



Designation: B 770 – 96

AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Specification for Copper-Beryllium Alloy Sand Castings for General Applications¹

This standard is issued under the fixed designation B 770; 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 requirements for copper-beryllium alloy sand castings for general applications. Nominal compositions of the alloys defined by this specification are shown in Table 1.²

1.2 The values stated in inch-pound units are to be regarded as the standard. Metric values in parentheses are for information only.

2. Referenced Documents

2.1 The following documents in effect on date of material purchase form a part of this specification to the extent referenced herein:

2.2 ASTM Standards:

B 30 Specification for Copper-Base Alloys in Ingot Form²

B 208 Practice for Preparing Tension Test Specimens for Copper-Base Alloys for Sand, Permanent Mold, Centrifugal and Continuous Castings³

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

B 824 Specification for General Requirements for Copper Alloy Castings³

E 527 Practice for Numbering Metals and Alloys (UNS)⁴

3. Ordering Information

3.1 Orders for castings under this specification shall include the following information:

3.1.1 Quantity of castings required,

3.1.2 Copper alloy UNS number (Table 2) and temper (as-cast, heat treated, etc.) (Section 5),

3.1.3 Specification number, title, and year of issue,

3.1.4 Pattern or drawing number, and condition (cast, machined, etc.),

¹ This practice is under the jurisdiction of ASTM Committee B-5 on Copper and Copper Alloys and is the direct responsibility of Subcommittee B05.05 on Castings and Ingots for Remelting.

Current edition approved Sept. 10, 1996. Published November 1996. Originally published as B 770 – 87. Last previous edition B 770 – 93.

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 01.01.

3.1.5 Chemical analysis of residual elements, if specified in the purchase order (Specification B 824),

3.1.6 Mechanical requirements, if specified in the purchase order (Section 6),

3.1.7 Pressure test requirements, if specified in the purchase order (Specification B 824),

3.1.8 Soundness requirements, if specified in the purchase order (Specification B 824),

3.1.9 Repair of castings (Section 8),

3.1.10 Certification, if specified in the purchase order (Specification B 824),

3.1.11 Foundry test report, if specified in the purchase order (Specification B 824),

3.1.12 Witness inspection, if specified in the purchase order (Specification B 824), and

3.1.13 Product marking, if specified in the purchase order (Specification B 824).

3.2 When material is purchased for agencies of the U.S. Government, the Supplementary Requirements of Specification B 824 may be specified.

4. Chemical Composition

4.1 The castings shall conform to the requirements shown in Table 2.

4.2 These specification limits do not preclude the presence of other elements. Limits may be established for unnamed elements by agreement between manufacturer or supplier and purchaser. Copper may be given as remainder and may be taken as the difference between the sum of all elements analyzed and 100 %. When all elements in Table 2 are analyzed, their sum shall be 99.5 % minimum.

4.3 It is recognized that residual elements may be present in cast copper-base alloys. Analysis shall be made for residual elements only when specified in the purchase order (Specification B 824).

5. Temper

5.1 The standard tempers are listed as follows:

5.1.1 *TF00*—Cast, solution heat treated and precipitation heat treated.

5.1.2 *M01*—As sand cast.

5.1.3 Special or non-standard tempers are subject to negotiation between the supplier and purchaser. Standard temper