

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 5768

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Revised

ALLOY, CORROSION AND HEAT RESISTANT
Iron Base - 20Cr - 20Ni - 20Co - 3Mo - 2W - 1Cb
Solution and Precipitation 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: Parts and assemblies, such as turbine rotors, shafts, buckets and bolts, requiring high strength up to 1500 F and oxidation resistance up to 1800 F.
4. COMPOSITION:

		Check Analysis	
		Under Min	or Over Max
Carbon	0.10 - 0.20	--	--
Manganese	1.00 - 2.00	0.04	0.04
Silicon	1.00 max	--	0.05
Phosphorus	0.030 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	20.00 - 22.50	0.25	0.25
Nickel	19.00 - 21.00	0.20	0.20
Cobalt	18.50 - 21.00	0.20	0.20
Molybdenum	2.50 - 3.50	0.10	0.10
Tungsten	1.75 - 2.75	0.10	0.10
Columbium	0.75 - 1.25	0.05	0.05
Nitrogen	0.10 - 0.20	0.01	0.01
Iron	remainder		

5. CONDITION:

- 5.1 Unless otherwise specified, bars and forgings shall be solution and precipitation heat treated after the final rolling or forging operation.
- 5.2 Forging stock shall be supplied as ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

- 6.1 Heat Treatment: Bars and forgings shall be solution heat treated by heating to $2175 F + 25$, holding at that temperature for 1 hour followed by quenching in water, and shall then be precipitation heat treated by heating to $1500 F + 25$, holding at that temperature for 4 hours followed by air cooling.
- 6.2 Hardness: Bars and forgings shall have hardness of Brinell 193 - 241 or equivalent.
- 6.3 Stress Rupture Test at 1350 F: Bars and forgings shall be capable of meeting the following requirements:

A tensile test specimen, maintained at $1350 F + 10$ while an axial load of 30,000 psi is applied continuously, shall not rupture in less than 100 hours. The test