



Standard Specification for Copper-Silicon Alloy Wire for General Applications¹

This standard is issued under the fixed designation B 99/B99M; 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 specification establishes the requirements for round, rectangular, and square wire for general applications other than for electrical transmission cable. The alloys involved are UNS No. C65100 and UNS No. C65500.

1.2 The values stated in inch-pound units or SI units are to be regarded separately as standard. Within the text, SI units are shown in brackets. The values in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

2. Referenced Documents

2.1 ASTM Standards:

B 250 Specification for General Requirements for Wrought Copper-Alloy Wire²

B 250M Specification for General Requirements for Wrought Copper-Alloy Wire [Metric]²

B 601 Practice for Temper Designations for Copper and Copper-Alloys—Wrought and Cast²

B 846 Terminology for Copper and Copper Alloys²

E 62 Test Methods for Chemical Analysis of Copper and Copper-Alloys (Photometric Methods)³

E 478 Test Methods for Chemical Analysis of Copper Alloys³

3. Terminology

3.1 For the definition of general terms related to copper and copper alloys refer to Terminology B 846.

3.2 Definition of Term Specific to This Standard:

3.2.1 *unaided eye*—permits the use of corrective optical lenses necessary to obtain normal vision.

4. Ordering Information

4.1 Contracts or purchase orders for product to this specification should include the following information:

4.1.1 ASTM designation and year of issue,

4.1.2 Copper Alloy UNS No.,

4.1.3 Temper designation (Section 6),

4.1.4 Dimensions (diameter, distance between parallel faces),

4.1.5 How furnished (coil, reel, specific lengths, etc.), and

4.1.6 When product is purchased for agencies of the U.S. Government.

4.2 The following options are available to this specification and should be specified in the contract or purchase order when required:

4.2.1 Heat identification or traceability details,

4.2.2 Certification,

4.2.3 Mill test reports, and

4.2.4 Special packaging and package markings.

5. Chemical Composition

5.1 The material composition shall conform to the requirements of Table 1 for the Copper Alloy UNS No. specified in the ordering information.

5.1.1 These compositional limits do not preclude the presence of other elements. When required, limits may be established and analysis required for unnamed elements by agreement between the supplier and the purchaser.

5.2 Copper listed as the remainder is the difference between the sum of results for all elements determined and 100 %.

5.3 When all elements listed in Table 1 for the Copper Alloy UNS No. prescribed in the ordering information are determined, the sum of results shall be 99.5 % min.

6. Temper

6.1 Tempers, as defined in Practice B 601, available under this specification are O61 (annealed), H00 ($\frac{1}{8}$ hard), H01 ($\frac{1}{4}$ hard), H02 ($\frac{1}{2}$ hard), H04 (full hard) and H08 (spring).

6.1.1 Product made to H04 (full hard) temper is generally not available in sizes larger than $\frac{1}{2}$ in. (12 mm) in diameter or distance between parallel faces.

6.1.2 Product made to H08 (spring) temper is generally not available in sizes larger than $\frac{1}{4}$ in. (6 mm) in diameter or distance between parallel faces.

7. Mechanical Property Requirements

7.1 Tensile Requirements:

7.1.1 The product of the Copper Alloy UNS No. specified in the ordering information shall conform to the requirements of Table 2 for the prescribed temper.

7.2 Grain Size Requirements:

¹ This specification is under the jurisdiction of ASTM Committee B-5 on Copper and Copper Alloys and is the direct responsibility of Subcommittee B05.02 on Wire and Wire Rod.

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² Annual Book of ASTM Standards, Vol 02.01.

³ Annual Book of ASTM Standards, Vol 03.05.

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