

Alloy 718

Grade: Alloy718 (UNS N07718, ASTM B637, API 6A CRA 1st Edition Addendum 3)

Type: Solution annealed and age hardened Nickel alloy.

Nominal Composition	
Element	Weight %
Carbon	0.045 max
Silicon	0.35 max
Manganese	0.35 max
Phosphorus	0.010 max
Sulphur	0.010 max
Molybdenum	2.8 – 3.3
Chromium	17.0 – 21.0
Nickel	50 – 55.0 max
Aluminium	0.4 – 0.6
Titanium	0.80 – 1.15
Niobium + Tantalum	4.87 – 5.20
Copper	0.23 max
Cobalt	1.0 max
Iron	Balance

Notes

Mechanical Properties Condition: Solution annealed followed by age hardening

Property	Values
Ultimate Tensile Strength	150 min Ksi (1034Mpa)
0.2 % Yield Strength	120 min Ksi (827Mpa)
Elongation	20 % min
Reduction of Area	≤10" 35% min / >10" 25%
CVN @ -60°C * see notes	< 3" 68J ave / 61J single / 0.38mm lats (L) ≥3" - 10" 47J ave / 41J single / 0.38mm lats (T) >10" 41J ave / 37J single / 0.38mm lats (T)
Hardness	NACE (40 HRC max)

Notes:

L = Longitudinal direction, T = Transverse direction

Overview

Grade has very high strength and 140 ksi (40HRC Maximum) and 150ksi (45HRC Maximum) yield strengths can be achieved with modified aging cycle as per API 6ACRA Issue 1 Addendum 3, excellent subzero impact properties even at higher strengths.

Excellent corrosion resistance and so is used in a range of severe corrosive environments for applications such as hangers, gates and stems.

Maximum hardness shown is based on compliance with NACE MR0175 / ISO 15156.