



# Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar<sup>1</sup>

This standard is issued under the fixed designation B152/B152M; 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 ( $\epsilon$ ) 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<sup>2</sup> establishes the requirements for copper sheet, strip, plate, and rolled bar produced from the following coppers.

Copper UNS No. <sup>A</sup>	Previous Designation	Type of Copper
C10100 <sup>B</sup>	OFE	Oxygen-free electronic
C10200 <sup>B</sup>	OF	Oxygen-free without residual deoxidants
C10300	...	Oxygen-free extra low phosphorus
C10300	OFXLP	Oxygen-free extra low phosphorus
C10400, C10500, C10700	OFS	Oxygen-free, silver bearing
C10800	...	Oxygen-free low phosphorus
C10800	OFLP	Oxygen-free low phosphorus
C10910	...	Low oxygen
C11000 <sup>B,C</sup>	ETP, TP <sup>C</sup>	Electrolytic tough pitch <sup>C</sup> , Tough pitch <sup>C</sup>
C11000 <sup>B,C</sup>	ETP, TP <sup>C</sup>	Electrolytic tough pitch, <sup>C</sup> Tough pitch <sup>C</sup>
C11300, C11400, C11600 <sup>B</sup>	STP	Silver bearing tough pitch
C12000	DLP	Phosphorized, low residual phosphorus
C12200 <sup>B</sup>	DHP	Phosphorized, high residual phosphorus
C12300	DPS	Phosphorized, silver bearing
C12300	DHPS	Phosphorized, silver bearing
C14200	DPA	Phosphorus deoxidized, arsenical
C14420	...	Tin bearing tellurium copper
C14530	...	Tin tellurium bearing copper

<sup>A</sup> Except Copper UNS Nos. C10910 (low oxygen), C14200 (phosphorus deoxidized, arsenical), C14420 (tin bearing tellurium), and C14530 (tin tellurium bearing) these types of copper are classified in Classification B224.

<sup>B</sup> SAE Specification CA101 conforms to Copper UNS No. C10100; SAE Specification CA102 conforms to the requirements for Copper UNS No. C10200; SAE Specification CA110 conforms to the requirements for Copper UNS No. C11000; SAE Specifications CA113, CA114, and CA116 conform to the requirements for Copper UNS Nos. C11300, C11400, and C11600; SAE Specification CA120 conforms to Copper UNS No. C12000; and SAE Specification CA122 conforms to the requirements for Copper UNS No. C12200.

<sup>C</sup> Unless specified in the contract or purchase order the supplier is permitted to provide ETP copper or TP copper.

NOTE 1—Each of the coppers listed has unique properties that can make it suitable for specific applications. The purchaser should consult with the supplier to determine which copper would be best suited for the intended application.

NOTE 2—This specification is not intended to establish requirements for material rolled to ounce-weight thicknesses. Such material is defined in Specification B370.

Plates for locomotive fireboxes are defined in Specification B11.

Flat copper products with finished (rolled or drawn) edges (flat wire and strip) are defined in Specification B272.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee B05 on Copper and Copper Alloys and is the direct responsibility of Subcommittee B05.01 on Plate, Sheet, and Strip.

Current edition approved Jan. 15, 2013 Oct. 1, 2019. Published January 2013 October 2019. Originally approved in 1942. Last previous edition approved in 2009 2013 as B152/B152M—09 B152/B152M—13. DOI: 10.1520/B0152-B0152M-13-10.1520/B0152-B0152M-19.

<sup>2</sup> For ASME Boiler and Pressure Vessel Code applications see related Specification SB-152 in Section II of that Code.

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



1.1.1 When a specific copper is not identified in the contract or purchase order, the supplier may furnish product from any of the listed coppers.

1.2 Units—The values stated in either inch-pound units or inch-poundSI units are to be regarded separately as standard. The values stated in each system may 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 The following safety hazards caveat only pertains to the test method portion, Section 13 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.~~

1.3 The following safety hazard caveat pertains only to the test method(s) described in this specification:

1.3.1 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, health, and 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:<sup>3</sup>

~~B11 Specification for Copper Plates for Locomotive Fireboxes (Withdrawn 1980)<sup>4</sup>~~

B170 Specification for Oxygen-Free Electrolytic Copper—Refinery Shapes

B193 Test Method for Resistivity of Electrical Conductor Materials

B216 Specification for Tough-Pitch Fire-Refined Copper—Refinery Shapes

B224 Classification of Coppers

B248 Specification for General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar

B248M Specification for General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar (Metric)

B272 Specification for Copper Flat Products with Finished (Rolled or Drawn) Edges (Flat Wire and Strip)

B370 Specification for Copper Sheet and Strip for Building Construction

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

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

B846 Terminology for Copper and Copper Alloys

E3 Guide for Preparation of Metallographic Specimens

~~E8E8/E8M Test Methods for Tension Testing of Metallic Materials [Metric] E0008 E0008M~~

~~E8M Test Methods for Tension Testing of Metallic Materials [Metric] (Withdrawn 2008)<sup>4</sup>~~

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

E62 Test Methods for Chemical Analysis of Copper and Copper Alloys (Photometric Methods) (Withdrawn 2010)<sup>4</sup>

E112 Test Methods for Determining Average Grain Size

E478 Test Methods for Chemical Analysis of Copper Alloys

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

### 2.2 ASME Standard:

ASME Boiler and Pressure Vessel Code<sup>5</sup>

## 3. General Requirements

3.1 The following sections of Specification ~~B248~~ or ~~B248M~~ constitute a part of this ~~specification~~. specification:

3.1.1 ~~Terminology~~: Terminology

3.1.2 ~~Materials and Manufacture~~: Manufacture

3.1.3 ~~Sampling~~: Sampling

3.1.4 ~~Number of Tests and Retests~~: Retests

3.1.5 ~~Specimen Preparation~~: Preparation

3.1.6 ~~Test Methods~~: Methods

3.1.7 ~~Packaging and Package Marking~~: Marking

<sup>3</sup> 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.

<sup>4</sup> The last approved version of this historical standard is referenced on www.astm.org.

<sup>5</sup> Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, ~~Three~~Two Park Ave., New York, NY 10016-5990, http://www.asme.org.