



Designation: E292 – 18

# Standard Test Methods for Conducting Time-for-Rupture Notch Tension Tests of Materials<sup>1</sup>

This standard is issued under the fixed designation E292; 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 ( $\epsilon$ ) 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 force 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

- A453/A453M Specification for High-Temperature Bolting, with Expansion Coefficients Comparable to Austenitic Stainless Steels
- E4 Practices for Force Verification of Testing Machines
- E6 Terminology Relating to Methods of Mechanical Testing
- E8/E8M Test Methods for Tension Testing of Metallic Materials
- E74 Practices for Calibration and Verification for Force-Measuring Instruments
- E139 Test Methods for Conducting Creep, Creep-Rupture,

and Stress-Rupture Tests of Metallic Materials

- E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods
- E220 Test Method for Calibration of Thermocouples By Comparison Techniques
- E633 Guide for Use of Thermocouples in Creep and Stress-Rupture Testing to 1800°F (1000°C) in Air
- E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method
- E1012 Practice for Verification of Testing Frame and Specimen Alignment Under Tensile and Compressive Axial Force Application

### 2.2 Military Standard:

- MIL-STD-120 Gage Inspection<sup>3</sup>

## 3. Terminology

3.1 *Definitions*—The definitions of terms relating to creep testing, that appears in Terminology E6 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 *gauge length*—the original distance between gauge 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.

<sup>1</sup> These test methods are under the jurisdiction of ASTM Committee E28 on Mechanical Testing and is the direct responsibility of Subcommittee E28.04 on Uniaxial Testing.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from DLA Document Services, Building 4/D, 700 Robbins Ave., Philadelphia, PA 19111-5094, <http://quicksearch.dla.mil>.