



Standard Guide for Verifying Computer-Generated Test Results Through The Use Of Standard Data Sets¹

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^{ε1} NOTE—3.1.2 and 3.1.4 were editorially updated in December 2011.

1. Scope

1.1 This guide establishes a process for the verification of application software used to calculate the mechanical properties of materials.

1.2 This guide has two purposes: (1) it provides guidelines for creating standard data sets for verifying computer-generated test results, and (2) it describes how users can verify whether the calculations in their application software produce accurate, acceptable results. This does not ensure that the software will produce correct results in all cases. The verification is only for those conditions covered by the standard data sets. This guide uses the concept of standard “data sets,” which are made available by the ASTM groups responsible for each of the individual standards.

1.3 This guide defines the terminology, the format, and the process for the use of these data sets and how the data sets are to be used for verification. It does not define the specific data sets required to verify each of the application standards. Rather, such data sets would become a necessary part of the standard and would be classified as an adjunct in accord with the definition in section B29 of the “Form and Style for ASTM Standards.” This classifies an adjunct as any material that is required for use of the standard but is not practicable to publish as an integral part of the standard.

1.4 In **Annex A1** there is an example of how such data sets would be made available for one example standard.

1.5 Because the verification data sets are contained in files supplied to the application software in the computer, this procedure only provides verification of post-test calculations performed by the computer system. It does not evaluate the data acquisition system, real-time calculations, or any other part of the software beyond the post-test calculations.

2. Referenced Documents

2.1 *ASTM Standards*:²

- E1823 [Terminology Relating to Fatigue and Fracture Testing](#)
- E1942 [Guide for Evaluating Data Acquisition Systems Used in Cyclic Fatigue and Fracture Mechanics Testing](#)
- E1856 [Guide for Evaluating Computerized Data Acquisition Systems Used to Acquire Data from Universal Testing Machines](#)

3. Terminology

3.1 *Definitions of Terms Specific to This Standard*:

3.1.1 *ASCII*—American National Standard Code for Information Interchange. Data supplied in this form is readable by any computer system and will be displayed on the screen in human readable form.

3.1.2 *raw data*—the sampled values of a sensor output.

3.1.3 *data set*—A self-contained set of data consisting of a preamble, specimen information, and basic data. This may take the form of a printed document or a computer data file.

3.1.4 *derived data*—data obtained through the processing of the raw data.

3.1.5 *expected results*—The results accompanying the data sets that are expected from the computer.

3.1.6 *item separator*—A special character (delimiter) used to separate items that appear on one line of ASCII characters.

3.1.7 *keyword*—A text word or combination of characters that uniquely identify an item of information in the Specimen Information section. Such keywords are defined in a preamble to the data set within the standard in which they are to be used.

3.1.8 *line terminator*—A character or sequence of characters used to signify the end of a line of ASCII characters.

3.1.9 *preamble*—A text section describing the data set, which standard it applies to, any critical information and restrictions for use of the data sets, and the expected values

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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.