

# Inconel ® 718

## Product Data Sheet

## High strength superalloy

Excellent yield strength which works efficiently in low temperature service

Inconel 718 ® is a precipitation hardenable nickel-based alloy designed specifically to display exceptionally high creep-rupture, tensile and yield properties at temperatures up to 1300°F.

The alloy has excellent weldability when compared to the nickel-base superalloys hardened by aluminium and titanium. The material is used for jet engine, high-speed airframe parts such as wheels, buckets, spacers, and high temperature bolts and fasteners. It is also used in the oil and gas sector for wellhead components.

This material is resistant to corrosion, stress corrosion and fatigue, with good strength and ductility in sub-zero temperatures.

### Typical Applications:

- Exhaust systems
- Connecting rod bolts
- Race engine valves
- Hot structural aerospace applications
- Safety valves
- Gas turbines
- Jet engine components
- Rocket motors
- Wellhead components

### About Smiths High Performance

Smiths High Performance is a leading stockholder and supplier of high performance engineering materials to the global motorsport sector. We are supply partners in a range of specialist motorsport markets including Formula 1, Formula E, NASCAR, MOTO GP, WEC & WRC.

Further technical data available on the reverse of this Datasheet



### Material Specifications

- AMS 5596 (sheet, strip and plate)
- AMS 5662/5663 (bar and billet)
- AMS 5832 (wire)
- AMS 5589/5590 (seamless tubular products)
- NACE MRO175 (oil and gas specification)

The UNS number for this material is NO7718.

## Chemical Composition

Weight %	Ni + Co	Cr	Fe	Nb +Ta	Mo	Ti	Al
Min:	50 - 55%	17 - 21%	BAL	4.75 - 5.5%	2.8 - 3.3%	0.65 - 1.15%	0.2 - 0.8%

## Mechanical Properties

Condition	Approximate Tensile Strength		Approximate Service Temperature	
Annealed	800 - 1000 N/mm <sup>2</sup>	116 - 145 ksi	-	-
No1 Sprint Temper	1000 - 1200 N/mm <sup>2</sup>	145 - 175 ksi	-	-
No 1 Spring Temper + Annealed + Aged	1250 - 1450 N/mm <sup>2</sup>	181 - 210 ksi	-200 to 550° C	-330 to 1020° F
Sprint Temper	1300 - 5100 N/mm <sup>2</sup>	189 - 218 ksi	-	-
Spring Temper + Annealed + Aged	1250 - 1450 N/mm <sup>2</sup>	181 - 210 ksi	-200 to 550° C	-330 to 1020° F

## Product Summary

- Precipitation hardening nickel based alloy
- Excellent resistance to stress corrosion cracking
- Excellent corrosion & fatigue resistance
- Excellent weldability
- Good strength and ductility
- Excellent yield strength
- Excellent tensile strength
- Non-magnetic and spark resistant
- Used in motorsport, aerospace and oil & gas sector
- Processing operations available in-house
- Offered to customers ex-stock
- Testing available via our in-house UKAS laboratory

...where performance matters...

When you purchase high performance materials from **Smiths High Performance**, you will be joining some of the biggest and best global engineering companies. We are a Tier 1 supply chain partner to the world's leading motorsport companies. Our unique business structure and ethos allows us to offer services which are otherwise unavailable in this market sector.