

Specific Requirements for Hairs and Fibers Proficiency Tests

1. Test Design

- 1.1 Hairs and Fibers proficiency samples should measure sample handling and preparation skills; the ability to collect, separate, and manipulate the sample; analytical skills; data interpretation skills; the ability to utilize reference collections; and documentation skills.
- 1.2 Hair samples should test the ability to distinguish between human hair and animal hair and the ability to determine the likelihood of a common origin of two or more samples using the methods routinely employed in the laboratory.
- 1.3 Human hair samples may test the ability to determine somatic origin or characteristics associated with certain racial groups.
- 1.4 Fiber samples should test the ability to identify different types of natural and synthetic fibers; to determine physical, optical, and chemical properties of fibers; to compare synthetic and natural fibers; as well as the comparison of the construction of threads, fabrics, ropes, and cordage.
- 1.5 Proficiency tests may involve the comparison of two or more samples, or the characterization of a single sample using techniques routinely used in casework.
- 1.6 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.
- 1.7 Proficiency samples should be representative of materials typically encountered in casework and presented in realistic scenarios. Samples should not include obscure materials or those that are not readily available.
- 1.8 Hair samples may be composed of human or animal hairs.
 - 1.8.1 Animal hairs should be from a species for which all participants could reasonably be expected to have standards for comparison.
 - 1.8.2 Hair samples should represent a range of values of characteristics present. The hairs provided should display sufficient microscopic characteristics for a valid conclusion.
- 1.9 Fiber samples should consist of natural or synthetic fibers which an analyst might encounter in casework (e.g., staple or filament fibers, threads, fabric sections, ropes, cordage, etc.). To the extent that animal hairs may occur in clothing or other textile materials, they may also be included in fiber proficiency tests.
- 1.10 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.

- 1.11 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.
- 1.12 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.
- 1.13 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 Hairs and Fibers 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.