



Designation: B134/B134M – 15 (Reapproved 2021)

Standard Specification for Brass Wire¹

This standard is issued under the fixed designation B134/B134M; 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 requirements for round, hexagonal, octagonal, rectangular and square brass wire of UNS Alloy Nos. C21000, C22000, C22600, C23000, C23400, C24000, C26000, C27000, and C27400.

1.2 *Units*—The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.3 *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:²

B250/B250M Specification for General Requirements for Wrought Copper Alloy Wire

B601 Classification for Temper Designations for Copper and Copper Alloys—Wrought and Cast

B846 Terminology for Copper and Copper Alloys

E8/E8M Test Methods for Tension Testing of Metallic Materials

E112 Test Methods for Determining Average Grain Size

E478 Test Methods for Chemical Analysis of Copper Alloys

3. General Requirements

3.1 The following sections of Specification **B250/B250M** constitute a part of this specification.

¹ This specification is under the jurisdiction of ASTM Committee **B05** on Copper and Copper Alloys and is the direct responsibility of Subcommittee **B05.02** on Rod, Bar, Wire, Shapes and Forgings.

Current edition approved July 1, 2021. Published July 2021. Originally approved in 1940. Last previous edition approved in 2015 as B134/B134M – 15. DOI: 10.1520/B0134_B0134M-15R21.

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.

- 3.1.1 Terminology
- 3.1.2 Materials and Manufacture
- 3.1.3 Workmanship, Finish, and Appearance
- 3.1.4 Sampling
- 3.1.5 Number of Tests and Retests
- 3.1.6 Specimen Preparation
- 3.1.7 Test Methods
- 3.1.8 Significance of Numerical limits
- 3.1.9 Inspection
- 3.1.10 Rejection and Rehearing
- 3.1.11 Certification
- 3.1.12 Mill Test Reports
- 3.1.13 Product Marking;
- 3.1.14 Packaging and Package Marking
- 3.1.15 Supplementary Requirements

3.2 In addition, when a section with a title identical to that referenced in **3.1** appears in this specification, it contains additional requirements that supplement those that appear in Specification **B250/B250M**.

4. Terminology

4.1 Definitions of Terms Specific to This Standard:

4.1.1 *camber offset, n*—the axial component of curvature of wire in an unrestrained state.

4.1.1.1 *Discussion*—The camber is measured as the offset in the ends of one turn of freely hanging wire.

4.1.2 *cast, n*—the maximum diameter of coiled wire when one complete circumference rests completely on a flat surface as a table, workbench, or floor.

4.2 For other definitions of terms related to copper and copper alloys, refer to Terminology **B846**.

5. Ordering Information

5.1 Include the following information in orders for product:

5.1.1 ASTM Designation and year of issue;

5.1.2 Copper Alloy UNS No. designation;

5.1.3 Temper;

5.1.4 Cross section: round, hexagonal, octagonal, rectangular, or square;

5.1.5 Quantity: total weight, footage, or number of pieces of each temper, cross section, or alloy;

5.1.6 Dimensions: diameter or distance between parallel surfaces, width and thickness, length;

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

5.1.7 Type of edge: square corners, rounded edge, full-rounded edge;

5.1.8 How furnished: coil, spool, or reel, specific lengths with or without ends; and

5.1.9 When material is purchased for agencies of the U.S. government (Specification **B250/B250M**).

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

5.2.1 Certification (Specification **B250/B250M**, and

5.2.2 Mill test report (Specification **B250/B250M**).

5.2.3 Cast and camber requirements, if specified.

6. Materials and Manufacture

6.1 *Material*—The material shall be made from cast billets, logs, or rods of Copper Alloy UNS Nos. C21000, C22000, C22600, C23000, C23400, C24000, C26000, C27000, or C27400, of such purity, soundness, and structure to be suitable for processing into the desired product.

6.2 *Manufacture*—The products shall be manufactured by such hot working, cold working, and annealing processing as to produce a uniform wrought structure in the finished product.

7. Chemical Composition

7.1 The material shall conform to the chemical compositional requirements specified in **Table 1** for the copper alloy specified in the ordering information.

7.1.1 When all elements specified for a given alloy in **Table 1** are determined, their sum of results shall be as follows:

Alloy UNS Nos.	Sum of Results, Percent, Minimum
C21000, C22000, C22600, C23000, C23400, C24000	99.8
C26000, C27000, C27400	99.7

7.2 These composition limits do not preclude the presence of other elements. Limits may be established and analysis required for unnamed elements by agreement between the manufacturer or supplier and the purchaser.

7.3 Zinc, listed as the “remainder,” is the difference between the sum of results for all elements determined and 100 %.

8. Temper

8.1 The product in drawn or rolled wire of UNS Alloy Nos. C21000, C22000, C22600, C23000, C23400, C24000,

C26000, C27000, and C27400 shall be available in H00, H01, H02, H03, H04, H06, H08, and H10 tempers as defined in Classification **B601**.

8.1.1 Product made in H04 temper is not generally available in sizes over ½ in. [13 mm] in diameter.

8.1.2 Product made in H06 temper is not generally available in sizes over ¾ in. [10 mm] in diameter.

8.1.3 Product made in H08 temper is not generally available in sizes over ¼ in. [6 mm] in diameter.

8.1.4 Square product is not generally available in H06 or H08 tempers.

8.1.5 The tension test shall be the standard temper test for all H temper wire.

8.1.6 The product in annealed form of UNS Alloys Nos. C21000 and C22000 shall be available in OS050, OS035, OS025, and OS015 tempers as defined in Classification **B601**.

8.1.7 The product in annealed form of UNS Alloy Nos. C22600, C23000, C23400, and C24000 shall be available in OS070, OS050, OS035, OS025, OS015, and OS010 tempers as defined in Classification **B601**.

8.1.8 The product in annealed form of UNS Alloy Nos. C26000, C27000, and C27400 shall be available in OS120, OS070, OS050, OS035, OS025, and OS015 tempers as defined in Classification **B601**.

9. Grain Size for Annealed Wire

9.1 Grain size shall be the standard requirement for all product in the annealed tempers.

9.2 Acceptance or rejection based on grain size shall depend only on the average grain size of test specimens taken from each of two sample portions and each specimen shall be within the limits prescribed in **Table 2** when determined in accordance with Test Methods **E112**.

10. Mechanical Property Requirements

10.1 Tensile Strength Requirements:

10.1.1 Drawn or rolled product shall conform to the requirements specified in **Tables 3-6**, by alloy and temper, for wire 0.020 in. [0.5 mm] and over in diameter or distance between parallel surfaces.

10.1.1.1 The temper of wire under 0.020 in. [0.5 mm] in diameter or distance between parallel surfaces shall be subject to agreement between the manufacturer, or supplier, and the purchaser.

TABLE 1 Chemical Requirements

Copper Alloy UNS No.	Composition, %			
	Copper	Lead, max	Iron, max	Zinc
C21000	94.0–96.0	0.05	0.05	remainder
C22000	89.0–91.0	0.05	0.05	remainder
C22600	86.0–89.0	0.05	0.05	remainder
C23000	84.0–86.0	0.05	0.05	remainder
C23400	81.0–84.0	0.05	0.05	remainder
C24000	78.5–81.5	0.05	0.05	remainder
C26000	68.5–71.5	0.07	0.05	remainder
C27000	63.0–68.5	0.09	0.07	remainder
C27400	61.0–64.0	0.09	0.05	remainder