



Standard Test Methods for Conducting Time-for-Rupture Notch Tension Tests of Materials¹

This standard is issued under the fixed designation E 292; 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 These test methods cover the determination of the time for rupture of notched specimens under conditions of constant load and temperature. These test methods also includes the essential requirements for testing equipment.

1.2 The values stated in inch-pound units are to be regarded as the standard. The units in parentheses are for information only.

1.3 *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:

A 453/A453M Specification for High-Temperature Bolting Materials, with Expansion Coefficients Comparable to Austenitic Steels²

E 4 Practices for Force Verification of Testing Machines³

E 6 Terminology Relating to Methods of Mechanical Testing³

E 8 Test Methods for Tension Testing of Metallic Materials³

E 74 Practice of Calibration of Force-Measuring Instruments for Verifying the Load Indication of Testing Machines³

E 139 Practice for Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials³

E 220 Test Method for Calibration of Thermocouples by Comparison Techniques⁴

E 633 Guide for Use of Thermocouples in Creep and Stress Rupture Testing to 1000°C (1800°F) in Air³

E 1012 Practice for Verification of Specimen Alignment Under Tensile Loading³

2.2 Military Standard:

MIL-STD-120 Gage Inspection⁵

3. Terminology

3.1 *Definitions*—The definitions of terms relating to creep testing, which appear in Section E of Terminology E 6 shall apply to the terms used in these test methods. For the purpose of this practice only, some of the more general terms are used with the restricted meanings given below.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *axial strain*—the average of the strain measured on opposite sides and equally distant from the specimen axis.

3.2.2 *bending strain*—the difference between the strain at the surface of the specimen and the axial strain. In general, it varies from point to point around and along reduced section of the specimen.

3.2.3 *gage length*—the original distance between gage marks made on the specimen for determining elongation after fracture.

3.2.4 *length of the reduced section*—the distance between tangent points of the fillets that bound the reduced section.

3.2.5 The adjusted length of the reduced section is greater than the length of the reduced section by an amount calculated to compensate for the strain in the fillets adjacent to the reduced section.

3.2.6 *maximum bending strain*—the largest value of bending strain in the reduced section of the specimen. It can be calculated from measurements of strain at three circumferential positions at each of two different longitudinal positions.

3.2.7 *reduced section of the specimen*—the central portion of the length having a cross section smaller than that of the ends that are gripped. The reduced section is uniform within tolerances prescribed in Test Methods E 8.

¹ These test methods are under the jurisdiction of ASTM Committee E28 on Mechanical Testing and is the direct responsibility of Subcommittee E28.10 on Effect of Elevated Temperature on Properties.

Current edition approved Oct. 10, 2001. Published December 2001. Originally published as E 292 – 66 T. Last previous edition E 292 – 83 (Reapproved 1996) ^{ϵ 1}.

² Annual Book of ASTM Standards, Vol 01.01.

³ Annual Book of ASTM Standards, Vol 03.01.

⁴ Annual Book of ASTM Standards, Vol 14.03.

⁵ Available from Standardization Documents Order Desk, Bldg. 4, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

