AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 5668

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ALLOY, CORROSION AND HEAT RESISTANT
Nickel Base - 15Cr - 2.5Ti - 1Cb - 0.7Al
Solution and Precipitation Heat Treated

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

2. FORM: Bars, billets, and forgings.

3. APPLICATION: Primarily parts, such as turbine blades or buckets, requiring oxidation resistance and high strength at 1250-1500 F.

4. COMPOSITION:

Carbon	0.08 max
Manganese	1.00 max
Silicon	0.50 max
Sulfur	0.01 max
Chromium	14.00 - 16.00
Nickel	70.00 min
Columbium	0.70 - 1.20
Titanium	2.25 - 2.75
Aluminum	0.40 - 1.00
Iron	9.00 max
Copper	0.20 max

5. CONDITION: (a) Unless otherwise specified, bars and forgings shall be solution heat treated, then heated to 1550 F ± 10, held at heat 24 hours and air cooled, and then heated to 1300 F ± 10, held at heat 20 hours and air cooled. Solution heat treatment shall be as agreed upon by purchaser and vendor.

(b) Stock ordered for forging shall be supplied as ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS: (a) Hardness.- Bars and forgings heat treated as in 5(a) shall have hardness of Brinell 277-341 or equivalent.

(b) Grain Size.- When grain size is specified, it shall be interpreted as the average number of grains per linear inch, at 100X magnification, counted along two axes at right angles to each other.

(c) Stress Rupture Test at 1500 F.- Specimens taken from bars and forgings shall be capable of meeting the following requirements:

A tensile test specimen, maintained at a temperature of 1500 F ± 10 while an axial load of 25,000 psi is applied continuously, shall not rupture in less than 100 hours. The test shall be continued, after the 100 hours, until the specimen ruptures, either maintaining the same load or increasing the load to not over 50,000 psi as necessary to produce rupture. In either case, the elongation after rupture, measured at room temperature, shall be not less than 5% in 4D.

7. QUALITY: The product 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.