



Standard Practice for Conducting an Interlaboratory Study to Evaluate the Performance of an Analytical Method¹

This standard is issued under the fixed designation E 1601; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

^{ε1} NOTE—Caution notes were moved into the text editorially in November 2003.

1. Scope

1.1 This practice covers procedures and statistics for an interlaboratory study (ILS) of the performance of an analytical method. The study provides statistical values which are useful in determining if a method is satisfactory for the purposes for which it was developed. These statistical values may be incorporated in the method's precision and bias section. This practice discusses the meaning of the statistics and what users of analytical methods may learn from them.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- E 135 Terminology Relating to Analytical Chemistry for Metals, Ores, and Related Materials
- E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method
- E 1169 Guide for Conducting Ruggedness Tests
- E 1763 Guide for Interpretation and Use of Results from Interlaboratory Testing of Chemical Analysis Methods

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminology E 135.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *interlaboratory study (ILS)*—study undertaken to ascertain if a test method is suitable for its intended use. The ILS includes preparation, testing, and evaluation phases.

3.2.2 *interlaboratory test*—measures the variability of results when a test method is applied many times in a number of laboratories.

3.2.3 *replicate results*—results obtained by applying a test method a specified number of times to a material.

3.2.4 *result*—the numerical value obtained by applying a test method once to a material.

3.2.5 *test method*—gives directions for producing a single result.

3.2.6 *test protocol*—gives instructions to each participating laboratory, detailing the way it is to conduct its part of the interlaboratory test program.

3.3 Unless the test method destroys the test portion each time it is applied, the protocol for a Plan A test specifies, if possible, replicate results on a single test portion (which may be in solution). The protocol for a Plan B test specifies the number of test portions of a material and requires duplicate results (2 only) on each portion (which may be in solution).

4. Summary of Practice

4.1 Instructions are provided for planning and conducting a cooperative evaluation of a proposed analytical method.

4.2 The following list describes the organization of this practice:

4.2.1 Sections 1-5 define the scope, significance and use, referenced documents, and terms used in this practice.

4.2.2 Section 6 helps users of analytical methods understand and use the statistics found in the Precision and Bias section of methods.

4.2.3 Sections 7 and 8 instruct the ILS coordinator and members of the task group on how to plan and conduct the experimental phase of the study.

4.2.4 Section 9 discusses the procedures for collecting, evaluating, and disseminating the data from the interlaboratory test.

4.2.5 Section 10 presents the statistical calculations.

¹ This practice is under the jurisdiction of ASTM Committee E01 on Analytical Chemistry for Metals, Ores, and Related Materials and is the direct responsibility of Subcommittee E01.22 on Statistics and Quality Control.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.