

AERONAUTICAL MATERIAL SPECIFICATIONS

AMS 4630E

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

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ALUMINUM BRONZE 90Cu - 8.5Al Soft

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **FORM:** Rods, bars, forgings, forging stock, and tubing.
3. **APPLICATION:** Primarily for parts requiring strength and corrosion resistance at moderate temperatures.
4. **COMPOSITION:**

Copper	87.0 min
Aluminum	7.0 - 10.0
Iron	1.5 max
Total Other Additions, including Nickel, Tin, and Manganese	2.0 max
Total Named Elements	99.5 min

5. **CONDITION:**

5.1 **Rods, Bars, and Tubing:** Hot rolled or drawn, or extruded, then cold finished if necessary, and stress relieved, soft temper.

5.2 **Forgings:** Stress relieved.

5.3 **Forging Stock:** As ordered by the forging manufacturer.

6. **TECHNICAL REQUIREMENTS:**

6.1 **Tensile Properties:**

6.1.1 **Rods and Bars:**

Yield Strength at 0.2% Offset
or at Extension Indicated
(E = 16,000,000)

Nominal Diameter or Distance Between Parallel Sides Inches	Tensile Strength psi, min	Extension Under Load in. in 2 in.	Elongation % in 4D, min
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Rounds

0.5 and under	80,000	40,000	0.0090	15
Over 0.5 to 1.0, incl	75,000	37,000	0.0086	15
Over 1.0	72,000	33,000	0.0081	15

Other Shapes

1.0 and under	75,000	35,000	0.0084	15
Over 1.0	72,000	33,000	0.0081	15

- 6.1.1.1 Tensile test specimens from rods and bars over 1.5 in. in diameter or distance between parallel sides shall have their axes located approximately midway between center and surface.
- 6.2 Hardness: Material, including forgings but excluding forging stock, shall have hardness not lower than Brinell 130 using 1000 kg load, or equivalent hardness $\emptyset$ by other methods, on the surface, except on rounds, where a flat as necessary for accuracy may be made, or not lower than Rockwell B 80 when taken half-way between center and surface of the cross section.
- 6.3 Mercurous Nitrate Test: Test specimens as in 6.3.1, 6.3.2, and 6.3.3 shall be $\emptyset$ capable of withstanding, without cracking, testing in accordance with ASTM B154-51, Procedure A.
- 6.3.1 Rods and Bars: Test specimens shall be of full cross section and shall have length of either 6 in. or twice the diameter or minimum distance between parallel sides, whichever is greater.
- 6.3.2 Forgings: Test specimens may be any convenient size or shape, or an entire forging may be used.
- 6.3.3 Tubing: Test specimens shall be full cross sections 6 in. long.
7. QUALITY: Material shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external imperfections detrimental to fabrication or to performance of parts.
8. TOLERANCE: Unless otherwise specified, tolerances shall conform to the following:
- 8.1 Rods and Bars: The latest issue of AMS 2221 as applicable. Diameter, thickness, and width tolerances shall be as specified below:
- 8.1.1 Rounds, Hexagons, and Octagons: Table I, Refractory.
- 8.1.2 Squares: Table IV.
- 8.1.3 Rectangles, Thickness: Table IV.
- 8.1.4 Rectangles, Width: Table VII, Refractory.
- 8.2 Tubing: The latest issue of AMS 2223 as applicable. Diameter and wall thickness tolerances shall be as specified below:
- 8.2.1 Diameter: Table I, Refractory.
- 8.2.2 Wall Thickness: Table III.
9. REPORTS:
- 9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product conforms to the chemical composition and technical requirements of this specification. This report shall include the purchase order number, material specification number, size, and quantity. If forgings are supplied, the part number and size of stock used to make the forgings shall also be included.