



Standard Guide for Recommended Formats for Data Records Used in Computerization of Fatigue and Fracture Data of Metals¹

This standard is issued under the fixed designation E 1761; 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 recommended formats for the recording of fatigue and fracture test data for inclusion in computerized material property databases. From this information, the database designer should be able to construct the data dictionary preparatory to developing a database schema. Not covered within the scope of this guide are guidelines for the identification of the materials themselves, or descriptions of the materials, or both. Those guidelines are covered in separate standards, such as Guides E 1338 and E 1339.

1.2 The recommended format specified in this guide is suggested for use in recording data in a database, that is different from contractual reporting of actual test results for a specific lot of material. The latter type of information is specified in materials specifications shown in business transactions and is subject to agreement between supplier and purchaser.

1.3 This guide is specific to plane-strain fracture toughness test data based on Test Method E 399, fatigue crack growth rate test data based on Test Method E 647, and strain-controlled fatigue testing based on Practice E 606.

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:

- E 6 Terminology Relating to Methods of Mechanical Testing²
- E 83 Practice for Verification and Classification of Extensometers²
- E 380 Practice for Use of the International System of Units (SI)³

¹ This guide is under the jurisdiction of ASTM Committee E08 on Fatigue and Fracture and is the direct responsibility of Subcommittee E08.02 on Standards and Terminology.

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² *Annual Book of ASTM Standards*, Vol 03.01.

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

E 399 Test Method for Plane-Strain Fracture Toughness of Metallic Materials²

E 606 Practice for Constant-Amplitude Low-Cycle Fatigue Testing²

E 616 Terminology Relating to Fracture Testing²

E 647 Test Method for Measurement of Fatigue Crack Growth Rates²

E 1012 Practice for Verification of Specimen Alignment Under Tensile Loading²

E 1013 Terminology Relating to Computerized Systems⁴

E 1338 Guide for the Identification of Metals and Alloys in Computerized Material Property Databases⁴

E 1339 Guide for Identification of Aluminum Alloys and Parts in Computerized Material Property Databases⁵

E 1443 Terminology Relating to Building and Accessing Material and Chemical Database⁴

2.2 Other Standard:

BS 6835 (1988)

3. Terminology

3.1 Definitions:

3.1.1 Computer-related technical terms in this guide are defined in Terminologies E 1443, E 1013, and other standards referenced in those terminologies.

3.1.2 Technical terms related to fracture testing procedures are defined in Terminology E 616.

3.1.3 Technical terms related to mechanical testing and mechanical procedures are defined in Terminology E 6.

4. Significance and Use

4.1 Because of the intense activity in building computerized materials databases and the desire to encourage uniformity and ease data comparison and data interchange, these recommended formats provide for the inclusion of specific elements of test data in such databases.

4.2 This guide defines the principal data elements that are considered important and worth recording and storing permanently in computerized data storage systems from which machine-readable databases will be developed. These data

⁴ *Annual Book of ASTM Standards*, Vol 14.01.

⁵ Discontinued. See 1996 *Annual Book of ASTM Standards*, Vol 14.01.