

# NICKEL ALLOY

# ALLOY 400



## Alloy 400 (UNS N04400)

Alloy 400 (UNS N04400) is a solid-solution alloy that can be hardened only by cold working. It has high strength and toughness over a wide temperature range and excellent resistance to many corrosive environments.

Alloy 400 is widely used in many fields, especially marine and chemical processing. Typical applications are valves and pumps; pump and propeller shafts; marine fixtures and fasteners; electrical and electronic components; springs; chemical processing equipment; gasoline and fresh water tanks; crude petroleum stills, process vessels and piping; boiler feedwater heaters and other heat exchangers; and deaerating heaters.

### AVAILABLE TUBE PRODUCT FORMS

STRAIGHT | COILED | SEAMLESS

SEAM WELDED, COLD REDRAWN AND ANNEALED

### TYPICAL MANUFACTURING SPECIFICATIONS

ASTM B163      AMS 4574

ASTM B165      BS3074

Also individual customer specifications

### TYPICAL APPLICATIONS

HEAT EXCHANGERS

STEAM GENERATORS

REBOILER TUBES

BRINE HEATERS AND EVAPORATOR BODIES IN SALT PLANT

NUCLEAR CORE COOLING TUBES

SULPHURIC AND HYDROFLUORIC ACID ALKYLATION PLANT

CONTROL LINES

### INDUSTRIES PREDOMINANTLY USING THIS GRADE

CHEMICAL PROCESSES

OIL AND GAS

NUCLEAR AND POWER



## Technical Data

### MECHANICAL PROPERTIES

Temper	Annealed	
Tensile Rm	70	ksi (min)
Tensile Rm	480	MPa (min)
R.p. 0.2% Yield	28	ksi (min)
R.p. 0.2% Yield	195	MPa (min)
Elongation (2" or 4D gl)	40	% (min)

### PHYSICAL PROPERTIES (Room Temperature)

Specific Heat (0-100°C)	427	J.kg <sup>-1</sup> .°K <sup>-1</sup>
Thermal Conductivity	21.8	W.m <sup>-1</sup> .°K <sup>-1</sup>
Thermal Expansion	13.9	mm/m/°C
Modulus Elasticity	173	GPa
Electrical Resistivity	5.47	μohm/cm
Density	8.83	g/cm <sup>3</sup>

### CHEMICAL COMPOSITION

(% by weight)

Element	Min	Max
C	-	0.3
Si	-	0.5
Mn	-	2
S	-	0.24
Cu	Balance	
Fe	-	2.50
Ni	63	70