AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS 4630C

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ALUMINUM BRONZE

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, and extruded tubing.

3. APPLICATION: Primarily for strength and wear resistance at elevated temperatures.

4. COMPOSITION:

Copper	87.00 min
Aluminum	7.00 - 10.00
Iron	1.50 max
Other additions including Nickel, Tin, and Manganese	2.00 max
Total Named Elements	99.50 min

5. CONDITION:

5.1 Rods and Bars: Hot Rolled, drawn, or extruded, but may subsequently be cold-finished.

5.2 Forgings: As forged, and stress relieved if necessary, unless otherwise specified.

5.3 Tubing: Extruded, but may subsequently be cold-finished.

6. TECHNICAL REQUIREMENTS:

6.1 Physical Properties: Rods and bars shall conform to the following requirements:

Nominal Diameter or Distance Between Parallel Sides, Inches	Tensile Strength, psi, min	Yield Strength at 0.2% offset or at extension indicated, psi, min	Extension Under Load, inch in 2 in.	Elongation, % in 4D, min
0.5 and under	80,000	40,000	0.0090	15
Over 0.5 - 1.0, incl	75,000	37,000	0.0086	15
Over 1.0 - 3.0, incl	72,000	33,000	0.0084	15

6.2 Hardness: Unless otherwise specified, all material, including forgings, shall have hardness not lower than Brinell 130, using 1000 kg load and 10 mm ball, on the surface, except on rounds, where a flat, as necessary for Brinell accuracy, shall be made, or not lower than Rockwell B 80 when taken half-way between surface and center of the cross-section.

6.3 Mercurous Nitrate Test:

6.3.1 Rods and Bars: Test specimens of full cross-section having a 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.

6.3.2 Forgings: Test specimens may be any convenient size or shape, or an entire forging may be used. Testing procedure shall be the same as in paragraph 6.3.1 above.

6.3.3 Tubing: Test specimens shall be full cross-sections 6 in. long. Testing procedure shall be the same as in paragraph 6.3.1 above.

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 following:

8.1 Rods and Bars: Shall conform to the latest issue of AMS 2221 as applicable and as specified below:

8.1.1 Diameter or Thickness (Rounds, Hexagons and Octagons): Table I, Refractory.

8.1.2 Thickness (Squares): Table IV.

8.1.3 Thickness (Rectangles): Table IV.

8.1.4 Width (Rectangles): Table VII, Refractory.

8.2 Tubing: Shall conform to the latest issue of AMS 2223 as applicable and 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 notarized report showing the results of tests to determine conformance to the requirements of this specification, or stating that the chemical composition and physical properties of the product conform to the requirements specified. 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.

9.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a notarized 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 certification that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.