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

AMS 5667E

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ALLOY, CORROSION AND HEAT TREATMENT
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 and Forgings:

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

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

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

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) psi, min	Extension Under Load in. in 2 in.	Elongation % in 4D min	Reduction of Area, % min
Under 4.0	165,000	105,000	0.0108	20	25
4.0 and over	165,000	100,000	0.0105	15	17

6.1.3.1.1 When tensile test specimens are machined from approximately the center of large disc forgings, the elongation and reduction of area may be as low as 10% and 12%, respectively.

6.1.3.2 Hardness: 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 imperfections 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.

8.3 Straightness: Section 6 as applicable.

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.

9.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

10. IDENTIFICATION:

10.1 Bars: Individual pieces or bundles shall have attached a metal tag stamped with the purchase order number, AMS 5667E, nominal size, and heat number, or shall be boxed and the box marked with the same information. In addition to the above identification, bars 0.5 in. and over in diameter or distance between parallel sides shall be stamped with the heat number within 2 in. of one end.