Designation: ~~B981/B981M – 12~~ B981/B981M – 19

Standard Specification for ~~Low Leaded~~ Low-Leaded Brass Rod, ~~Bar~~ Bar, Wire, and Shapes[1]

This standard is issued under the fixed designation B981/B981M; 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 low leaded brass rod, bar, wire, and shapes of any specified cross section produced from Copper Alloys UNS No. C36300, C36500, C37000, C37100 and C37700 suitable for high-speed screw machining applications.

NOTE 1—Refer to Specification B124/B124M when purchasing bar or rod for forging production.

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

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~~ safety, health, and ~~health~~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:*[2]

B124/B124M Specification for Copper and Copper Alloy Forging Rod, Bar, and Shapes

B249/B249M Specification for General Requirements for Wrought Copper and Copper-Alloy Rod, Bar, Shapes and Forgings

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

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

E8/E8M Test Methods for Tension Testing of Metallic Materials

3. General Requirements

3.1 The following sections of Specifications B249/B249M (rod, bar, and shapes) and B250/B250M (wrought copper alloy wire) constitute a part of this specification.

3.1.1 ~~Terminology,~~ Terminology;

3.1.2 Materials and ~~Manufacture,~~ Manufacture;

3.1.3 Workmanship, Finish, and ~~Appearance,~~ Appearance;

3.1.4 ~~Sampling,~~ Sampling;

3.1.5 Number of Tests and ~~Retest,~~Retest;

3.1.6 Specimen ~~Preparation,~~Preparation;

3.1.7 Test ~~Methods,~~Methods;

3.1.8 Significance of Numerical ~~Limits,~~Limits;

3.1.9 ~~Inspection,~~Inspection;

[1] This ~~test method~~ 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.

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[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~~standard's Document Summary page on the ASTM website.

3.1.10 Rejection and ~~Rehearing,~~Rehearing;
3.1.11 ~~Certification,~~Certification;
3.1.12 Mill Test ~~Report,~~Report;
3.1.13 Packaging and Package ~~Marking,~~Marking; and
3.1.14 Supplementary Requirements.

3.2 In addition, when a section with a title identical to those referenced in 3.1 appears in this specification, it contains additional requirements that supplement those appearing in Specifications B249/B249M and B250/B250M.

4. Ordering Information

4.1 Include the following information when placing orders for product under this specification, as applicable:
4.1.1 ASTM specification designation and year of issue (Bxxx/BxxxM – XX).
4.1.2 Copper Alloy UNS No. designations (C36300, C36500, C37000, C37100, and C37700, see Section 6 and Table 1.
4.1.3 Temper (see Section 7 and Table 2 and Table 3).
4.1.4 Product cross section form (for example, round, hexagonal, square, etc.).
4.1.5 Dimensions (see Section 9).
4.1.6 How furnished: straight lengths or coils (see 5.2).
4.1.7 Edge contours (see Section 9).
4.1.8 Quantity; total weight, footage, or number of pieces for each size.

4.2 The following options are available and shall be specified at the time of placing the order when required:
4.2.1 Tensile test requirement for product ½ in. [12 mm] and over (see 8.2).
4.2.2 Certification (refer to Specifications B249/B249M or B250/B250M).
4.2.3 Mill Test Report (refer to Specifications B249/B249M or B250/B250M).
4.2.4 When product is purchased for agencies of the U.S. Government see Section 11.

5. Materials and Manufacture

5.1 *Material*—The material of manufacture shall be a cast billet of Copper Alloys UNS No. C36300, C36500, C37000, C37100 and C37700 and of such purity and soundness as to be suitable for hot extrusion into rod, bar, wire, and shaped products.
5.1.1 In the event that heat identification or traceability is required, the purchaser shall specify the details desired.

NOTE 2—Due to the discontinuous nature of the processing of castings into wrought products, it is not always practical to identify a specific casting analysis with a specific quantity of finished material.

5.2 *Manufacture*—Product produced under this specification shall be in straight lengths; however, it shall be furnished in coils when so specified in the contract or purchase order (see 4.1.6).

6. Chemical Composition

6.1 The product shall conform to the chemical compositional requirements specified in Table 1 for Copper Alloys UNS No. C36300, C36500, C37000, C37100 and C37700.

6.2 The UNS designated composition limits do not preclude the possible presence of other unnamed elements; however, analysis shall be made regularly only for the minor elements listed in Table 1, plus either copper or zinc, or plus all major elements except one. The major element that is not analyzed shall be determined by difference between the sum of those elements analyzed and 100 %. By agreement between producer or supplier and purchaser, analysis may be required and limits established for the elements not cited. Percentage content of elements shown as "remainder" (rem.) is calculated by difference.

TABLE 1 Chemical Requirements

Copper Alloy UNS No.	Composition (%) Copper	Lead	Phosphorus	Iron Max.	Tin Max.	Zinc	Copper Plus Elements with Specific Limits Present, min
~~C36300~~	~~61.0—63.0~~	~~0.25—0.7~~	~~0.04—0.15~~	~~0.15~~	–	~~remainder~~	~~99.5~~
C36300	61.0–63.0	0.25–0.7	0.04–0.15	0.15	...	remainder	99.5
~~C36500~~	~~58.0—61.0~~	~~0.25—0.7~~		~~0.15~~	–	~~remainder~~	~~99.6~~
C36500	58.0–61.0	0.25–0.7	...	0.15	...	remainder	99.6
~~C37000~~	~~59.0—62.0~~	~~0.8—1.5~~		~~0.15~~	–	~~remainder~~	~~99.6~~
C37000	59.0–62.0	0.8–1.5	...	0.15	...	remainder	99.6
~~C37100~~	~~58.0—62.0~~	~~0.6—1.2~~		~~0.15~~	–	~~remainder~~	~~99.6~~
C37100	58.0–62.0	0.6–1.2	...	0.15	...	remainder	99.6
~~C37700~~	~~58.0—61.0~~	~~1.5—2.5~~		~~0.30~~	–	~~remainder~~	~~99.5~~
C37700	58.0–61.0	1.5–2.5	...	0.30	...	remainder	99.5