



Standard Specification for Cartridge Brass Sheet, Strip, Plate, Bar, and Disks (Blanks)¹

This standard is issued under the fixed designation B 19; 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.

1. Scope

1.1 This specification establishes the requirements for UNS No. C26000² sheet, strip, plate, bar, and disks for the manufacturer of ammunition of component parts thereof.

1.2 Values given in inch-pound units are the standard. Values given in parenthesis are for information only.

2. Referenced Documents

2.1 ASTM Standards:

B 154 Test Method for Mercurous Nitrate Test for Copper and Copper Alloys³

B 248 Specification for General Requirements for Copper and Copper Alloy Plate, Sheet, Strip, and Rolled Bar³

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

E 3 Methods of Preparation of Metallographic Specimens⁴

E 8 Test Methods for Tension Testing of Metallic Materials⁴

E 112 Test Methods for Determining Average Grain Size⁴

E 255 Practice for Sampling Copper and Copper Alloys for Determination of Chemical Composition⁵

E 478 Test Methods for Chemical Analysis of Copper Alloys⁵

E 527 Practice for Numbering Metals and Alloys (UNS)⁶

2.2 Federal Standards:⁷

Fed. Std. No. 123 Marking for Shipment (Civil Agencies)

Fed. Std. No. 185 Identification Marking of Copper and Copper-Base Alloy Mill Products

2.3 Military Standards:⁷

MIL-STD-105 Sampling Procedures and Tables for Inspection by Attributes

MIL-STD-129 Marking for Shipment and Storage

MIL-C-3993 Packaging of Copper and Copper-Base Alloy Mill Products

3. Ordering Information

3.1 Contracts or purchase orders for product under this specification should contain the following information:

3.1.1 ASTM designation and year of issue (for example, B19-XX),

3.1.2 Product form: sheet, strip, plate, bar, or disks (blanks),

3.1.3 Temper (Section 6),

3.1.4 Dimension: thickness, width, length,

3.1.5 How furnished: flat lengths, coils, or blanks,

3.1.6 Quantity: total weight each temper, form, and size, and

3.1.7 When severe drawing or deep cupping is required.

3.2 The following options are available and should be specified in the contract or purchase order when required:

3.2.1 Heat identification or traceability details,

3.2.2 Caliber or diameter of Type IV cups or disks (Section 10),

3.2.3 Mercurous Nitrate Test (Section 9),

3.2.4 Product Marking (Section 18),

3.2.5 On site inspection (Section 12),

3.2.6 Certification (Section 3),

3.2.7 Test Report (Mill) (Section 3), and

3.2.8 Product Marking (Section 18).

4. Material and Manufacture

4.1 Material:

4.1.1 The material of manufacture shall be a cast bar of copper alloy UNS C26000 of such purity, uniformity, and soundness as to be suitable for processing into the products prescribed herein.

4.2 Manufacturing:

4.2.1 The product shall be manufactured by such hot working, cold working, and annealing processes as to produce a uniform wrought structure in the specified temper for the finished product.

4.2.2 The products shall be furnished with slit edges unless otherwise specified.

4.3 In the event heat identification or traceability is required,

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

Current edition approved Feb. 15, 1995. Published April 1995. Originally published as B 19 – 19 T. Last previous edition B 19 – 86 (1993) ^{ϵ 1}.

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 02.01.

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 01.01.

⁷ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

the purchaser shall specify the details desired in the contract or purchase order.

5. Chemical Composition

5.1 The product material shall conform to the requirements prescribed in Table 1.

5.1.1 These specification limits do not preclude the presence of other elements. Limits for unnamed elements may be established and analysis required by agreement between manufacturer and purchaser.

5.2 Either copper or zinc may be taken as the difference between the sum of all elements analyzed and 100 %. When all elements in Table 1 are analyzed, their sum shall be 99.7 % min.

6. Temper

6.1 Product tempers, as defined in Practice B 601, shall be as follows:

6.1.1 *Rolled Product:* B 601, H01, H02, H03, H04, H06, H08, and H10.

6.1.2 *Annealed Product:* OS015, OS025, OS035, OS050, OS070, and OS100.

