



Standard Terminology Relating to Methods of Mechanical Testing¹

This standard is issued under the fixed designation E6; 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 This terminology covers the principal terms relating to methods of mechanical testing of solids. The general definitions are restricted and interpreted, when necessary, to make them particularly applicable and practicable for use in standards requiring or relating to mechanical tests. These definitions are published to encourage uniformity of terminology in product specifications.

1.2 Terms relating to fatigue and fracture testing are defined in Terminology [E1823](#).

2. Referenced Documents

2.1 ASTM Standards:²

[E8/E8M Test Methods for Tension Testing of Metallic Materials](#)

[E796 Test Method for Ductility Testing of Metallic Foil \(Withdrawn 2009\)](#)³

[E1823 Terminology Relating to Fatigue and Fracture Testing](#)

2.2 ISO Standard:⁴

[ISO/IEC Guide 99:2007 International Vocabulary of metrology—Basic and general concepts and terms \(VIM\)](#)

2.3 NIST Technical Notes:

[NIST Technical Note 1297 Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results](#)⁵

¹ This terminology is under the jurisdiction of ASTM Committee [E28](#) on Mechanical Testing and is the direct responsibility of Subcommittee [E28.91](#) on Terminology except where designated otherwise. A subcommittee designation in parentheses following a definition indicates the subcommittee with responsibility for that definition.

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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 The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from International Organization for Standardization (ISO), 1 rue de Varembe, Case postale 56, CH-1211, Geneva 20, Switzerland, <http://www.iso.ch>.

⁵ Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, <http://www.nist.gov>.

3. Index of Cross-References and Associated Definitions

3.1 The terms listed below are associated with terminology that is fundamental or commonly used. The definition for the term of interest is related to or is given below the definition for the fundamental term cited.

Term	
angular strain	see strain
axial strain	see strain
bending strain	see strain
chord modulus	see modulus of elasticity
direct verification	see verification
compressive stress	see stress
elastic constants	see modulus of elasticity and Poisson's ratio
elastic modulus	see modulus of elasticity
engineering strain	see strain
engineering stress	see stress
fracture stress	see stress
indirect verification	see verification
linear (tensile or compressive) strain	see strain
macrostrain	see strain
malleability	see ductility
microstrain	see strain
modulus of rigidity	see modulus of elasticity
nominal stress	see stress
normal stress	see stress
physical properties	see mechanical properties
pin	see mandrel (in bend testing)
plunger	see mandrel (in bend testing)
principal stress	see stress
residual strain	see strain
residual stress	see stress
Rockwell superficial hardness number	see Rockwell hardness number
secant modulus	see modulus of elasticity
shear strain	see strain
shear stress	see stress
static fatigue strength	see creep rupture strength
strain gauge fatigue life	see fatigue life
stress-rupture strength	see creep rupture strength
tangent modulus	see modulus of elasticity
tensile stress	see stress
torsional modulus	see modulus of elasticity
torsional stress	see stress
transverse strain	see strain
true strain	see strain
true stress	see stress
ultimate tensile strength (UTS)	see tensile strength
yield strength	see also upper yield strength and lower yield strength

4. Terminology

4.1 Terms and Definitions: