AERONAUTICAL MATERIAL SPECIFICATION

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

AMS 4610 D

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BRASS RODS AND BARS, FREE CUTTING
61.5Cu - 35.5Zn - 3Pb
Half 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 screw machine parts.

4. COMPOSITION:

Copper	60.00 - 63.00
Lead	2.50 - 3.75
Iron	0.15 max
Total Other Elements	0.50 max
Zinc	remainder

5. CONDITION: Cold finished, half hard temper.

6. TECHNICAL REQUIREMENTS:

6.1 Physical Properties: Material shall conform to the following requirements:

Nominal Diameter, Thickness or Width 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	Hardness Rockwell (See 6.1.1)
Rods (Rounds, Hexagons, Octagons)					
0.5 and under	60,000	28,000	0.0077	10	B65-85 (6.1.2)
Over 0.5 to 1.0, incl	55,000	25,000	0.0073	15	B65-85
Over 1.0 to 2.0, incl	50,000	20,000	0.0067	20	B60-80
Over 2.0	45,000	15,000	0.0060	25	B35-75
Bars (Squares, Rectangles)					
1.0 and under thick) 2.0 and under wide)	50,000	25,000	0.0073	10	B45-85
Over 1.0 thick) or Over 2.0 wide)	45,000	17,000	0.0063	20	B45-65

6.1.1 Rods and bars shall not be rejected on the basis of hardness if tensile property requirements are met.

6.1.2 Hardness determinations on rounds 0.5 in. and under in diameter shall be made on a ground or filed flat of sufficient area to ensure that accurate readings are obtained; Rockwell F or Rockwell Superficial 30T determinations may be made and converted to Rockwell B.

6.1.3 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 the center and surface.

6.2 Mercurous Nitrate Test: 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 containg 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 or thickness and width tolerances shall be as specified below:

8.1 Rounds, Hexagons and Octagons: Table I, Non-refractory.

8.2 Squares: Table III.

8.3 Rectangles, Thickness: Table III.

8.4 Rectangles, Width: Table VII, Non-refractory.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a notarized report of 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.