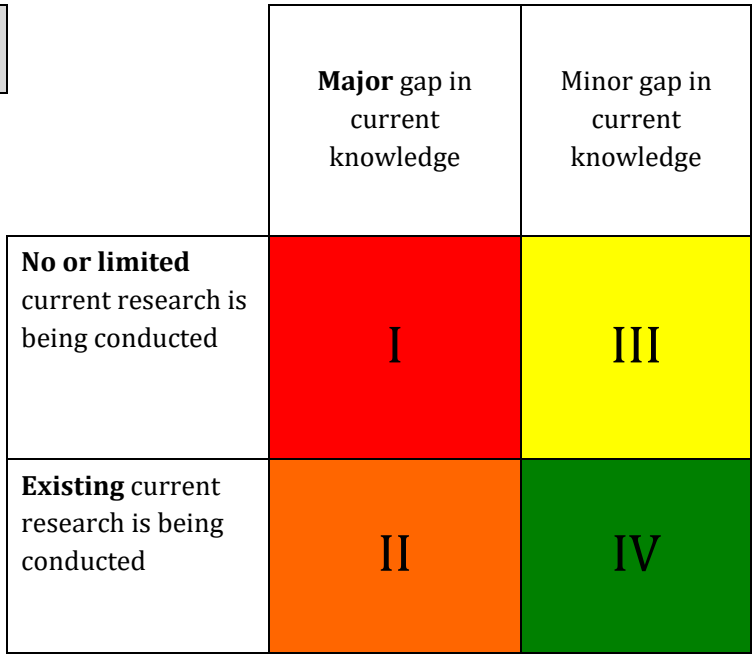
6. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

At the subcommittee level, this research would provide useful information for the development of current and potential future glass standards.

7. In what ways would the research results improve services to the criminal justice system?

Developing a more widespread understanding of the sources of variation and composition for the forensic analysis of non-float glass would allow for more support for these sources to be used as physical evidence in court.

8. Status assessment (I, II, III, or IV): II



This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.