



825 (UNS N08825)

825 is typically supplied as a cold worked solid solution nickel-based alloy, capable of meeting the severe challenges of high temperature, high pressure, sour wells. The alloy is classified in MR0175/ISO15156 as a type 4c alloy, with no restrictions to partial pressure of H₂S below 270F and resistant to 100 psi H₂S at 425°F.

NOMINAL COMPOSITION

Chromium 21%

Nickel 42%

Molybdenum 3%

Iron Balance

API 5CRA / ISO 13680 Group 4 Category 21-42-3

Grade	Yield Strength min. (ksi)	Tensile Strength min. (ksi)	Elongation min. (%)	NACE MR0175/ISO 15156 Environmental Limits
110	110	115	11	Table A.14 Type 4c
125	125	130	10	Table A.14 Type 4c
140	140	145	9	N/A

TYPICAL MECHANICAL PROPERTIES

Grade	Yield Strength (ksi)	Tensile Strength (ksi)	Charpy V-Notch Toughness (ft-lbs at 14F)
110	122	130	72
125	138	149	55

TYPICAL PHYSICAL PROPERTIES

		70°F	200°F	400°F
Density	lbs/cu ³ .	0.29		
Thermal Expansion	X10 ⁻⁶ /deg F	8	8	8.5
Elastic Modulus	psi x 10 ⁶	28.3	27.9	27.1
Poisson Ratio		0.3	0.3	0.3
Thermal Conductivity	Btu/ft h °F	6.4	7.1	8.1
Specific Heat	Btu/lb °F	0.11	0.12	0.12