

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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New York City

AMS 4612 B

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BRASS, NAVAL - RODS AND BARS Hard

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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	59.0	-	62.0	
Tin	0.50	-	1.0	
Lead	0.20		max	
Iron	0.10		max	
Total Other Elements	0.10		max	
Zinc			remainder	

5. **CONDITION:** Cold drawn or rolled, hard temper.
6. **TECHNICAL REQUIREMENTS:** (a) Physical Properties.-

Nominal Diameter or Thickness <u>Inches</u>	Tensile Strength <u>psi, min</u>	Yield Strength at 0.2 % Offset or at <u>Extension Indicated</u> <u>psi, min</u>	Extension Under Load <u>Inch in 2 in.</u>	Elongation <u>% in 4D min</u>	*Hardness <u>Rockwell</u>
Rounds					
Up to 1.0, incl	67,000	45,000	0.0100	20	B 75 - 95
Over 1.0 - 2.5, incl	62,000	37,000	0.0090	25	B 70 - 90
Over 2.5 - 3.5, incl	54,000	25,000	0.0074	30	B 70 - 90
Over 3.5	54,000	22,000	0.0070	30	B 70 - 90
Hexagons, Octagons					
Up to 1.0, incl	67,000	45,000	0.0100	20	B 70 - 90
Over 1.0 - 2.5, incl	62,000	37,000	0.0090	25	B 65 - 85
Over 2.5	54,000	25,000	0.0074	30	B 60 - 80

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

Note: Tensile test specimens from rods and bars over 1.5 in. in diameter or thickness shall have their axes located approximately midway between the center and surface.

Section 7C of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

(b) 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. Material in which defects are revealed during fabrication will be subject to rejection.

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:

(a) Rounds, Hexagons, Octagons	Table I, Non-refractory
(b) Squares	Table III
(c) Rectangles, thickness	Table III
(d) Rectangles, width	Table VII, Non-refractory

9. REPORTS: (a) 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.

(b) 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.

10. IDENTIFICATION: Rods and bars may be shipped loose, bundled or boxed and shall be identified as follows:

(a) If loose or bundled, an attached metal tag shall be stamped with the purchase order number, AMS 4612B, and size.

(b) If boxed, the box shall be legibly marked with the purchase order number, AMS 4612B, and size.

11. REJECTIONS: Material not conforming to this specification or to authorized modifications will be subject to rejection. Unless otherwise stipulated, rejected material or parts will be returned to vendor at vendor's expense, unless purchaser receives, within three weeks or notification of rejection, other instructions for disposition.