

Alloy 718

UNS N07718

NiWire produces Alloy 718 (UNS N07718) specially used in oil field applications. This nickel alloy is produced under the specification NACE MR0175 which requires the solution annealed and aged material to meet a maximum hardness of 40 HRC. NiWire uses double vacuum melting to keep the residual elements, carbides, nitrides and oxides at low levels. Specifically, carbon was specified to .045% max, and P, S, Pb, Se, and Bi were specified to ppb levels. Ti, Al and Nb levels were tightly controlled as well.

Specification

NiWire's production follows: *NACE MR0175, API 6A718*

Chemical Composition

Composition limits: 50.0 to 55.0 min Ni; 17.0 to 21.0 Cr; 4.87 to 5.20 Nb+Ta; 2.80 to 3.30 Mo; 0.80 to 1.15 Ti; 0.40 to 0.60 Al; 1.00 max Co; 0.045 max C; 0.35 max Mn; 0.35 max Si; 0.01 P; 0.01 S; 0.006 max B; 0.23 max Cu; 0.001 max Pb; 0.0005 max Se; 0.00005 max Bi; 0.003 max Ca; 0.006 max Mg; bal Fe

Applications

Typical uses: Downhole tools such as subsurface safety valves, packers, flow control devices and other tools. Also used for wellhead components and valve bodies.

Physical Properties

Density: 8.19 g/cm³ (0.296 lb/in.³)

Melting range: 1260 to 1336 °C (2300–2437 °F)

Mechanical Properties

Minimum properties, API 6A 718 bar, solution annealed & aged condition:

Properties	Minimum	Maximum
Tensile Strength, ksi	150	-
Yield Strength (0.2% Offset), ksi	120	140
Elongation, %	20	-
Reduction of Area, %	25	-
Impact Strength, ft•lb min. aver.	40	-
Hardness, HRC	30	40

Chemical properties

Alloy 718 under NACE specification is highly resistant to chloride and sulfide stress corrosion cracking. And has the same good corrosion resistance as standard Alloy 718.