

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 53 69A

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STEEL CASTINGS, SAND, CORROSION AND HEAT RESISTANT

20Cr - Ni - 1.4Mo - 1.4W - Cb - Ti

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **APPLICATION:** Parts and assemblies, such as nozzle diaphragm assemblies, requiring high strength up to 1350 F, and oxidation resistance up to 1600 F.
3. **COMPOSITION:**

Carbon	0.28 - 0.35
Manganese	0.75 - 1.50
Silicon	1.00 max
Phosphorus	0.04 max
Sulfur	0.04 max
Chromium	18.00 - 21.00
Nickel	8.00 - 11.00
Molybdenum	1.00 - 1.75
Tungsten	1.00 - 1.75
Columbium + Tantalum	0.30 - 0.70
Titanium	0.15 - 0.50
Copper	0.50 max

4. **CONDITION:** Solution and precipitation heat treated, unless otherwise specified.
5. **TECHNICAL REQUIREMENTS:**
 - 5.1 **Heat Treatment:** Castings shall be solution heat treated by heating to 2000 F + 50, holding at that temperature for not less than thirty minutes and cooling in air, followed by heating to 1600 F + 25, holding at that temperature for not less than 8 hours and cooling in air.
 - 5.2 **Hardness:** Castings shall have hardness not higher than Brinell 229 or equivalent.
6. **QUALITY:**
 - 6.1 Castings shall be uniform in quality and condition, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts. Castings shall have smooth surfaces and shall be well cleaned.
 - 6.2 When castings are broken for fracture test, the fracture shall have uniform color and be substantially free from oxides and other defects.
 - 6.3 Unless otherwise specified, castings shall be produced under radiographic control.
 - 6.4 Inspection standards and procedures shall be as agreed upon by purchaser and vendor.