AERONAUTICAL MATERIAL SPECIFICATION

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

AMS 5667 D

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ALLOY, CORROSION AND HEAT RESISTANT
Nickel Base - 15.5Cr - 7Fe - 2.5Ti - 1(Cb+Ta) - 0.7Al

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. FORM: Bars, forgings, and forging stock.

3. APPLICATION: Primarily for parts, such as bolts and turbine rotors, requiring high strength at 800-1100 F.

4. COMPOSITION:

Carbon	0.08 max
Manganese	1.0 max
Silicon	0.5 max
Sulfur	0.01 max
Chromium	14.0 - 17.0
Nickel + Cobalt	70.0 min
Cobalt, if determined	1.0 max
Columbium + Tantalum	0.7 - 1.2
Titanium	2.25 - 2.75
Aluminum	0.40 - 1.0
Iron	5.0 - 9.0
Copper	0.5 max

5. CONDITION:

5.1 Bars: Hot finished and equalized, unless otherwise specified.

5.1.1 Round bars shall be ground or turned.

5.2 Forgings: Equalized, unless otherwise specified.

5.3 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Bars:

6.1.1 Heat Treatment: Equalized by heating to 1625 F ± 25, holding at heat for 24 hr followed by air cooling.

6.1.2 Hardness: Shall be as follows, or equivalent:

Nominal Diameter or Distance Between Parallel Sides Inches	Hardness, Brinell
2.5 and under	277 max
Over 2.5	302 max

6.1.3 Properties After Aging: Specimens taken from bars shall, after aging at 1300 F ± 25 for 20 hr and air cooling, be capable of meeting the following
ø requirements:

6.1.3.1 Tensile Properties:

Tensile Strength, psi	165,000 min
Yield Strength at 0.2% Offset or at 0.0111 in. in 2 in. Extension Under Load (E = 31,000,000), psi	110,000 min
Elongation, % in 4D	20 min
Reduction of Area, %	30 min

6.1.3.2 Hardness: Brinell 302-363 or equivalent.

6.2 Forgings:

6.2.1 Heat Treatment: Equalized by heating to 1625 F ± 25, holding at heat for 2½ hr, cooling to 1300 F in 2 hr or less, either in air or in the furnace, followed by cooling as required.

6.2.2 Hardness: Shall be as follows, or equivalent:

Maximum Section Thickness, Inches	Hardness, Brinell
2.5 and under	277 max
Over 2.5	302 max

6.2.3 Hardness After Aging: Forgings shall, after aging at 1300 F ± 25 for 20 hr
ø and air cooling, have hardness of Brinell 302-363 or equivalent.

7. QUALITY: Material shall be uniform in quality and condition, clean, sound, 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 2261 as applicable and as specified below:

8.1 Diameter: Table VI.

8.2 Width and Thickness: Table IV.

ø 8.3 Straightness: Rounds, 6.4. Other than rounds, 6.3.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report of the results of tests for chemical composition of each heat in the shipment, and of tests to determine conformance to the requirements of Section 6. This report shall include the purchase order number, heat number, material specification number, size, and quantity from each heat. If forgings are supplied, the part number and size of stock used to make the forgings shall also be included.