Designation: B129 – 17

Standard Specification for Cartridge Brass Cartridge Case Cups [1]

This standard is issued under the fixed designation B129; 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 establishes the requirements for annealed cartridge brass cups produced of Copper Alloy UNS No. C26000 for processing into cartridge cases of the following types:

1.1.1 *Type I,* for small arms cartridge case cups, and

1.1.2 *Type II,* for artillery cartridge case cups.

1.2 *Units*—The values stated in inch-pound units are to be regarded as standard, except for grain size, which is given in SI units. The values given in parentheses are mathematical conversions to SI units, which are provided for information only and are not considered standard.

1.3 *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:*[2]

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

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

E112 Test Methods for Determining Average Grain Size

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

E478 Test Methods for Chemical Analysis of Copper Alloys

3. Terminology

3.1 For definitions of terms related to copper and copper alloys, refer to Terminology B846.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *cup (cupping), n*—a shallow cylindrical shell closed at one end, normally intended for further fabrication, formed from a blank.

4. Ordering Information

4.1 Include the following specified choices when placing orders for product under this specification, as applicable:

4.1.1 ASTM designation and year of issue,

4.1.2 Type (Section 1),

4.1.3 Grain size (Section 8),

4.1.4 Dimensions and tolerances (Section 9),

4.1.5 Drawing number to which order applies (Section 9).

4.2 The following options are available but may not be included unless specified at the time of placing of the order when required:

4.2.1 Grain size analysis of the base (Section 14),

4.2.2 Source inspection (Section 16),

4.2.3 Certification,

4.2.4 Mill Test Report, and

4.2.5 If product is purchased for agencies of the U.S. Government (see the Supplementary Requirements section of this specification for additional requirements, if specified).

5. Materials and Manufacture

5.1 *Materials:*

5.1.1 The material of manufacture shall be annealed plate, sheet, strip, or disks of wrought Copper Alloy UNS No. C26000 processed to produce even-topped cups.

5.2 *Manufacture:*

5.2.1 The product shall be manufactured by such blanking and cupping to meet the cup dimensions specified, and subsequently annealed. The annealed cups shall be pickled, washed, and dried.

6. Chemical Composition

6.1 The material shall conform to the chemical composition requirements in Table 1.

[1] 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.

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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.

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

TABLE 1 Chemical Requirements

Element	Copper Alloy UNS No. C26000 Composition, %
Copper	68.5–71.5
Lead, max	0.07
Iron, max	0.05
Bismuth, max	0.006
Zinc	remainder

6.2 These composition limits do not preclude the presence of other elements. By agreement between the manufacturer and purchaser, limits may be established and analysis required for unnamed elements

6.3 Because zinc is listed as "remainder," either copper or zinc may be taken as the difference between the sum of results of all other elements determined and 100 %. When all elements in Table 1 are determined, the sum of results shall be 99.7 % min.

7. Temper

7.1 The standard tempers for products described in this specification are given in Table 2.

7.1.1 Annealed tempers OS080 and OS110.

8. Grain Size for Annealed Tempers

8.1 Grain size shall be the standard requirement for all product in the annealed tempers.

8.1.1 Unless there is a prior agreement between the purchaser and supplier, the grain size for 0.30, 0.45, and 0.50 calibers will be produced to the grain size requirements specified in Table 2.

8.1.2 Grain size ranges other than those specified in Table 2 shall be established by agreement between the manufacturer and purchaser.

8.1.3 Grain size ranges for other cups shall be established by agreement between the manufacturer and purchaser.

8.1.4 Acceptance or rejection based upon grain size shall depend only on the average grain size of a test specimen as prescribed in Section 11. Each specimen shall be within the limits prescribed in Table 2 when determined in accordance with Test Methods E112.

9. Dimensions, Mass, and Permissible Variation

9.1 All dimensions and tolerances of cups shall be as indicated on the drawings furnished with the purchase order or contract.

TABLE 2 Grain Size Requirements on Sidewall[A] for Annealed (OS) Product

Type	Caliber	Standard Temper Designation (B601)	Diameter of Average Grain Size, mm	
			min	max
I	0.30 and 0.45	OS080	0.045	0.120
	0.50	OS110	0.065	0.150
II	Grain size subject to agreement between the manufacturer and purchaser			

[A] Approximately midway of the length of the sidewall.

10. Workmanship, Finish, and Appearance

10.1 The cups shall be uniform in quality and shall be free of oil, grease, oxidation, stains, scale, chips, acid, dirt or grit, dented or bent edges, laminations, slivers, laps, cracks, deep scratches, wrinkles, or other injurious defects which would interfere with the purpose for which the cups are intended. The cups, subsequent to annealing, shall be pickled, washed, and dried.

11. Sampling

11.1 The lot size, portion size, and selection of pieces shall be as follows:

11.1.1 *Lot Size*—40 000 lb (18 144 kg) or fraction thereof.

11.1.2 *Portion Size:*

11.1.2.1 For grain size—15 cups for Type I, or 2 cups for Type II.

11.1.2.2 For determination of dimensions—200 cups.

11.1.2.3 For the visual inspection—2000 cups.

11.1.3 Samples for chemical analysis are to be taken in accordance with Practice E255.

12. Number of Tests and Retests

12.1 *Test:*

12.1.1 *Chemical Analysis*—Chemical composition shall be determined in accordance with the element mean of the results from at least two replicate analyses of the sample(s).

12.2 *Other Tests:*

12.2.1 *Visual Inspection*—Each cup in the sample shall be visually inspected.

12.2.1.1 *Major Defects*—Not more than 0.25 % of the cups in the sample shall contain the following major defects – scaly metal, deep scratches, laminations, slivers, laps, cracks, and wrinkles.

12.2.1.2 *Minor Defects*—Not more than 2 % of the cups in the sample shall contain the following minor defects – oily cup, greasy cup, dirty or gritty cup, oxidized cup, stained cup, dented or bent edges, and scratches.

12.2.2 *Grain Size*—Specimens taken from each sample piece selected in accordance with 11.1.2.1 shall be tested for conformance to the grain size requirement.

NOTE 1—A deep scratch is one 0.005 in. (0.13 mm) or greater in depth.

12.3 *Retests:*

12.3.1 If the chemical analysis fails to conform to the specified limits, analysis shall be made on a composite sample, prepared from the pieces selected from each portion involved, consisting of either 15 cups from Type I or two cups from Type II. The results of this retest shall comply with the specified requirements.

12.3.2 Failure of more than two samples of Type I cups to comply to the grain size requirements shall be cause for rejection of the lot. If two samples fail to comply a retest shall be permitted on a sample double that of the original sample. Each of the specimens so retested shall meet the specified requirements.

12.3.2.1 Failure of the two samples of Type II cups to comply to the grain size requirements shall be cause for rejection of the lot. If one sample fails, a retest shall be