



Designation: B 888 – 98

Standard Specification for Copper Alloy Strip for Use in the Manufacture of Electrical Connectors or Spring Contacts¹

This standard is issued under the fixed designation B 888; 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 covers the requirements for copper alloy strip for use in the manufacture of electrical connectors or spring contacts produced from one of the following Copper Alloy UNS Nos.²: C14530, C15100, C15500, C19400, C19500, C19700, C23000, C26000, C42200, C42500, C51000, C51100, C52100, C63800, C65400, C68800, C70250, C70260, C75200, and C76200.

1.2 The requirements for the other copper alloys such as beryllium copper UNS C17000, C17200, C17400, C17410, C17500, and C17510 shall be as prescribed in the current edition of Standards B 194, B 768 and B 534.

1.3 The values stated in either inch-pound units or SI units are to be regarded separately as standard. 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 noncompliance with this specification.

2. Referenced Documents

2.1 ASTM Standards:

- B 193 Test Method for Resistivity of Electrical Conductor Material³
- B 194 Specification for Copper-Beryllium Alloy Plate, Sheet, Strip, and Rolled Bar⁴
- B 248 Specification for General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar⁴
- B 248M Specification for General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar [Metric]⁴
- B 534 Specification for Copper-Cobalt-Beryllium Alloy and Copper-Nickel-Beryllium Alloy Plate, Sheet, Strip, and Rolled Bar⁴

B 601 Practice for Temper Designations for Copper and Copper Alloys—Wrought and Cast⁴

B 768 Specification for Copper-Cobalt-Beryllium Alloy Strip and Sheet⁴

B 820 Test Method for Bend Test for Formability of Copper Alloy Spring Material⁴

B 846 Terminology for Copper and Copper Alloys⁴

E 8 Test Methods for Tension Testing of Metallic Materials⁵

E 8M Test Methods for Tension Testing of Metallic Materials [Metric]⁵

E 54 Test Methods for Chemical Analysis of Special Brasses and Bronzes⁶

E 62 Test Methods for Chemical Analysis of Copper and Copper Alloys (Photometric Method)⁶

E 75 Test Methods for Chemical Analysis of Copper-Nickel and Copper-Nickel-Zinc Alloys⁶

E 478 Test Methods for Chemical Analysis of Copper Alloys⁶

E 527 Test Practice for Numbering Metals and Alloys (UNS)⁷

2.2 ISO Standards:

ISO 4744 Copper and Copper Alloys—Determination of Chromium Content - Flame Atomic Absorption Spectrometric Method⁸

ISO 7602 Copper and Copper Alloys—Determination of Tellurium Content⁸

3. Terminology

3.1 *Definitions*—For definition of terms used in this specification, refer to Terminology B 846.

4. General Requirements

4.1 For product furnished under this specification in English units, the following sections of Specification B 248 must constitute a part of this specification. For product furnished under this specification in the SI units, the following sections of Specification B 248M must constitute a part of this specification.

¹ This standard is under the jurisdiction of Committee B-5 on Copper and is the direct responsibility of Subcommittee B05.01 on Plate, Sheet, and Strip.

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² The UNS system for copper and copper alloys (see Practice E 527) is a simple expansion of the former standard designation system accomplished by the addition of a prefix “c” and a suffix “00.” The suffix can be used to accommodate composition variations of the base alloy.

³ *Annual Book of ASTM Standards*, Vol 02.03.

⁴ *Annual Book of ASTM Standards*, Vol 02.01.

⁵ *Annual Book of ASTM Standards*, Vol 03.01.

⁶ *Annual Book of ASTM Standards*, Vol 03.05.

⁷ *Annual Book of ASTM Standards*, Vol 01.01.

⁸ Available from American National Standards Institute, 11 W. 42nd St., New York, NY 10036-8002.



- 4.1.1 Terminology,
 - 4.1.2 Materials and Manufacture,
 - 4.1.3 Dimensions, Weights, and Permissible Variations,
 - 4.1.4 Workmanship, Finish, and Appearance,
 - 4.1.5 Sampling,
 - 4.1.6 Number of Tests and Retests,
 - 4.1.7 Specimen Preparation,
 - 4.1.8 Test Methods,
 - 4.1.9 Significance of Numerical Limits,
 - 4.1.10 Certification,
 - 4.1.11 Test Reports, and
 - 4.1.12 Packaging and Package Marking.
- 4.2 In the event of a conflict between this specification and Specification B 248 or B 248M, the requirements of this specification shall take precedence.

