

AERONAUTICAL MATERIAL SPECIFICATIONS

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

AMS 4674C

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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) | | |
|--|----------------------------|--|-----------------------|---|
| | | Extension Under Load psi, min | Extension 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)

| Yield Strength at 0.2% Offset or at Extension Indicated (E = 26,000,000) | | | |
|--|----------------------------|-------------------------------------|---|
| Nominal Diameter or Distance Between Parallel Sides Inches | Tensile Strength psi | Extension Under Load psi, min | Elonga- tion, % in 4D, min (See 6.1.2) |
| Hexagons, Squares, Rectangles | | | |
| 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), ϕ 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 | Rounds | Hardness, Rockwell B |
|--|--------|----------------------|
| 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 Squares 2.125 and under Rectangles 1.75 and under | } | 80 - 94 |

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.