AERONAUTICAL MATERIAL SPECIFICATION

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

AMS 5750

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Revised

ALLOY, CORROSION AND HEAT RESISTANT
Nickel Base - 16Mo - 15.5Cr - 6Fe - 4W

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

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

3. APPLICATION: Primarily for parts and assemblies, such as turbine rotors, shafts, buckets and bolts requiring high strength up to 1500 F and oxidation resistance up to 2000 F.

4. COMPOSITION:

		Check Analysis Under Min	Check Analysis Over Max
Carbon	0.08 max	--	0.01
Manganese	1.00 max	--	0.03
Silicon	1.00 max	--	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	14.50 - 16.50	0.20	0.20
Molybdenum	15.00 - 17.00	0.15	0.15
Tungsten	3.00 - 4.50	0.15	0.15
Iron	4.00 - 7.00	0.15	0.15
Vanadium	0.35 max	--	0.04
Nickel + Cobalt	remainder		
Cobalt, if determined	2.50 max	--	--

5. CONDITION:

5.1 Bars and Forgings: Solution heat treated.

5.1.1 Bars less than 0.75 in. in diameter or distance between parallel sides shall be pickled.

5.1.2 Bars 0.75 in. and over in diameter or distance between parallel sides shall be centerless ground.

5.2 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Heat Treatment: Material shall be solution heat treated by heating to 2225 F ± 25, holding at heat for not less than the time indicated below, followed by either quenching in water or rapid air cooling.

Nominal Diameter or Maximum Cross Section Inches	Time at Heat min.
0.5 and under	30
Over 0.5 to 1.0, incl	45
Over 1.0 to 2.0, incl	60

6.2 Hardness: Brinell 190-243 or equivalent.

6.3 Stress Rupture Test at 1500 F: Specimens taken from bars or forgings shall be capable of meeting the following requirements:

6.3.1 A tensile test specimen, maintained at 1500 F ± 10 while an axial load of 20,000 psi is applied continuously, shall not rupture in less than 24 hours. The test shall be continued, after the 24 hr, until the specimen ruptures, either maintaining the same load or increasing the load to not over 30,000 psi as necessary to produce rupture. In either case, the elongation after rupture, measured at room temperature, shall be not less than 15% in 4D.

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:

8.1.1 Bars less than 0.75 in. in diameter or distance between parallel sides - Table IV.

8.1.2 Bars 0.75-2.0 in. in diameter or distance between parallel sides - Table VI.

8.2 Length: Section 5.

8.3 Straightness: Paragraph 6.3 or 6.4 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. 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.