Designation: D 4356 – 84 (Reapproved 2002)

An American National Standard

Standard Practice for Establishing Consistent Test Method Tolerances[1]

This standard is issued under the fixed designation D 4356; 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 practice should be used in the development of any test method in which the determination value is calculated from measurement values by means of an equation. The practice is not applicable to such determination values as those calculated from counts of nonconformities, ratios of successes to failures, gradings, or ratings.

1.2 The purpose of this practice is to provide guidance in the specifying of realistic and consistent tolerances for making measurements and for reporting the results of testing.

1.3 This practice can be used as a guide for obtaining the minimum test result tolerance that should be specified with a particular set of specified measurement tolerances, the maximum permissible measurement tolerances which should be specified to achieve a specified test result tolerance, and more consistent specified measurement tolerances.

1.4 These measurement and test result tolerances are not statistically determined tolerances that are obtained by using the test method but are the tolerances specified in the test method.

1.5 In the process of selecting test method tolerances, the task group developing or revising a test method must evaluate not only the consistency of the selected tolerances but also the technical and economical feasibility of the measurement tolerances and the suitability of the test result tolerance for the purposes for which the test method will be used. This practice provides guidance only for establishing the consistency of the test method tolerances.

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1.7 *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:*

D 123 Terminology Relating to Textiles[2]

D 2905 Practice for Statements on Number of Specimens for Textiles[2]

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications[3]

E 456 Terminology Relating to Quality and Statistics[3]

3. Terminology

3.1 *Definitions:*

3.1.1 *determination process, n*—the act of carrying out the series of operations specified in the test method whereby a single value is obtained. (Syn. *determination.* See Section 4.)

3.1.1.1 *Discussion*—A determination process may involve several measurements of the same type or different types, as well as an equation by which the determination value is calculated from the measurement values observed.

3.1.2 *determination tolerance, n—as specified in a test method,* the exactness with which a determination value is to be calculated and recorded.

3.1.2.1 *Discussion*—In this practice, the determination tolerance also serves as the bridge between the test result tolerance and the measurement tolerances. The value of the determination tolerance calculated from the specified test result tolerance is compared with the value calculated from the specified measurement tolerances.

[1] This practice is under the jurisdiction of ASTM Committee E11 on Quality and Statistics and is the direct responsibility of Subcommittee E11.20on Test Method Evaluation and Quality Control.

Current edition approved March 30, 1984. Published August 1984.

[2] *Annual Book of ASTM Standards,* Vol 07.01.

[3] *Annual Book of ASTM Standards,* Vol 14.02.

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