

Specific Requirements for Fire Debris Analysis Proficiency Tests

1. Test Design

- 1.1 Fire Debris proficiency samples should measure sample handling and preparation skills, the ability to recover ignitable liquid residues from fire debris, chromatographic interpretation skills, and documentation skills.
- 1.2 Participants should be able to demonstrate the ability to recover and identify ignitable liquid residues using the methods routinely employed in the laboratory, from the entire range of sample types routinely encountered (e.g., liquid samples, empty containers, concentrated samples, very dilute samples, negative samples, etc.)
- 1.3 Chromatographic interpretation skills include the ability to distinguish pyrolysis patterns from petroleum product patterns, and the ability to classify petroleum products according to the classification scheme of updated ASTM documents.
- 1.4 Proficiency samples should consist of substances of the composition and purity the individual is likely to encounter in casework. Tests should include readily available products, not obscure or specialty products.
- 1.5 Simulated debris samples should include matrices commonly encountered in fire debris analysis (e.g., wood, carpet, tile, cloth, shoes, plastics, etc.).
- 1.6 Manufactured debris samples should include control samples to which no petroleum products have been added.
- 1.7 The following types of proficiency tests are suitable:
 - 1.7.1 Commercially available manufactured tests. Approved proficiency test providers shall be recognized by one of the forensic science accreditation bodies.
 - 1.7.2 Samples prepared by someone outside the participant's laboratory while following a proficiency testing preparation and verification procedure and having the appropriate records.
- 1.8 Documentation provided to the laboratory staff member responsible for proficiency tests must include notes regarding sample handling, preparation, and extraction; instrumental data; detailed descriptions of non-instrumental test results; calculations for quantitative results; documentation of data interpretation and conclusions; and standard and control sample results.
- 1.9 Acceptable results may be established by the proficiency test provider, but must be verified by cumulative results and/or analysis by at least two qualified referee laboratories.
- 1.10 Individuals within a single laboratory may receive identical proficiency test samples, as long as the results are achieved independently by the individual participants.

2. Criteria for Successful Participation in a Fire Debris Proficiency Test

- 2.1 The test provider will provide written notification to the laboratory staff member responsible for proficiency tests and/or the participant advising the results of his or her proficiency test. If applicable for commercial test providers, the laboratory staff member responsible for proficiency tests can verify the results given the participant's test code.
- 2.2 Correct results, which meet the test provider's specifications with no false inclusions or exclusions, demonstrate a successful participation in the proficiency test.
- 2.3 Incorrect results, such as false inclusions and exclusions, demonstrate an unsuccessful participation in the proficiency test.
- 2.4 Inconclusive results may be judged as successful or unsuccessful participation, or non-participation in the proficiency test.
 - 2.4.1 A judgment of an unsuccessful participation may occur if a participant provided the correct conclusion, but his or her methods and results do not adequately support the conclusion.
 - 2.4.2 A judgment of non-participation in the proficiency test may occur if a participant provided a properly qualified correct conclusion, which could not otherwise be supported by the results and methods used.