

Specific Requirements for Paints and Polymers Analysis Proficiency Tests

1. Test Design

- 1.1 Paints and Polymers proficiency samples should measure sample handling and preparation skills; the ability to recover, separate, and manipulate the materials of interest from sample matrices; the ability to differentiate and analyze separate layers of a sample; the ability to characterize and compare the chemical and physical properties of the sample; the ability to utilize reference collections, and documentation skills.
- 1.2 Participants should be able to demonstrate the ability to identify different types of polymers and establish or disprove the possibility of a common origin of two or more samples using the methods routinely employed in the laboratory.
- 1.3 Absolute identification of the materials in a proficiency test is not always required. Tests should emphasize comparative analysis.
 - 1.3.1 Conclusions should be appropriate for the samples provided and for the type of evidence, in general. Qualifying statements should be included with samples where a lack of knowledge about the uniformity of the source may affect the conclusion.
- 1.4 Proficiency samples should be representative of materials typically encountered in casework and presented in realistic scenarios. Samples should not include obscure matrices or those not readily available.
- 1.5 Test samples should be of a nature that any forensic laboratory equipped with standard instrumentation can complete the test.
- 1.6 Samples should be of sufficient size to allow for duplicate analyses and be prepared in such a manner as to ensure uniformity between samples.
- 1.7 Samples may be loose or on a suitable substrate, of thin film or bulk polymers of other types.
 - 1.7.1 Paint samples may consist of single or multiple layer paint systems, including clearcoats and primers, or paint samples may be presented as smears or microscopic particles.
 - 1.7.2 Polymeric materials may be presented as smears or microscopic particles.
- 1.8 Sample preparation and analysis should be performed by the participant to the fullest extent possible. If certain routine, repetitive procedures are usually performed by another laboratory analyst or technician, then persons other than the participant may assist with the proficiency test. Interpretation of the proficiency test results, however, must be performed entirely by an individual participant.

- 1.9 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.
 - 1.10 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.
 - 1.11 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 Paints and Polymers 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.