



Designation: B 569 – 98

Standard Specification for Brass Strip in Narrow Widths and Light Gage for Heat- Exchanger Tubing¹

This standard is issued under the fixed designation B 569; 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 brass strip in narrow widths and light gages produced from Copper Alloys Nos. C23000, C26000, and C26130.

NOTE 1—This product is commonly used for the manufacture of thin-wall tubes for water passages in heat exchangers for internal combustion engines and other closed system heat sources.

1.2 Values given in inch-pound units are the standard except for grain size, which are given in SI units. Values given in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:

B 248 Specification for General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar²

B 601 Practice for Temper Designations for Copper and Copper Alloys—Wrought and Cast²

B 846 Terminology for Copper and Copper Alloys²

E 3 Methods of Preparation of Metallographic Specimens³

E 8 Test Methods for Tension Testing of Metallic Materials³

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance With Specifications⁴

E 112 Test Methods for Determining Average Grain Size³

E 478 Test Methods for Chemical Analysis of Copper Alloys⁵

3. Terminology

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

3.2 *Definitions of Terms Specific to This Standard:*

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.

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² *Annual Book of ASTM Standards*, Vol 02.01.

³ *Annual Book of ASTM Standards*, Vol 03.01.

⁴ *Annual Book of ASTM Standards*, Vol 14.02.

⁵ *Annual Book of ASTM Standards*, Vol 03.06.

3.2.1 *capable of*—the test need not be performed by the producer of the product; however, should subsequent testing by the purchaser establish that the product does not meet these requirements, the product shall be subject to rejection.

4. Ordering Information

4.1 Orders for products should include the following information:

4.1.1 ASTM designation and year of issue (for example, B 569–XX),

4.1.2 Copper Alloy UNS No. designation (for example, C26000),

4.1.3 Temper (Section 7),

4.1.4 Dimensions: thickness, width, length, and so forth (Section 11), and

4.1.5 Quantity: total weight each form, temper, and size.

4.2 The following options are available and should be specified at the time of placing an order when required:

4.2.1 Heat identification or traceability details,

4.2.2 Certification, and

4.2.3 Mill test report.

5. Materials and Manufacture

5.1 Material:

5.1.1 The material of manufacture shall be cast bar, cake, or slab of Copper Alloy UNS No. C23000, C26000, or C26130 of such purity and soundness as to be suitable for processing into the products prescribed herein.

5.1.2 In the event heat identification or traceability is required, the purchaser shall specify the details desired.

NOTE 2—Because of the discontinuous nature of the processing of castings into wrought products, it is not always practical to identify a specific casting analysis with a specific quantity of finished material.

5.2 Manufacture:

5.2.1 The product width shall be 3 in. (76.2 mm) and under, and thickness shall be less than 0.018 in. (0.457 mm).

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

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

5.2.2.1 The product shall be hot- or cold-worked to the finished size, and subsequently annealed, when required, to meet the temper properties specified.

6. Chemical Composition

6.1 The material shall conform to the chemical compositional requirements in Table 1 for Copper Alloy UNS No. designation specified in the ordering information.

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

6.2 Zinc, specified as the “Remainder,” may be taken as the difference between the sum of results for all elements determined and 100 %.

6.2.1 When zinc is determined, however, copper may be taken by difference, and when so taken, the results must conform with the requirements of Table 1 for copper.

6.3 When all elements listed in Table 1 are determined for C26000 and C26130 the sum of results shall be 99.7 % min and for C23000 the sum of results shall be 99.8 % min.

7. Temper

7.1 Products shall be produced in tempers H01 (¼ hard), H02 (½ hard), O81 (Annealed-to-Temper—¼ hard), and O82 (Annealed-to-Temper—½ hard) as defined in Practice B 601.

NOTE 3—The purchaser should confer with the manufacturer or supplier for the availability of product in a specific temper.

8. Grain Size of Annealed Tempers

8.1 Annealed-to-Temper (O81 and O82) strip shall have an average grain size of 0.015 mm max as determined by Test Methods E 112.

9. Mechanical Property Requirement

9.1 *Tensile Strength Requirement*—The product furnished shall conform to the requirements prescribed in Tables 2 and 3 for the temper specified in the ordering information when tested in accordance with Test Methods E 8.

9.2 *Yield Strength Requirement*—The product furnished shall be capable of conforming to the requirements prescribed in Tables 2 and 3 for the temper specified in the ordering information when tested in accordance with Test Methods E 8.

9.3 *Elongation Test Requirement*—The product furnished shall conform to the requirements prescribed in Tables 2 and 3 for the temper specified in the ordering information when tested in accordance with Test Methods E 8.

TABLE 1 Chemical Requirements

Copper Alloy UNS No.	Composition, %				
	Copper	Lead, max	Iron, max	Arsenic	Zinc
C23000	84.0–86.0 ^A	0.05	0.05	...	Remainder
C26000	68.5–71.5 ^B	0.07	0.05	...	Remainder
C26130	68.5–71.5 ^B	0.05	0.05	0.02–0.08	Remainder

^ACu + Sum of Named Elements = 99.8 %.

^BCu + Sum of Named Elements = 99.7 %.

10. Dimensions, Mass, and Permissible Variations

10.1 Unless closer tolerances are specified in the contract or purchase order, the product furnished shall conform to the following thickness and width tolerances:

10.1.1 *Thickness Tolerances*—Table 4.

10.1.2 *Width Tolerances*—Table 5.

10.2 *Straightness Tolerances*—The maximum edgewise curvature (depth of arc) in any 72-in. (1830-mm) continuous length shall not exceed ¼sin. (3.18 mm).

11. Workmanship, Finish and Appearance

11.1 The strip shall be free of defects, but blemishes of a nature that do not interfere with normal commercial operations are acceptable. It shall be well-cleaned and free of dirt. A superficial film of residual light lubricant may be present and is acceptable unless otherwise specified.

11.2 The surface finish and appearance shall be the normal commercial quality for the alloy, thickness, and temper ordered. When application information is provided with the purchase order, the surface shall be that commercially producible for the application. Superficial films of discoloration, or lubricants, or tarnish inhibitors are permissible unless otherwise specified.

12. Sampling

12.1 *Sampling*—The lot size, portion size, and selection of sample pieces shall be as follows:

12.1.1 *Lot Size*—An inspection lot shall be 10 000 lb (4550 kg) or less of material of the same mill form, alloy, temper, and nominal dimensions, subject to inspection at one time or shall be the product of one cast bar from a single melt charge, whose weight shall not exceed 25 000 lb (11 350 kg), that has been processed continuously and subject to inspection at one time.

12.1.2 *Portion Size*—A portion shall be four or more pieces selected to be representative of each lot. If the lot consists of less than four pieces, representative samples shall be taken from each piece.

12.1.2.1 *Chemical Analysis*—The sample for chemical analysis shall be taken in accordance with Practice E 255 for product in its final form. Unless otherwise required by the purchaser, at the time the order is placed the manufacturer shall have the option of determining conformance to chemical composition by analyzing samples taken at the time the castings are poured or samples taken from the semifinished product if heat identity can be maintained throughout all operations. If the manufacturer determines the chemical composition during manufacture, he shall not be required to sample and analyze the finished product. The minimum weight of the composite sample in accordance with Practice E 255 shall be 150 g.

12.1.2.2 *Samples for All Other Tests*—Samples for all other tests shall be taken from the sample portion in 12.1.2 and be of a convenient size to accommodate the test and comply with the requirements of the appropriate ASTM product standards and test methods.

13. Number of Tests and Retests

13.1 *Tests*: