



Nickel Alloy 600 is a nickel-chromium alloy that provides excellent resistance to oxidation at high temperatures. It is also commonly used as a corrosion-resistant alloy due to its resistance to a wide range of acids and alkalis.

Specifications

- AMS: 5540, 5665
- ASME: SB 168
- ASTM: B 168
- UNS: N06600
- W.Nr./EN: 2.4816

Chemical Composition, %

	Ni	Cr	Fe	C	Mn	Si	Cu	Al	Ti	B	P	S
MIN	72.0	14.0	6.0	0.05	–	–	–	–	–	–	–	–
MAX	–	17.0	10.0	1.50	1.0	0.5	0.5	0.3	0.3	0.006	0.015	0.015

Features

- Exhibits superior oxidation resistance at high temperatures
- Excellent resistance to nitrogen, hydrogen, and carburization
- Can be used in air as well as other environments continuously for long periods of time
- Hot working is relatively easy

Applications

- Nuclear power plants
- Heat exchangers
- Industrial chemical evaporators
- Industrial acid and alkali equipments
- Heat treatment furnace parts
- Afterburner parts and other components used at high temperatures
- Vacuum furnace fixtures
- Chemical and food processing equipment
- Paper mill and alkaline digesters
- Vinyl chloride monomer production
- Thermo couple sheathing in aggressive atmospheres
- Catalyst regenerators in petrochemical production



## Physical Properties

Density: .304 lb/in<sup>3</sup>    Melting Range: 2470-2575°F

Specific Heat Btu/lb °F:	0.11
Poisson's Ratio:	0.29

## Coefficient of Thermal Expansion

Temperature °F	70	1000	1200	1400	1600	1800
in/in°F x 10 <sup>-6</sup>	–	8.4	8.6	8.7	9.1	9.3

## Thermal Conductivity

Temperature °F	70	1000	1200	1400	1600	1800
Btu-ft/ft <sup>2</sup> -hr-°F	8.6	13.2	14.3	13.0	16.7	–

## Modulus of Elasticity

Temperature °F	70	1000	1200	1400	1600	1800
Dynamic, psi x 10 <sup>6</sup>	30.0	25.6	24.5	23.6	22.2	20.4

## Mechanical Properties at Room Temperature (Representative)

Temperature °F	70	1000	1200	1400	1600	1800
0.2% Yield Strength, ksi	37	28.5	26.5	17	9.0	4.0
Ultimate Tensile Strength, ksi	93	84	65	27.5	15	7.5
Charpy Impact V-notch, ft-lbs	45	47	39	46	80	118

## Corrosion Resistance

The composition of Nickel Alloy 600 provides corrosion resistance in a wide range of corrosive environments. The addition of chromium provides superior corrosion resistance in acidic environments, compared to pure nickel, while allowing the material to maintain corrosion resistance in a reducing state and exhibit superior corrosion resistance to alkaline solutions. Nickel Alloy 600 is also highly resistant to stress-corrosion cracking.