5. Classification

5.1 Product produced to this specification is classified as strip material to be used for spring contact or electrical and electronic connector applications only.

6. Ordering Information

6.1 Contract or purchase orders for product under this specification should include the following information:

- 6.1.1 ASTM designation and year of issue,
- 6.1.2 UNS alloy designation,
- 6.1.3 Dimensions, for example, thickness, width,
- 6.1.4 Quantity, and
- 6.1.5 Temper (Section 8).

6.2 The following options are available under this specification and shall be specified in the contract or purchase order when required:

6.2.1 Type of edge: slit, sheared, sawed, square corners, rounded corners, rounded edges, or full-rounded edges (Section 11),

6.2.2 Width and straightness tolerances, slit-metal tolerances, square-sheared metal tolerances, sawed metal tolerances, straightened or edge-rolled metal tolerances (Section 11),

6.2.3 Identification marking (Section 22),

6.2.4 Certification (Section 20),

6.2.5 Mill test report (Section 21), and

6.2.6 How packaged: coil wound in traverse or pancake style (Section 22).

6.2.6.1 Number of strip lengths per coil,

6.2.6.2 Size and weight of each coil, and

6.2.7 The electrical resistivity or any other physical and electrical properties (See Table X1.1).

7. Materials and Manufacture

7.1 *Material*—The material of manufacture shall be a cast bar, slab, cake, billet, or other form of the composition given in Table 1 for the specified alloy, suitable for processing into the product prescribed in this specification.

7.2 *Manufacture*—The product shall be produced by either hot- or cold-working operation. It shall be finished, unless otherwise specified, by such hot working, cold working, annealing, or heat treatment as may be necessary to meet the properties specified in Table 2.

7.3 *Edges*—The edges shall be slit or rolled edges as specified by the buyer. Slit edges shall be furnished unless otherwise specified or agreed upon between the purchaser and supplier or manufacturer.



TABLE 1 Chemical Requirements

Elements Composition, %											
Copper Alloy UNS No.	Copper	Aluminum	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Phosphorus	Tin	Tellurium
C14530	99.90 min.								0.001-0.010	0.003-0.023 ^A	
C15100	99.82 min.	0.005 max. ^B		0.005 max. ^B			0.005 max. ^B				
C15500	99.75 ^C min.					0.08-0.13			0.04-0.08		0.027-0.10
C19400	97.0 min.			2.1-2.6	0.03 max.				0.015-0.15		
C19500	96.0 min.	0.02 max.	0.30-1.3	1.0-2.0	0.02 max.				0.01-0.35	0.10-1.0	
C19700	remainder		0.05 max.	0.3-1.2	0.05 max.				0.10-0.40	0.20 max.	
C23000	84.0-86.0			0.05 max.	0.05 max.	0.01-0.20	0.05 max.			remainder	
C26000	68.5-71.5			0.05 max.	0.07 max.					remainder	
C42200	86.0-89.0			0.05 max.	0.05 max.				0.35 max.	0.8-1.4	
C42500	87.0-90.0			0.05 max.	0.05 max.				0.35 max.	1.5-3.0	
C51000	remainder			0.10 max.	0.05 max.				0.03-0.35	4.2-5.8	
C51100	remainder			0.10 max.	0.05 max.				0.03-0.35	3.5-4.9	
C52100	remainder			0.10 max.	0.05 max.				0.03-0.35	7.0-9.0	
C63800	remainder	2.5-3.1	0.25-0.55	0.20 max.	0.05 max.		0.10 max.	0.20 max.			1.5-2.1
C65400	remainder ^D				0.05 max.						0.50 max.
C68000	remainder ^D	3.0-3.8 ^C	0.25-0.55	0.20 max.	0.05 max.						2.7-3.4
C70250	remainder ^F			0.20 max.	0.05 max.	0.05-0.30	0.10 max.	2.2-4.2 ^E			0.25-1.2
C70260	remainder ^F							1.0-3.0 ^F	0.005 max. ^F		0.20-0.70 ^F
C75200	63.5-66.5			0.25 max.	0.05 max.		0.50 max.	16.5-19.5 ^E			
C76200	57.0-61.0			0.25 max.	0.10 max.		0.50 max.	11.0-13.5 ^E			

^AIncludes Te + Se.

^BAluminum + iron + manganese not to exceed 0.01 %.

^CAluminum + zinc = 25.1 – 27.1.

^DIncluding silver.

^EIncluding cobalt.

^FCopper + nickel + phosphorus + silicon 99.5 min.