6.1.3 The purchaser should confer with the manufacturer or supplier for availability of product in a specific temper, form, and size.

7. Mechanical Property Requirements

7.1 Materials furnished under this specification shall conform to the tension test requirements specified in this specification.

7.1.1 Rolled-to-temper material shall conform to the requirements specified in Table 2.

7.1.2 Annealed material shall conform to the requirements specified in Table 3.

7.1.3 Material furnished as-hot rolled shall conform to the requirements specified in Table 3.

8. Grain Size Requirements

8.1 Annealed sheet, strip, and bar furnished under this specification shall conform to the requirements specified in Table 4.

8.2 Except for material ordered by the U.S. Government, annealed material to be used for the manufacture of cartridge brass cups and disks shall conform to the requirements of Table 5.

8.3 Annealed plate, bar, and disks ordered by the U.S. Government shall meet the following requirements:

8.3.1 Material up to 0.500 in. (12.70 mm) in thickness inclusive, except material for 20 mm disks, shall be furnished to a grain size of 0.055 to 0.120 mm inclusive.

TABLE 1 Chemical Requirements

NOTE 1—If the presence of bismuth is suspected during analysis, further analysis shall be made, and if bismuth is found in excess of 0.006 %, the lot shall be rejected.

Copper	Composition, %		Zinc
	Lead, max	Iron, max	
68.5 to 71.5	0.07	0.05	remainder

TABLE 2 Tensile Strength Requirements for Rolled Tempers

NOTE 1—Plate is generally available in only the soft O60, quarter-hard H01, and half-hard H02 tempers. Required properties for other tempers shall be agreed upon between the manufacturer or supplier and the purchaser at time of placing the order or contract.

Temper Designation		Tensile Strength, ksi ^A (MPa) ^B	
		min	max
Standard	Former		
H01	quarter hard	49 (340)	59 (405)
H02	half hard	57 (395)	67 (460)
H03	three-quarter hard	64 (440)	74 (510)
H04	hard	71 (490)	81 (560)
H06	extra hard	83 (570)	92 (635)
H08	spring	91 (625)	100 (690)
H10	extra spring	95 (655)	104 (720)

^A ksi 1000 psi.

^B See Appendix X1.

8.3.2 Material over 0.500 in. (12.70 mm) in thickness, except material for 20-mm disks, shall be furnished to a grain size of 0.070 to 0.150 mm inclusive.

8.3.3 Disks (blanks) of 20 mm and material for blanking 20-mm disks (blanks) shall be furnished to a grain size of 0.070 to 0.130 mm inclusive.

8.4 Material ordered as-hot rolled shall be furnished to a grain size as agreed upon between the manufacturer or supplier and the producer.

8.5 Material to be used for the manufacture of primer cup and primer anvils shall conform to the grain size requirements of Table 6.

9. Mercurous Nitrate Test

9.1 When specified in the contract or purchase order, the product shall meet the requirements of Test Method B 154.

9.1.1 Mercury is a recognized health hazard. Proper equipment for the detection and removal of vapors is recommended. The use of suitable gloves while testing is advised.

10. Dimensions and Permissible Variations

10.1 The dimensions and tolerances covered by this specification, except as covered herein, shall be as specified in the current edition of Specification B 248, with particular reference to Section 5 and the dimensional tables of that specification.

10.2 The diameter of the disks measured at the large end shall not vary from that specified in the order by more than the amounts shown in Table 7.

10.3 Disks shall not vary in thickness by more than the amounts shown in Table 8, except that disks for 20-mm cartridge cases shall be not less than the thickness specified and shall not exceed the specified thickness by more than 0.008 in. (0.20 mm) in the area 1 in. (25 mm) in diameter in the center of the disk.

10.4 Material to be used for the manufacture of primer cup and primer anvil shall conform to the dimensional tolerances requirements shown in Table 6.

10.5 Special dimensional tolerances shall be as agreed upon between the manufacturer or supplier and the purchaser.

10.6 Straightness shall be determined by placing the piece on a level surface so that the arc or departure from straightness is horizontal. The maximum depth of arc shall be measured to