

NICKEL ALLOY

ALLOY 825

(UNS N08825)

Application

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**

Typical manufacturing specifications

ASTM B163, ASTM B423, ASTM B704

Also individual customer specifications.

Industries predominantly using this grade

Oil and gas, Chemical processes,

Nuclear and power etc.

Maximum Coil Length per Dimension (Unit : meter)

		Wall thickness (mm)					
		0.51	0.71	0.89	1.24	1.65	2.11
Outside diameter (mm)	3.175	2877	2235	1923	-	-	-
	6.35	1313	977	805	617	-	-
	9.53	850	625	509	380	301	250
	12.7	-	459	372	275	214	175
	19.05	-	-	242	177	136	109
	25.4	-	-	-	131	100	80

can provide longer length according to customer requirement

Technical Data

Chemical composition(% by weight)

Element	Ni	Cr	Mn	C	Cu	Si	S	Al	Ti	Mo	-	-
Minimum	38.0	19.5	-	-	1.5	-	-	-	0.6	2.5	-	-
Maximum	46.0	23.5	1.0	0.05	3.0	0.5	0.03	0.2	1.2	3.5	-	-
Aiming	40	20	0.6	0.01	1.7	0.3	0.0005	0.1	0.7	2.7	-	-

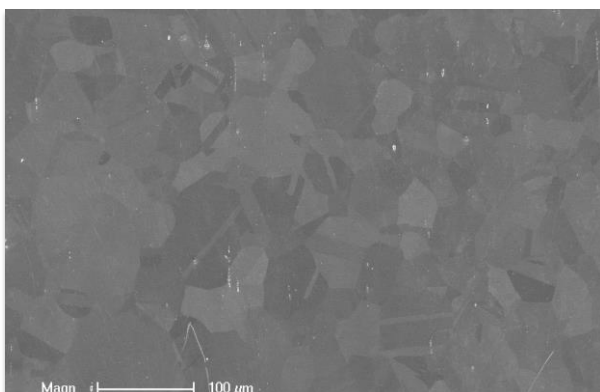
Mechanical Properties

	Specifications(Tubing, Annealed)		Actual data	
Tensile Rm	85	ksi (min.)	92~104	ksi
Tensile Rm	586	MPa (min.)	640~720	MPa
Yield (R.p. 0.2%)	35	ksi (min.)	37~62	ksi
Yield (R.p. 0.2%)	241	MPa (min.)	260~430	MPa
Elongation	30	% (min.)	35~50	%

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	mm/m.°C
Modulus Elasticity	196	GPa
Electrical Resistivity	113	μohm.cm
Density	8.13	g/cm ³

Microstructure



Maximum allowable pressure (Unit : BAR)

		Wall thickness (mm)						
		0.89	1.24	1.65	2.11	2.77	3.96	4.78
Outside diameter (mm)	6.35	451	656	898	1161	-	-	-
	9.53	290	416	573	754	1013	-	-
	12.7	214	304	415	546	742	-	-
	19.05	-	198	267	349	470	-	-
	25.4	-	147	197	256	343	509	630
	31.8	-	116	156	202	269	396	488
	38.1	-	-	129	167	222	325	399
	50.8	-	-	96	124	164	239	292

* We follow customer requested dimensions.

* Select tubes according to design pressure