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

AMS 5735 B
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STEEL, CORROSION AND HEAT RESISTANT
15Cr - 26Ni - 1.3Mo - 1.9Ti - 0.3V

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, forging stock, and mechanical tubing.

3. APPLICATION: Primarily for parts, such as turbine rotors, shafts, buckets or blades, bolts, dowels, and fittings requiring high strength up to 1300 F and oxidation resistance up to 1500 F.

4. COMPOSITION:

		Check Analysis Under Min or Over Max	
Carbon	0.08 max	--	0.01
Manganese	1.00 - 2.00	0.04	0.04
Silicon	0.40 - 1.00	0.05	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	13.50 - 16.00	0.20	0.20
Nickel	24.00 - 27.00	0.20	0.20
Molybdenum	1.00 - 1.50	0.05	0.05
Titanium	1.75 - 2.25	0.05	0.05
Vanadium	0.10 - 0.50	0.03	0.03
Aluminum	0.35 max	--	0.05

5. CONDITION:

5.1 Bars: Solution and precipitation heat treated, unless otherwise specified. Bars 2.75 in. and less in diameter or distance between parallel sides shall be cold finished.

5.2 Tubing: Cold finished, solution and precipitation heat treated, unless otherwise specified.

5.3 Forgings: Solution and precipitation heat treated and descaled, unless otherwise specified.

5.4 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Heat Treatment: Bars, forgings, and tubing shall be solution heat treated by heating to 1800 F ± 25, holding at heat for 1 hr, and quenching in oil or water, and shall then precipitation heat treated by heating to not lower than 1300 F but not higher than 1400 F, holding at heat for 16 hr, and air cooling.

6.2 Hardness: Brinell 248-321 or equivalent.

6.3 Tensile Properties: Tensile test specimens cut from bars, forgings, and tubing, and from forging stock heat treated in accordance with 6.1, tested at room temperature, shall conform to the following requirements:

Tensile Strength, psi	130,000 min
Yield Strength at 0.2% Offset or at 0.0098 in. in 2 in. Extension Under Load (E = 29,100,000), psi	85,000 min
Elongation, % in 4D	15 min
Reduction of Area, %	18 min

6.3.1 When tensile test specimens are machined from approximately the center of large disc forgings, the elongation may be as low as 10.0% and the reduction of area as low as 12%.

6.4 Stress-Rupture Test at 1200 F: Specimens taken from bars, forgings, and tubing, and from forging stock heat treated as in 6.1 shall be capable of meeting both of the following requirements; however, only the test outlined in 6.4.1 need be performed unless otherwise agreed upon by purchaser and vendor:

6.4.1 A tensile test specimen with 60 deg Vee notch, with area at root of Vee approximately equal to half the area of the full section of specimen and ratio of radius of curvature at base of notch to full specimen diameter approximately equal to 0.02, maintained at 1200 F ± 5 while an axial load of 65,000 psi is applied continuously, shall not rupture in less than 23 hours.

6.4.2 A tensile test specimen, maintained at 1200 F ± 5 while an axial load of 62,500 psi is applied continuously, shall not rupture in less than 23 hours. ø The test shall be continued, after the 23 hr, until rupture occurs. The elongation after rupture, measured at room temperature, shall be not less than 5% 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 following:

8.1 Bars: The latest issue of AMS 2241 as applicable and as specified below:

8.1.1 All hexagons, and other bars 2.75 in. and less in diameter or distance between parallel sides - Table I.

8.1.2 Bars, other than hexagons, over 2.75 in. in diameter or distance between parallel sides - Table II.

8.2 Tubing: The latest issue of AMS 2243 as applicable. Diameter tolerances shall conform to Table I, columns headed "Annealed or Solution Heat Treated".