



Designation: B 411/B 411M – 01

Standard Specification for Copper-Nickel-Silicon Alloy Rod and Bar¹

This standard is issued under the fixed designation B 411/B 411M; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

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

1. Scope *

1.1 This specification establishes the requirements for copper-nickel-silicon alloy rod and bar produced from Copper Alloy UNS No. C64700 in straight lengths.

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

2. Referenced Documents

2.1 *ASTM Standards:*

B 193 Test Method for Resistivity of Electrical Conductor Materials²

B 249/B 249M Specification for General Requirements for Wrought Copper and Copper-Alloy Rod, Bar, Shapes, and Forgings³

B 601 Classification for Temper Designations for Copper and Copper Alloys—Wrought and Cast³

B 846 Terminology for Copper and Copper Alloys³

E 8 Test Methods for Tension Testing of Metallic Materials⁴

E 8M Test Methods for Tension Testing of Metallic Materials (Metric)⁴

E 54 Test Methods for Chemical Analysis of Special Brasses and Bronzes⁵

E 478 Test Methods for Chemical Analysis of Copper Alloys⁶

3. General Requirements

3.1 The following sections of Specification B 249/B 249M 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.

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² *Annual Book of ASTM Standards*, Vol 02.03.

³ *Annual Book of ASTM Standards*, Vol 02.01.

⁴ *Annual Book of ASTM Standards*, Vol 03.01.

⁵ *Annual Book of ASTM Standards*, Vol 03.05.

⁶ *Annual Book of ASTM Standards*, Vol 03.06.

- 3.1.1 Terminology,
- 3.1.2 Workmanship, Finish, and Appearance,
- 3.1.3 Sampling,
- 3.1.4 Number of Tests and Retests,
- 3.1.5 Specimen Preparation,
- 3.1.6 Test Methods,
- 3.1.7 Significance of Numerical Limits,
- 3.1.8 Inspection,
- 3.1.9 Rejection and Rehearing,
- 3.1.10 Certification,
- 3.1.11 Test Report,
- 3.1.12 Packaging and Package Marking, and
- 3.1.13 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 which supplement those appearing in Specification B 249/B 249M.

4. Terminology

4.1 For the definition of terms related to copper and copper alloys, refer to Terminology B 846.

4.2 *Definitions of Terms Specific to This Standard:*

4.2.1 *capable of, adj*—possessing the required properties or characteristics, or both, necessary to conform to the specification requirement(s) when subjected to specific test(s).

5. Ordering Information

5.1 Orders for product to this specification shall include the following information:

- 5.1.1 ASTM designation and year of issue (for example, B 411/B 411M – 01),
- 5.1.2 Copper alloy UNS No. designation,
- 5.1.3 Temper,
- 5.1.4 Product form (cross section such as round, hexagonal, square, and so forth),
- 5.1.5 Dimensions (diameter or distance between parallel surfaces, width, thickness),
- 5.1.6 Edge contours,
- 5.1.7 Length, nominal,
- 5.1.8 Quantity; total weight, length, or number of pieces for each form and size, and

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