

# AERONAUTICAL MATERIAL SPECIFICATIONS

## AMS 4610G

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

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BRASS, FREE CUTTING  
61.5Cu - 3Pb - 35.5Zn  
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	60.0 - 63.0
	Lead	2.5 - 3.75
	Iron	0.35 max
	Other Elements, total	0.5 max
	Zinc	remainder

5. CONDITION: Cold finished, half 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 (E=15,000,000)		
		psi, min	Extension Under Load in. in 2 in.	Elongation % in 4D, min
<b>Rounds, Hexagons, Octagons</b>				
0.5 and under	60,000	28,000	0.0077	10
Over 0.5 to 1.0, incl	55,000	25,000	0.0073	15
Over 1.0 to 2.0, incl	50,000	20,000	0.0067	20
Over 2.0	45,000	15,000	0.0060	25
<b>Squares, Rectangles</b>				
0.5 and under thick	50,000	25,000	0.0073	10
1.0 and under wide				
0.5 and under thick	45,000	17,000	0.0063	15
Over 1.0 to 6.0, incl, wide				
Over 0.5 to 2.0, incl, thick	45,000	17,000	0.0063	20
2.0 and under wide				

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## 6.1 Tensile Properties: (Continued)

Nominal Diameter or Distance Between Parallel Sides Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E=15,000,000)		
		psi, min	Extension Under Load in. in 2 in.	Elongation % in 4D, min
Squares, Rectangles (Continued)				
Over 0.5 to 2.0, incl, thick	40,000	15,000	0.0060	20
Over 2.0 to 6.0, incl, wide				
Over 2.0 thick	40,000	15,000	0.0060	20
Over 2.0 to 4.0, incl, wide				

6.1.1 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 should have hardness as follows, or equivalent, but shall not be rejected on the basis of hardness if the tensile property requirements are met:

Nominal Diameter or Distance Between Parallel Sides Inches	Hardness, Rockwell B		
	Rounds	Hexagons Octagons	Squares Rectangles
1.0 and under	65 - 85	60 - 80	50 - 80
Over 1.0 to 2.0, incl	60 - 80	50 - 70	40 - 70
Over 2.0	60 - 80	45 - 65	40 - 70

6.2.1 Hardness determinations shall be made on the surface, except on rounds where a flat, as necessary for accuracy, may be made.

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, after cleaning, be capable of withstanding, without cracking, immersion for 30 min. in an aqueous solution containing 10 g of mercurous nitrate (11.4 g of  $HgNO_3 \cdot 2H_2O$  or 10.7 g of  $HgNO_3 \cdot H_2O$ ) and 10 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, and free from foreign materials and from internal and external imperfections 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, Non-refractory.

8.2 **Squares:** Table III.