



Designation: ~~B 598–98 (Reapproved 2004)~~ Designation: B 598 – 09

## Standard Practice for Determining Offset Yield Strength in Tension for Copper Alloys<sup>1</sup>

This standard is issued under the fixed designation B 598; 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.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope\*

1.1 This practice establishes the requirements for determining offset yield strength (0.01 %, 0.02 %, and 0.05 % offset) at room temperature. It is intended for copper alloys in tempers commonly used for spring applications, and materials thicker than 0.010 in. (0.25 mm).

~~1.1.1 The primary application of this practice is intended for flat strip materials that are used for springs; however, this practice can be used for other product forms, such as wire, rod, and bar.~~

~~1.2 The values stated in inch-pound units are the standard. The SI values given in parentheses are for information only.~~

1.1.1 The primary application of this practice is intended for flat strip materials that are used for springs; however, this practice can be used for other product forms, such as wire, rod, and bar.

1.2 Units—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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 The following documents in effect on the date that the material is tested form a part of this practice, to the extent referenced herein:~~

~~2.2 ASTM Standards:~~

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

B 950 [Guide for Editorial Procedures and Form of Product Specifications for Copper and Copper Alloys](#)

E 4 [Practices for Force Verification of Testing Machines](#)

E 6 [Terminology Relating to Methods of Mechanical Testing](#)

E 8 [8/E 8M Test Methods for Tension Testing of Metallic Materials](#)

E 74 [Practice for Calibration of Force-Measuring Instruments for Verifying the Load Force Indication of Testing Machines](#)

E 83 [Practice for Verification and Classification of Extensometer Systems](#)

### 3. Terminology

~~3.1 The definitions of terms relating to mechanical testing in [Terminology E 6](#) apply.~~

### 4. Summary of Practice

4.1 To determine the offset yield strength, it is necessary to acquire data (autographic or numerical) from which a stress-strain diagram may be drawn. The stress at which a specified deviation of strain from the linear portion of the stress-strain curve occurs is the yield strength at that particular offset.

### 5. Significance and Use

5.1 This practice may be used for approximating a limiting design stress at room temperature and, in some cases, for

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee B05 on Copper and Copper Alloys and is the direct responsibility of Subcommittee B05.06 on Methods of Test.

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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.

\*A Summary of Changes section appears at the end of this standard.