

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 4615 B

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SILICON BRONZE
95.5Cu - 3.2Si
Hard

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **FORM:** Rods and bars.
3. **APPLICATION:** Primarily for bearings, and for fittings in hydraulic pressure lines using AMS 4665 tubing.
4. **COMPOSITION:**

Copper	94.8 min
Silicon	2.8 - 3.5
Manganese, Iron, or Zinc	1.6 max
Tin	0.70 max
Lead	0.05 max
Total Named Elements	99.5 min

Note: Lead in the range 0.20 - 0.80% may be added to the above composition when permitted by the purchaser; in such case, lead shall be considered a named element and the minimum copper requirement may be reduced by an amount equal to that of the lead present.

5. **CONDITION:** Cold finished, and stress relieved if necessary, hard temper.

6. **TECHNICAL REQUIREMENTS:**

6.1 **Tensile Properties:**

Nominal Diameter or Distance between parallel sides, Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated		Elongation, % in 4D, min
		psi, min	Extension Under Load, inch in 2 in.	
Rounds, Hexagons, Octagons, Squares				
0.5 and under	85,000	50,000	0.0107	14
Over 0.5 to 1.0, incl	85,000	50,000	0.0107	18
Over 1.0 to 1.5, incl	85,000	50,000	0.0107	22
Rectangles, Thickness				
1.0 and under	65,000			25
Over 1.0 to 1.5, incl	60,000			25
Over 1.5 to 3.0, incl	50,000			25

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- 6.1.1 Tensile test specimens from rectangles over 1.5 in. in thickness shall have their axes located approximately midway between center and surface.
- 6.2 Bending: Material shall withstand, without cracking, bending at room temperature through an angle of 90 degrees around a diameter equal to twice the nominal diameter or thickness of the test specimen.
- 6.3 Mercurous Nitrate Test: Test specimens of full cross section having length of either 6 in. or twice the diameter or minimum distance between parallel sides, whichever is greater, shall be capable of withstanding, without cracking, immersion for 15 min. in an aqueous solution containing 100 g of mercurous nitrate and 13 ml of nitric acid (sp gr 1.42) per liter of solution, using at least 10 ml of solution per sq in. of test specimen surface area.
7. QUALITY: Material shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts.
8. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2221 as applicable. Diameter, thickness and width tolerances shall be as specified below:
- 8.1 Rounds, Hexagons and Octagons: Table I, Refractory.
- 8.2 Squares: Table IV.
- 8.3 Rectangles, Thickness: Table IV.
- 8.4 Rectangles, Width: Table VII, Refractory.
9. REPORTS:
- 9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the requirements of this specification or stating that the chemical composition and tensile properties of the product conform to the requirements specified. This report shall include the purchase order number, material specification number, size, and quantity.
- 9.2 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 material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.
10. IDENTIFICATION: Individual pieces or bundles shall have attached a metal tag stamped with the purchase order number, AMS 4615B, and nominal size, or shall be boxed and the box marked with the same information.