

# NICKEL ALLOY

# ALLOY 690



## Alloy 690 (UNS N06690)

Alloy 690 is a high-chromium nickel alloy having excellent resistance to many corrosive aqueous media and high-temperature atmospheres. The alloy's high chromium content gives it excellent resistance to carburisation, metal dusting, oxidation and sulfidation at high temperature. In addition to its corrosion resistance, alloy 690 has high strength, good metallurgical stability, and favorable fabrication characteristics.

### AVAILABLE TUBE PRODUCT FORMS

STRAIGHT  
SEAMLESS

### TYPICAL MANUFACTURING SPECIFICATIONS

ASTM B167  
Also individual customer specifications.

### TYPICAL APPLICATIONS

HEAT EXCHANGERS  
STEAM GENERATORS  
HIGH TEMPERATURE APPLICATIONS EXPOSED TO CAUSTIC SOLUTIONS

### INDUSTRIES PREDOMINANTLY USING THIS GRADE

CHEMICAL PROCESSES  
NUCLEAR AND POWER  
OIL AND GAS



## Technical Data

### MECHANICAL PROPERTIES

Temper	Annealed	
Tensile Rm	86	ksi (min)
Tensile Rm	590	MPa (min)
R.p. 0.2% Yield	35	ksi (min)
R.p. 0.2% Yield	240	MPa (min)
Elongation (2" or 4D gl)	≥30	% (min)

### PHYSICAL PROPERTIES (Room Temperature)

Specific Heat (0-100°C)	450	J.kg <sup>-1</sup> .°K <sup>-1</sup>
Thermal Conductivity	13.5	W.m <sup>-1</sup> .°K <sup>-1</sup>
Thermal Expansion	14	µm/µm/°C
Modulus Elasticity	211	GPa
Electrical Resistivity	1.26	µohm/cm
Density	8.2	g/cm <sup>3</sup>

### CHEMICAL COMPOSITION (% by weight)

Element	Min	Max
C	-	0.05
Si	-	0.50
Mn	-	0.50
P	-	0.020
S	-	0.015
Al	-	0.500
Cr	27	31
Cu	-	0.50
Fe	7	11
Ti	-	0.50
Ni	Balance	