ALLOY 825 NICKEL TUBING

Alloy 825 is an austenitic nickel-iron-chromium alloy defined by additions of molybdenum, copper, and titanium. It was developed to provide exceptional resistance to numerous corrosive environments, both oxidizing and reducing. With a nickel content range between 38–46%, this grade exhibits pronounced resistance to stress corrosion cracking (SCC) induced by chlorides and alkalies. The chromium and molybdenum content provides good pitting resistance in all environments except strongly oxidizing chloride solutions. Utilized as an effective material in a wide variety of process environments, Alloy 825 maintains good mechanical properties from cryogenic temperatures to 1,000° F.

PRODUCT SPECIFICATIONS

ASTM B163, B829 / ASME SB163 / NACE MR0175

SIZE RANGE

Outside Diameter (OD)	Wall Thickness
.250"–.750"	.035"–.095"

Cold Finished and Bright Annealed Tube

CHEMICAL REQUIREMENTS

ALLOY 825 (UNS N08825)
COMPOSITION %

Ni	Nickel	38.0–46.0
Cu	Copper	1.5–3.0
Mo	Molybdenum	2.5–3.5
Fe	Iron	22.0 min
Mn	Manganese	1.0 max
C	Carbon	0.05 max
Si	Silicon	0.5 max
S	Sulfur	0.03 max
Cr	Chromium	19.5–23.5
Al	Aluminum	0.2 max
Ti	Titanium	0.6–1.2

DIMENSIONAL TOLERANCES

OD	OD Tolerance	Wall Tolerance
.250"–.500" excl	+.004"/-.000"	± 10%
.500"–.750" incl	+.005"/-.000"	± 10%

MECHANICAL PROPERTIES

Yield Strength	35 ksi min
Tensile Strength	85 ksi min
Elongation (min 2")	30%
Hardness (Rockwell B Scale)	90 HRB max

OD	Wall	ID	Lbs./Ft.	Bursting PSI	Working PSI
1/4" (.250")	.035	.180	.0834	21,420	5,355
	.049	.152	.1092	29,988	7,497
3/8" (.375")	.035	.305	.1319	14,280	3,570
	.049	.277	.1771	19,992	4,998
	.065	.245	.2233	26,520	6,630
1/2" (.500")	.035	.430	.1804	10,710	2,678
	.049	.402	.2449	14,994	3,749
	.065	.370	.3134	19,890	4,973
3/4" (.750")	.065	.620	.4935	13,260	3,315
	.095	.560	.6897	19,380	4,845

All pressure ratings are approximate and for illustration purposes only. Values are not guaranteed or warrantied.

TYPICAL APPLICATIONS

Oil & Gas Production - Sour Gas & Oil Wells
Acid Production - Sulphuric & Phosphoric
Pollution Control - Sulfur-Containing Flue Gas
Pickling Operations - Heating Coils & Tanks
Radioactive Waste Handling - Fuel Element Dissolvers
Food Processing Equipment

FABRICATION

This material has excellent formability, typical of nickel-base alloys, allowing the material to be bent to extremely small radii. Annealing after bending is not normally necessary. Upon request, PAC Stainless will provide additional information regarding the heating, hot or cold forming, machining and welding of Alloy 825 product.

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