



## Standard Guide for Defining the Test Result of a Test Method<sup>1</sup>

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### 1. Scope

1.1 The purpose of this standard is to provide guidelines for identifying the elements that comprise the test result of a test method and to illustrate how these elements combine into the test result.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods<sup>2</sup>

E 456 Terminology Related to Quality and Statistics<sup>2</sup>

#### 2.2 International Standard:

International Vocabulary of Basic and General Terms in Metrology (VIM)

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *characteristic, n*—a property of items in a sample or population which, when measured, counted or otherwise observed, helps to distinguish between the items.

3.1.2 *observation, n*—the process of obtaining information regarding the presence or absence of an attribute of a test specimen, or of making a reading on a characteristic or dimension of a test specimen.

NOTE 1—Observation is also associated with the attribute or measurement information obtained from the process. The term “observed value” is preferred for this second usage.

3.1.3 *observed value, n*—the value obtained by making an observation.

3.1.4 *test determination, n*—the value of a characteristic or dimension of a single test specimen derived from one or more observed values.

3.1.5 *test method, n*—a definitive procedure that produces a test result.

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee E11 on Quality and Statistics and is the direct responsibility of Subcommittee E11.20 on Test Method Evaluation and Quality Control.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 14.02.

3.1.5.1 *Discussion*—Examples of test methods include, but are not limited to: identification, measurement, and evaluation of one or more qualities, characteristics, or properties. [ASTM Regulations 2.2.6]

3.1.6 *test observation, n*—see *observation*.

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

NOTE 2—The test method specifies that one or a number of individual observations be made, and their average or another appropriate function, (such as the median or the standard deviation), be reported as the test result. It can also require standard corrections to be applied, such as correction of gas volumes to standard temperature and pressure. Thus, a test result can be a result calculated from several observed values. In the simple case, the test result is the observed value itself. **ISO 3534-2 (3.3.4.1)**

3.1.8 *test specimen, n*—the portion of a test unit needed to obtain a single test determination.

NOTE 3—When used for a physical test, this is sometimes called “test piece.” For a chemical test, it is sometimes called test portion or test sample. For optical and other tests, it is also sometimes called test sample. In interlaboratory evaluation of test methods and other statistical procedures, it is best to reserve the word sample for the whole amount of material involved and not the individual test specimens, pieces or portions being tested.

3.1.9 *test unit, n*—the total quantity of material (containing one or more test specimens) needed to obtain a test result as specified in the test method. See test result.

### 4. Significance and Use

4.1 All test methods have an output in the form of a test result. This guide provides information on the construction of test results from more elemental measurements.

4.2 A well defined test result is necessary before any precision statements can be made about the test method.

4.2.1 Form and Style for ASTM Standards, Section A21, requires that every test method shall contain a statement regarding its precision, preferably as a result of an interlaboratory test program. Reporting of such studies is described in E 177, which illustrates the development of test results from observations and test determinations.