

## Hastelloy® alloy X

**UNS N60002**  
**W. Nr 2.4665**

HASTELLOY® alloy X is a nickel-chromium-iron-molybdenum alloy that possesses an exceptional combination of oxidation resistance, fabricability and high-temperature strength. Alloy X exhibits good ductility after prolonged exposure to high temperatures.

Applications include: combustion chambers, gas turbine engine components such as honeycomb seals, compressor vanes and combustor cases.

Industries supplied include: Aerospace, industrial furnaces, petrochemical, and chemical processing.

### Nominal Composition

	C	Mn	Si	P	S	Cr	Co	Mo	W	Fe	Al	Ti	Ni
min	0.05					20.50	0.50	8.00	0.20	17.00			
max	0.15	1.00	1.00	0.040	0.030	23.00	2.50	10.00	1.00	20.00	0.50	0.15	balance

### Physical Properties

	At 70°F	At 20°C
<b>Density</b>	0.297 lb/in <sup>3</sup>	8.22 g/cm <sup>3</sup>
<b>Modulus of Elasticity (E)</b>	29.8 x 10 <sup>3</sup> ksi	205 GPa
<b>Modulus of Rigidity (G)</b>	11.3 x 10 <sup>3</sup> ksi	77.6 Gpa
<b>Coefficient of Expansion</b>	8.1 microinches/in.-°F (70-1000°F)	14.5 μm/m-°C (20-538°C)
<b>Electrical Resistivity</b>	46.6 μ ohm.in	118.36 μ ohm.cm
<b>Thermal Conductivity</b>	63 Btu-in./ft. <sup>2</sup> hr.-°F	9.1 W/m-K

### Applicable Specifications

Strip and Foil	AMS 5536
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### Typical Mechanical Properties

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	2125°F (1163°C)	105 ksi ( MPa) min	-300°F to 2200°F (-184°C to 1205°C)

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