Inconel 718

Inconel 718 is a nickel and cobalt-based superalloy renowned for its exceptional combination of high-temperature strength, corrosion resistance, and mechanical properties. It is favoured in industries that require materials capable of withstanding challenging environments and demanding conditions.

When heat treated, Inconel 718 demonstrates impressive tensile strength, making WAM® produced parts more valuable to Offshore and Marine applications, Chemical Processing plants, and hostile environments containing corrosive gases and acids.

Wire Classification

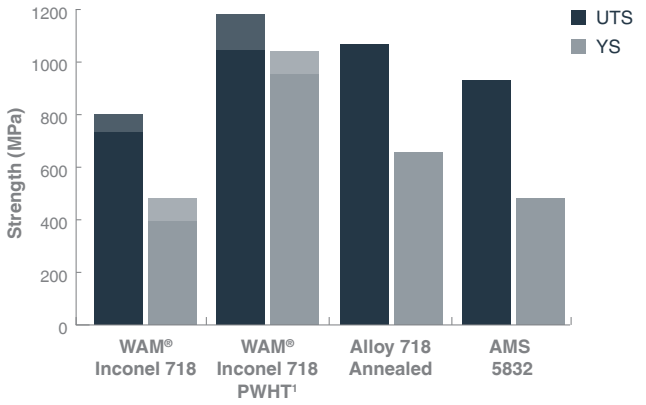
AWS A5.14 ERNiFeCr-2 EN ISO 18274-S Ni 7718

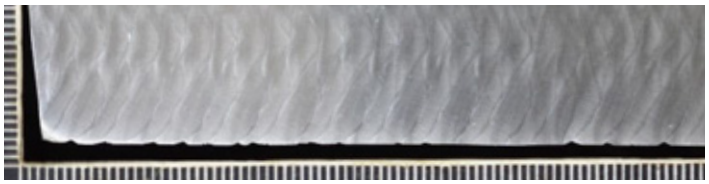
Wire Diameter	Shielding Gas	Process
1.2 mm	Argon	WAM® – DED-Arc

Equivalent Designations

UNS N07718, AMS 5832, ASTM B670, AMS 5596, AMS 5597, PWA 1033, GE B50TF15, ASTM B670, ASTM B637, AMS 5589, AMS 5590, ASTM B637, AMS 5562, AMS 5663, AMS 5664, PWA 1009, PWA 1010, GE B50TF15, Din 2.4668.

WAM® Inconel 718 Tensile Strength Comparison





Inconel 718 Macro examination.

WAM® Test Number 200023AM-30, 210014AM-01. Mechanical property values for the 'as-deposited WAAM' values are based on the median value and repeatability testing. Deposited density can be lower than wire density. AWS data source: D20.1/D20.1M:2019 Specification for Fabrication of Metal Components Using Additive Manufacturing.

Properties

Composition	Amount %
Carbon	≤0.08
Manganese	≤0.35
Nickel	50 - 55
Phosphorus	≤ 0.015
Sulfer	≤ 0.015
Silicon	≤ 0.35
Copper	≤ 0.3
Iron	Rest
Aluminium	0.2 - 0.8
Titanium	0.65 - 1.15
Chromium	17 - 21
Niobium+Tantalum	4.75 - 5.5
Cobalt	≤ 1.0
Molybdenum	2.8 - 3.3

Mechanical	WAM® X, Z Typical	WAM® X, Z Typical	AWS Typical
Ultimate Tensile Strength (MPa)	780 - 800	1130 - 1180	275 - 331
0.2% Proof stress (MPa)	400 - 480	970 - 1040	124 - 224
Reduction in area (%)	NA	NA	NA
Elongation (%)	32 - 35	7 - 12	-
Condition	as built	PWHT¹	
Classification	AWS A5.90		
Density (kg/m³)	8440		

Note:

- **PWHT¹**:
  Solutionised, quenched and aged for 18 hours, as per AMS-5662M.

  Discuss specifics on PWHT with AML3D.

35 Woomera Avenue
Edinburgh SA 5111 Australia
info@aml3d.com | +61 8 8258 1658
www.aml3d.com