



Standard Specification for Oxygen-Free Electrolytic Copper—Refinery Shapes¹

This standard is issued under the fixed designation B170; 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 U.S. Department of Defense.

1. Scope

1.1 This specification establishes the requirements for two grades of oxygen-free electrolytic copper wire bars, billets, and cakes produced without the use of metallic or metaloidal deoxidizers.

1.2 Oxygen-free copper, as described herein, is defined as copper containing oxygen not in excess of 0.0010 % (10 ppm).

1.2.1 Grade 1 copper (UNS C10100) corresponds to the designation OFE in Classification B224.

1.2.2 Grade 2 copper (UNS C10200) corresponds to the designation OF in Classification B224.

1.2.3 Grade 2 copper may be used to produce OFS designation coppers corresponding to UNS C10400, C10500, and C10700.

1.3 Although this specification includes certain UNS designations as described in Practice E527, these designations are for cross reference only and are not specification requirements. In case of conflict, Specification B170 shall govern.

1.4 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only, except for analytical measurements where SI units are the norm.

1.5 The following hazard caveat pertains only to Section 13 and Annex A1, of this specification. *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

B5 Specification for High Conductivity Tough-Pitch Copper Refinery Shapes

B193 Test Method for Resistivity of Electrical Conductor Materials

B224 Classification of Coppers

B577 Test Methods for Detection of Cuprous Oxide (Hydrogen Embrittlement Susceptibility) in Copper

B846 Terminology for Copper and Copper Alloys

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E50 Practices for Apparatus, Reagents, and Safety Considerations for Chemical Analysis of Metals, Ores, and Related Materials

E53 Test Method for Determination of Copper in Unalloyed Copper by Gravimetry

E76 Test Methods for Chemical Analysis of Nickel-Copper Alloys (Withdrawn 2003)³

E255 Practice for Sampling Copper and Copper Alloys for the Determination of Chemical Composition

E527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)

3. Terminology

3.1 Definitions:

3.1.1 Definition of terms used shall be that found in Classification B224 and Terminology B846.

4. Ordering Information

4.1 Orders for material shall include the following information:

4.1.1 ASTM designation and year of issue,

4.1.2 Grade,

¹ This specification is under the jurisdiction of ASTM Committee B05 on Copper and Copper Alloys and is the direct responsibility of Subcommittee B05.07 on Refined Copper.

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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 Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.