

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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Revised

STEEL CASTINGS, SAND, CORROSION AND HEAT RESISTANT 19.5Cr - 10Ni (Low Carbon)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. APPLICATION: Primarily for parts requiring both corrosion and heat resistance up to 800 F, especially where such parts are welded during fabrication. Parts requiring oxidation resistance up to 1500 F, but useful at that temperature only when stresses are low. Parts requiring resistance to fuming nitric acid.
3. COMPOSITION:

Carbon	0.050 max
Manganese	1.0 - 2.0
Silicon	0.75 - 1.5
Phosphorus	0.04 max
Sulfur	0.04 max
Chromium	18.0 - 21.0
Nickel	8.0 - 11.0
Molybdenum	0.5 max
Copper	0.5 max

4. CONDITION: Solution heat treated free from continuous carbide network, unless otherwise specified.

5. TECHNICAL REQUIREMENTS:

- 5.1 Solution Heat Treatment: Castings shall be solution heat treated by heating to 2000 F $\pm$ 50, holding at heat for not less than 30 min., and cooling in air.
- 5.2 Hardness: Castings shall have hardness not higher than Brinell 170 or equivalent.
- 5.3 Embrittlement: Castings shall be capable of meeting the following test:
 - 5.3.1 Test specimens, after being heated at 1200 F $\pm$ 10 for 2 hr and air cooled, shall withstand immersion for 48 hr in a boiling aqueous solution containing 100 g of CuSO₄·5H₂O and 100 ml of H₂SO₄ (sp gr 1.84) per liter of solution under a reflux condenser, without evidence of intercrystalline surface attack when examined microscopically.

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. Unless otherwise specified, metallic shot or grit shall not be used for final cleaning.
- 6.2 When castings are broken for fracture test, the fracture shall have uniform color and be substantially free from oxides and other defects.