

# NICKEL ALLOY

# ALLOY 825



## Alloy 825 (UNS N08825)

Alloy 825 (UNS N08825) is an austenitic nickel-iron-chromium alloy with additions of molybdenum, copper and titanium. It was developed to provide exceptional corrosion resistance in both oxidizing and reducing environments. The alloy is resistant to chloride stress-corrosion cracking and pitting.

The addition of titanium stabilizes Alloy 825 against sensitization in the as-welded condition making the alloy resistant to intergranular attack after exposure to temperatures in a range that would sensitize unstabilized stainless steels. The fabrication of Alloy 825 is typical of nickel-base alloys, with material being readily formable and weldable by a variety of techniques.

### AVAILABLE TUBE PRODUCT FORMS

STRAIGHT | COILED | SEAMLESS

SEAM WELDED AND COLD REDRAWN

SEAM WELDED, COLD REDRAWN AND ANNEALED

### TYPICAL MANUFACTURING SPECIFICATIONS

ASTM B163    ASTM B423    ASTM B704

Also individual customer specifications

### TYPICAL APPLICATIONS

CONDENSERS

OIL AND GAS WELL EQUIPMENT

HYDRAULIC SYSTEMS

CHEMICAL INJECTION LINES

CHEMICAL PROCESS EQUIPMENT AND VESSELS

DOWNHOLE CONTROL LINES

CONTROL AND INSTRUMENTATION

ACID PRODUCTION

NUCLEAR FUEL PROCESSING

### INDUSTRIES PREDOMINANTLY USING THIS GRADE

OIL AND GAS

CHEMICAL PROCESSES

NUCLEAR AND POWER



## Technical Data

### MECHANICAL PROPERTIES

Temper	Annealed	
Tensile Rm	85	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)	440	J.kg <sup>-1</sup> .°K <sup>-1</sup>
Thermal Conductivity	11.1	W.m <sup>-1</sup> .°K <sup>-1</sup>
Thermal Expansion	14.0	mm/m/°C
Modulus Elasticity	196	GPa
Electrical Resistivity	1.13	μohm/cm
Density	8.13	g/cm <sup>3</sup>

### CHEMICAL COMPOSITION (% by weight)

Element	Min	Max
C	-	0.05
Si	-	0.50
Mn	-	1
P	-	0.030
S	-	0.030
Al	-	0.20
Cr	19.50	23.50
Cu	1.5	3.00
Fe	Balance	
Mo	2.50	3.50
Ni	38	46
Ti	0.60	1.20