

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 ⁻¹ .°K ⁻¹
Thermal Conductivity	11.1	W.m ⁻¹ .°K ⁻¹
Thermal Expansion	14.0	mm/m/°C
Modulus Elasticity	196	GPa
Electrical Resistivity	1.13	Ohm-cm
Density	8.13	g/cm ³

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