

Nickel Alloy 600 is a nickel-chromium alloy that provides excellent resistance to oxidation at high temperatures. The high nickel content of alloy 600 provides good resistance to reducing environments, as well as exceptional resistance to chloride stress corrosion cracking, while the chromium content provides resistance to weaker oxidizing conditions.

### Nominal Composition %

<b>Ni</b>	Nickel – 72.0%
<b>Cr</b>	Chromium – 14.0% - 17.0%
<b>Fe</b>	Iron - 6.0% - 10.0%
<b>C</b>	Carbon – 0.05% - 1.50%
<b>Mn</b>	Manganese - 1.0%
<b>Si</b>	Silicon - 0.5%
<b>Cu</b>	Copper - 0.5%
<b>Al</b>	Aluminum - 0.3%
<b>Ti</b>	Titanium – 0.3%
<b>B</b>	Boron - .006%
<b>P</b>	Phosphorous - .015%
<b>S</b>	Sulfur - .015%

Percent by weight, maximum unless a range is listed.

### Standard Inventory Specifications

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

### Forms Stocked

- Coil – 0.0200" – 0.1250"
- Sheet – 0.0200" – 0.1250"
- Thin Strip – 0.0008" – 0.012"

### Thickness Stocked

- 0.018" - .065" thick

### 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



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### 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

## Physical Properties

Properties	Value
Density	0.304 lb/in <sup>3</sup> (8.97 g/cm <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.