AERONAUTICAL MATERIAL SPECIFICATION

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

AMS 5754

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Revised

ALLOY, CORROSION AND HEAT RESISTANT
Nickel Base - 22Cr - 1.5Co - 9Mo - 0.6W - 18.5Fe

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 oxidation resistance up to 2200 F, and relatively high strength above 1500 F.

4. COMPOSITION:

		Check Analysis Under Min or Over Max	
Carbon	0.05 - 0.15	0.01	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	20.50 - 23.00	0.25	0.25
Cobalt	0.50 - 2.50	0.05	0.05
Molybdenum	8.00 - 10.00	0.10	0.10
Tungsten	0.20 - 1.00	0.04	0.04
Iron	17.00 - 20.00	0.20	0.20
Nickel	remainder	--	--

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 descaled.

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 2150 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: Shall be not higher than Brinell 241 or equivalent.

6.3 Stress-Rupture Test at 1500 F: Material shall be capable of meeting the following requirements:

6.3.1 A tensile specimen maintained at 1500 F ± 5 while an axial load of 15,000 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 25,000 psi as necessary to produce rupture. In either case, the elongation after rupture, measured at room temperature, shall be not less than 10% 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 agreed upon by purchaser and vendor, tolerances shall conform to the latest issue of AMS 2261 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.

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.