

# NICKEL ALLOY

# ALLOY 690



## Alloy 690 (UNS N06690)

Alloy 690 is a high-chromium nickel-based alloy known for its exceptional resistance to corrosion and high-temperature environments. It is often referred to as Inconel 690, and it belongs to the same family of alloys as Inconel 600 and Inconel 601.

Alloy 690 is specifically designed to provide superior resistance to oxidation and corrosion in a variety of aggressive conditions, making it suitable for demanding applications.

One of the primary advantages of Alloy 690 is its outstanding resistance to a wide range of corrosive environments, including acids, alkalis, and other chemicals. It is particularly well-suited for environments containing sulfuric acid, hydrochloric acid, and other aggressive chemicals.

Alloy 690 can withstand high temperatures, making it suitable for applications in elevated-temperature environments.

### AVAILABLE TUBE PRODUCT FORMS

STRAIGHT

SEAMLESS

### TYPICAL MANUFACTURING SPECIFICATIONS

ASTM B167

Also individual customer specifications

### TYPICAL APPLICATIONS

HEAT EXCHANGERS

STEAM GENERATORS AND SUPERHEATERS

HIGH TEMPERATURE APPLICATIONS

NUCLEAR REACTOR COMPONENTS

### 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	Ohm-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	