

AERONAUTICAL MATERIAL SPECIFICATIONS

AMS 4674C

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

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NICKEL-COPPER ALLOY, CORROSION RESISTANT
67Ni - 30Cu - 0.04S
Free Machining

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 forging stock.
3. APPLICATION: Primarily for fittings, such as cones, nipples, and unions, in fluid line assemblies using AMS 4574 or AMS 4575 tubing.
4. COMPOSITION:

Nickel + Cobalt	63.0 - 70.0
Sulfur	0.025 - 0.06
Iron	2.5 max
Manganese	2.0 max
Cobalt, if determined	1.0 max
Silicon	0.50 max
Carbon	0.30 max
Copper	remainder

5. CONDITION:

- 5.1 Rods and Bars: Cold finished.
- 5.2 Forgings: As forged.
- 5.3 Forging Stock: As ordered by the forging manufacturer but shall be specially selected for freedom from surface seams and for good hot working characteristics.

6. TECHNICAL REQUIREMENTS:

6.1 Tensile Properties:

6.1.1 Rods and Bars:

Nominal Diameter or Distance Between Parallel Sides Inches	Tensile Strength psi	Yield Strength at 0.2% Offset or at Extension Indicated (E = 26,000,000)		
		psi, min	Extension Under Load in. in 2 in.	Elonga- tion, % in 4D, min (See 6.1.2)
Rounds				
Under 0.5	85,000 - 100,000	50,000	0.0078	8
0.5 to 1.0, incl	85,000 - 110,000	50,000	0.0078	15
Over 1.0 to 3.0, incl	85,000 min	50,000	0.0078	15

6.1.1 Rods and Bars: (contd)

Nominal Diameter or Distance Between Parallel Sides Inches Hexagons, Squares, Rectangles	Tensile Strength psi	Yield Strength at 0.2% Offset or at Extension Indicated (E = 26,000,000)		
		psi, min	Extension Under Load in. in 2 in.	Elonga- tion, % in 4D, min (See 6.1.2)
Under 0.5	85,000 min	50,000	0.0078	10
0.5 and over	85,000 min	50,000	0.0078	15

6.1.2 All rods and bars shall be tested in full section when practicable except that for referee purposes machined specimens shall be prepared when section size will permit. Elongation for full section specimens for shapes other than rounds shall be based on gauge length of 4.5 times the square root of the cross sectional area.

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 center and surface.

6.2 Hardness:

6.2.1 Rods and Bars: Should have hardness as follows, or equivalent (ASTM E93-52), 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		
Under 0.5		84 - 96
0.5 to 1.0, incl		84 - 98
Over 1.0 to 3.0, incl		84 - 100
Hexagons	2.0 and under	80 - 94
Squares	2.125 and under	
Rectangles	1.75 and under	

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

6.2.2 Forgings: Shall have hardness of Rockwell B 78 - 96 or equivalent.

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.