

# Alloy 825

Alloy 825 is a nickel-iron-chromium alloy with additions of molybdenum, copper, and titanium. The alloy is designed to provide exceptional resistance to many corrosive environments. Alloy 825 is resistant to corrosion in many acids and alkalis under both oxidising and reducing conditions, including sulphuric, sulphurous, phosphoric, nitric and organic acids, alkalis such as sodium or potassium hydroxide, and aqueous chloride solutions. High nickel content gives the alloy virtual immunity to stress corrosion cracking and good resistance to pitting and crevice.

Alloy 825 is a versatile general engineering alloy that exhibits good mechanical properties at both room and elevated temperatures (over 1000 °F).

### Typical applications include:

- Chemical processing
- Pollution control
- Oil and gas recovery
- Acid production
- Nuclear fuel reprocessing

Typical Composition	
Element	Weight (%)
Carbon	0.05 max
Manganese	1.00 max
Chromium	19.5 to 23.5
Nickel	38.0 to 46.0
Molybdenum	2.5 to 3.5
Iron	22.0 min
Titanium	0.06 to 1.2
Aluminium	0.2 max
Copper	0.5 to 3.0

Typical Specifications	
Product	Standard
Bar	ASTM B425
Forging	ASTM B564
Tube	ASTM B423
Other	NACE MR0175 NACE MR0103
UNS No.	N08825

Refer to page 9 for product availability.



**Tubing Specification:** High Quality, Fully Annealed, Alloy 825 Tubing to ASTM B163 or B423 Grade UNS N08825. Recommended Tube Hardness 80 HRB. Maximum Permissible Hardness 90 HRB.

Table 7	Alloy 825			Imperial
	Wall Thickness, inches			
Tube O.D. Size	0.035	0.049	0.065	0.083
1/4	5400	8700	11100	
3/8	3500	5500	7600	
1/2	2700	4300	5900	

Working pressure is measured in 'psig'

Table 8	Alloy 825				Metric
	Wall Thickness, mm				
Tube O.D. Size	0.8	1	1.2	1.5	2
6	260	450	610	730	
10		260	350	440	
12		210	280	360	

Working pressure is measured in 'bar'

- Not recommended for gas service
- Recommended for all services - standard assembly
- Recommended for all services - Use pre-assembly tool
- No data/Not recommended/No solution