

AERONAUTICAL MATERIAL SPECIFICATIONS

AMS 5667F

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

Issued 12-1-47
Revised 1-15-60

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, flash welded rings, and stock for forgings or flash welded rings.
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	0.50 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	0.50 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 and Flash Welded Rings: Equalized, unless otherwise specified.

5.2.1 Flash welded rings shall not be supplied unless specified or permitted on purchaser's part drawing. When supplied, they shall be manufactured in accordance with the latest issue of AMS 7490, unless otherwise specified.

∅ 5.3 Stock for Forgings or Flash Welded Rings: As ordered by the forging or flash welded ring manufacturer.

6. TECHNICAL REQUIREMENTS:

∅ 6.1 Bars, Forgings, and Flash Welded Rings:

6.1.1 Heat Treatment: The product shall be equalized by heating to 1625 F ± 25, holding at heat for 24 hr, and air cooling.

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6.1.2 Hardness: Shall be not higher than Brinell 302 or equivalent.

6.1.3 Properties After Precipitation Heat Treatment: Specimens taken from bars and forgings, and from parent metal of flash welded rings shall conform to the following requirements after heating to 1300 F \pm 25, holding at heat for 20 hr, and air cooling.

6.1.3.1 Tensile Properties:

Nominal Diameter or Section Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 31,000,000)		Elongation % in 4D min	Reduction of Area %, min
		psi, min	Extension Under Load in. in 2 in.		
Under 4.0	165,000	105,000	0.0108	20	25
4.0 and over	160,000	100,000	0.0105	15	17

6.1.3.1.1 When tensile test specimens are machined, tangentially, from approximately the center of large disc forgings (over 50 sq in. cross sectional area), the elongation may be as low as 10% and the reduction of area as low as 12%. Specimens machined in other directions from this location are not required.

6.1.3.2 Hardness: Brinell 302 - 363 or equivalent.

6.2 Stock for Forgings and Flash Welding: When a sample of stock is forged to a test coupon and heat treated as in 6.1.1, specimens taken from the heat treated coupon shall conform to the requirements of 6.1.2 and 6.1.3. If specimens taken from the stock after heat treatment as in 6.1.1 conform to the requirements of 6.1.2 and 6.1.3, the tests shall be accepted as equivalent to tests of the forged coupon.

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 for bars 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.

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 the results of tests on each size from each heat to determine conformance to the technical requirements of this specification. 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.