



Standard Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials¹

This standard is issued under the fixed designation C670; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 The *Form and Style for ASTM Standards* requires that all test methods contain statements on precision and bias. Further, the precision statement is required to contain a statement on single-operator precision (repeatability) and a statement on multilaboratory precision (reproducibility). This practice provides guidance for preparing precision and bias statements that comply with these requirements. Discussion of the purpose and significance of precision and bias statements for users of test methods is also provided. Examples of precision statements that conform to this practice are included in [Appendix X1](#). This practice supplements Practice [E177](#) and has been developed to meet the needs of ASTM Committees dealing with construction materials.

NOTE 1—Although this practice is under the jurisdiction of Committee C09, the current version was developed jointly by Committees C01 and C09 and has subsequently been adopted for use by other committees dealing with construction materials.

1.2 This practice assumes that an interlaboratory study (ILS) has been completed in accordance with Practice [C802](#) or Practice [E691](#). The interlaboratory study provides the necessary statistical values to write the precision and bias statements.

1.3 The system of units for this practice is not specified. Dimensional quantities in the practice are presented only in examples of precision and bias statements.

1.4 *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

[C802 Practice for Conducting an Interlaboratory Test Program to Determine the Precision of Test Methods for Construction Materials](#)

[C1067 Practice for Conducting a Ruggedness Evaluation or Screening Program for Test Methods for Construction Materials](#)

[D6607 Practice for Inclusion of Precision Statement Variation in Specification Limits](#)

[E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods](#)

[E456 Terminology Relating to Quality and Statistics](#)

[E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method](#)

3. Terminology

3.1 Definitions:

3.1.1 For definitions of general statistical terms, refer to Terminology [E456](#).

3.2 Definitions of Terms Specific to This Standard:³

3.2.1 *test determination, n*—the value of a characteristic of a single test specimen obtained by a specified test method.

3.2.1.1 *Discussion*—The term "replicate" is often used for a test determination.

3.2.2 *test result, n*—the value of a characteristic of a material obtained by carrying out a specified test method.

3.2.2.1 *Discussion*—A test result may be a single test determination or the average of a specified number of test determinations, or replicates (see [4.1](#) for additional discussion).

3.2.3 *identical test specimens, n*—test specimens selected at random and made from a single quantity or batch of material that is as homogeneous as possible.

¹ This practice is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.94 on Evaluation of Data (Joint C09 and C01).

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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.

³ Terms are listed in order of hierarchy beginning with the basic concept.