

## Haynes® alloy 188

UNS R30188  
W.Nr 2.4683

### Applicable Specifications

Wire & Bar AMS 5772, GE B50A712

**Description:** Haynes® Alloy 188 is a cobalt-nickel-chromium-tungsten alloy with excellent high temperature tensile strength, sulfidation, and oxidation resistance up to 1095°C (2000°F) for long term exposures. Haynes® Alloy 188 is not age hardenable but may be cold worked to achieve higher tensile and yield strength. Haynes® Alloy 188 responds well to conventional forming and welding techniques.

**Applications include:** High Temperature and Corrosion Resistant Applications

**Industries supplied include:** Military and Commercial Aerospace, Chemical Processing, and Land-Based Gas Turbines

### Nominal Composition

	C	Mn	P	S	Si	Cr	Ni	Co	B	Fe	W	La
Min	0.05				0.20	20.0	20.0	39 (bal)			13.0	0.03
Max	0.15	1.25	0.02	0.015	0.50	24.0	24.0		0.015	3.00	16.0	0.12

### Physical Properties

	At 70°F	At 20°C
Density	0.24 lb/in <sup>3</sup>	8.98 g/cm <sup>3</sup>
Modulus of Elasticity (E)	33.7 x 10 <sup>3</sup> ksi	232 GPa
Modulus of Rigidity (G)	13 x 10 <sup>3</sup> ksi	90 GPa
Coefficient of Expansion	9.1 μin/in/°F (75-1800°F)	16.5 μm/m-°C (25-1000°C)
Electrical Resistivity	39.6 μohm-in	101.0 μohm-cm
Thermal Conductivity	72 Btu-in/ft <sup>2</sup> -hr-°F	10.4 W/m-°C

### Typical Mechanical Properties

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	2150 °F (1177 °C)	125 ksi min	-300°F to 2000°F (-185°C to 1095°C)
Spring Temper	None	200 ksi min	-300°F to 2000°F (-185°C to 1095°C)
Spring Temper + Aged			

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