



Designation: B 159 – 96a^{ε1}

Standard Specification for Phosphor Bronze Wire¹

This standard is issued under the fixed designation B 159; 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.

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

^{ε1} NOTE—The definition of unaided eye was deleted in Section 3.

1. Scope *

1.1 This specification establishes the requirements for round, square and flat phosphor bronze wire of UNS Alloy Nos. C51000, C52100, and C52400 for general and spring applications.

1.1.1 Rectangular and square wire of the three alloys are generally available in sizes up to a maximum of 0.188 in. thick and 1.250 in. wide.

1.1.2 Round wire from Copper Alloy UNS No. C51000 is generally available in sizes up to 0.500 in. in diameter.

1.1.3 This specification is the companion to SI Specification B 159M.

NOTE 1—It is to be understood that this specification is general. Since the product is used for many applications where the requirements of the operations used are too particular to be specified by any of the ordinary mechanical tests, it is frequently advisable to submit samples or drawings to the manufacturer and secure an adjustment of temper to suit the actual application for which the product is intended.

NOTE 2—Product in rod, bar and shape form is produced to Specification B 139.

2. Referenced Documents

2.1 ASTM Standards:

2.1.1 The following documents in the current issue of the Book of Standards form a part of this specification.

B 139 Specification for Phosphorus Bronze Rod, Bar, and Shapes²

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

B 601 Practice for Temper Designation for Copper and Copper Alloys—Wrought and Cast²

B 846 Terminology for Copper and Copper Alloys²

E 8 Test Methods for Tension Testing of Metallic Materials³

E 62 Test Methods for Chemical Analysis of Copper and Copper Alloys (Photometric Method)⁴

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 02.01.

³ Annual Book of ASTM Standards, Vol 03.01.

⁴ Annual Book of ASTM Standards, Vol 03.05.

E 290 Test Method for Semi-Guided Bend Test for Ductility of Metallic Materials³

E 478 Test Methods for Chemical Analysis of Copper Alloys⁴

3. Terminology

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

4. Ordering Information

4.1 Contract or purchase orders for product under this specification shall include the following information:

4.1.1 ASTM designation and year of issue (for example, B159 – 96a),

4.1.2 Copper Alloy UNS No. (for example, C51000),

4.1.3 Temper designation (Section 5),

4.1.4 Dimensions (diameter, distance between parallel faces, etc.),

4.1.5 Type of edge (square corners, rounded corners, etc.),

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

4.1.7 When product is purchased for agencies of the U.S. Government (Section 8).

4.2 The following options are available under this specification and shall 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 %.

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