



Designation: E 1763 – 98

## Standard Guide for Interpretation and Use of Results from Interlaboratory Testing of Chemical Analysis Methods<sup>1</sup>

This standard is issued under the fixed designation E 1763; 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.

### 1. Scope

1.1 This guide covers procedures to help a task group interpret interlaboratory study (ILS) statistics to state precision and accuracy of a test method and make judgments concerning its range of use.

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:

E 135 Terminology Relating to Analytical Chemistry for Metals, Ores, and Related Materials<sup>2</sup>

E 1601 Practice for Conducting an Interlaboratory Study to Evaluate the Performance of an Analytical Method<sup>2</sup>

E 1763 Guide for Interpretation and Use of Results from Interlaboratory Testing of Chemical Methods of Analysis<sup>3</sup>

E 1914 Practice for the Use of Terms Relating to the Development and Evaluation of Methods for Chemical Analysis<sup>3</sup>

### 3. Terminology

3.1 For definitions of terms used in this guide, refer to Terminology E 135.

3.2 For descriptions of terms used in this guide, refer to Practice E 1914.

### 4. Significance and Use

4.1 A written test method is subjected to an ILS to evaluate its performance. The ILS produces a set of statistical estimates that depend upon the method, but also are influenced by the laboratories and test materials involved in the study. For that reason, the ILS task group must interpret these estimates, aided by this guide and using analytical judgment, to decide if the method is suitable to be balloted for publication as a standard.

The task group may use this guide to help them prepare the precision and bias statements that are a required part of the method.

### 5. Interlaboratory Studies

5.1 The following statement is required in each test method:

5.1.1 This test method has been evaluated in accordance with Practice E 1601 and Guide E 1763. Unless otherwise noted in the precision and bias section, the lower limit in the scope of each method specifies the lowest analyte content that may be analyzed with acceptable error (defined as a nominal 5 % risk of obtaining a 50 % or larger relative difference in results on the same test sample in two laboratories).

### 6. Required Statistical Information

6.1 A task group satisfies the requirement for statistical information if the method includes a table of the ILS statistics prepared in accordance with 6.2 and 6.3 and a summary statement selected from the model statements in Section 9. If the task group wishes to provide further statistical information, it may do so in accordance with the provisions of Section 7.

6.2 *Variability Data*—List the variability statistics for each analyte in a separate table arranged by increasing analyte content. List the number of independent data sets used in the calculations and the ILS statistics calculated in accordance with Practice E 1601. Where appropriate, list the material type and reference material identification. Follow the examples of Table 1, Table 2, and Table 3.

6.2.1 If the analytical method includes optional conditions extending the analyte range (for example, decreased sample portions or multiple calibration curves,) list the ILS statistics for each option separately as shown in Table A3.1 and Table A3.3.

6.3 *Bias Data*—If the ILS includes one or more test materials having an accepted reference value, include the accepted value(s) and b-value(s) as shown in Table 3.

### 7. Models for Error in Analytical Methods

7.1 An estimate of the reproducibility index,  $R$ , is obtained in an ILS for each individual test material. These are the discrete values of  $R$  listed in a statistical information table. Users need an estimate of  $R$  at the analyte level, which may lie anywhere within the range of the scope of the test method. If the task group conducted the ILS properly and employed good

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 03.05.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 03.06.