

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS4862B

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MANGANESE BRONZE CASTINGS 64Cu - 24Zn - 5.2Al - 3.8Mn - 3.0Fe

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. APPLICATION: Primarily for parts requiring high strength, toughness and corrosion resistance. This material has higher strength and lower ductility than AMS 4860.
3. COMPOSITION:

Copper	60.0 - 68.0
Aluminum	3.0 - 7.5
Manganese	2.5 - 5.0
Iron	2.0 - 4.0
Tin	0.20 max
Lead	0.20 max
Total Other Elements	0.20 max
Zinc	remainder

4. CONDITION: As cast.

5. TECHNICAL REQUIREMENTS:

- 5.1 Casting: A melt shall be the metal withdrawn from a batch furnace charge of 2000 pounds or less as melted for pouring castings.
- 5.2 Tensile Test Coupons: Shall be cast with each melt of metal for castings and, when requested, shall be supplied with the castings. Coupons shall be of such size that a standard (0.5-inch diameter at the reduced parallel section) tensile test specimen may be machined from each coupon, and shall be cast in molds made with the regular foundry mix of green sand, without using chills. Metal for the coupons shall be part of the melt which is used for the castings. The temperature of the metal during pouring of the coupons shall be not lower than the temperature of the metal during pouring of the castings.
- 5.3 Tensile Properties:
 - 5.3.1 Tensile test specimens cut from the coupons shall conform to the following requirements.

Tensile Strength, psi	110,000 min
Yield Strength at 0.2% offset or at 0.0120 inch in 2 in. extension under load, psi	60,000 min
Elongation, % in 4D	12 min

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5.3.2 If castings are cut for examination, tensile properties of specimens cut from the castings shall conform to the requirements of 5.3.1.

5.4 Hardness: Castings shall have hardness of Brinell 217-269, using 3000 kg load, or equivalent hardness by other methods.

5.5 Fracture Test: When castings are broken for fracture test, the fracture shall have uniform color and be substantially free from oxides, blowholes, porosity and other defects. Castings shall be sufficiently ductile to show some bending before rupture.

6. QUALITY:

6.1 Castings shall be uniform in quality and condition, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts. Castings shall have smooth surfaces and shall be well cleaned.

6.2 Inspection standards and procedures shall be as agreed upon by purchaser and vendor.

6.3 Castings shall not be repaired by plugging, welding or other methods, without written permission from purchaser.

7. REPORTS:

7.1 Unless otherwise specified, the vendor of castings shall furnish with each shipment three copies of a report showing the chemical composition of the castings, tensile properties of the tensile test specimens, melt numbers, purchase order number, material specification number, part number, quantity, and type of casting.

7.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of castings, part number, and quantity. When castings for making parts are produced or purchased by the parts vendor, that vendor shall inspect each lot of castings to determine conformance to the requirements of this specification, and shall include in the report a statement that the castings conform, or shall include copies of laboratory reports showing the results of tests to determine conformance.

8. IDENTIFICATION: Castings shall be identified in accordance with the latest issue of AMS 2804.

9. APPROVAL:

9.1 To assure uniformity of quality, sample castings from new or reworked patterns and molds shall be approved by purchaser, unless such approval be waived.

9.2 Vendor shall use the same foundry practices for production castings as for approved sample castings. If necessary to make any change, vendor shall notify purchaser prior to the first shipment of castings incorporating such change.