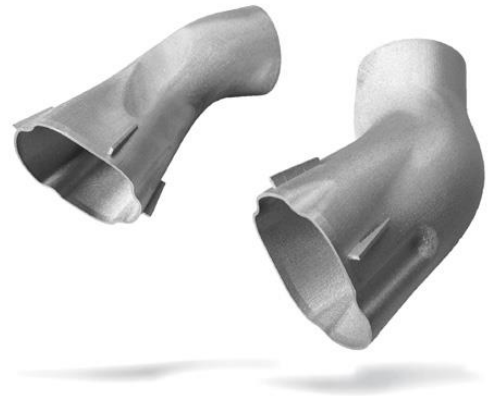


ZARE

SLM/DMLS

INCONEL 718



INCONEL 718 is a heat and corrosion resistant nickel alloy. Parts built from INCONEL 718 have chemical composition corresponding to UNS N07718, AMS 5662, AMS 5664, W.Nr 2.4668, DIN NiCr19Fe19NbMo3. This kind of precipitation-hardening nickel-chromium alloy is characterized by having good tensile, fatigue, creep and rupture strength at temperatures up to 700 °C (1290 °F). This material is ideal for many high temperature applications such as gas turbine parts, instrumentation parts, power and process industry parts etc. It also has excellent potential for cryogenic applications. Parts built from INCONEL 718 can be easily post-hardened by precipitation-hardening heat treatments. In both as-built and age-hardened states the parts can be machined, sparkeroled, welded, micro shot-peened, polished and coated if required.

Technical Data

Typical part accuracy (Quote <150 mm)	± 0.2/0.3mm
Typical part accuracy (Quote ≥150 mm)	± 0.05 every 25mm
Surface Roughness (as built)	Ra: 6/7µm
Surface Roughness (after machining)	Ra < 1.6µm

Heat Treatment

Annealing		Ageing	
Temperature	Time	Temperature	Time
0° – 980°	-	0° – 720°	-
980°	1	720°	8
980° - 0°	-	720° - 620°	2
		620°	8
		620° - 0°	-

Physical and Chemical properties

Chemical composition

Ni	50 – 55 %
Cr	17 - 21 %
Nb	4,75 – 5,50 %
Mo	2,80 – 3,30 %
Ti	0,65 – 1,15 %
Al	0,20 – 0,80 %
Co	≤ 1 %
Cu	≤ 0,3 %
C	≤ 0,08 %
Si / Mn	≤ 0,35 %
P / S	≤ 0,015 %

Physical properties

Relative Density	Approx. 99,99 %
Density	8,15 g/cm ³

Mechanical properties

	Test Method	As Build	Heat Treated
Tensile Strenght	ISO 6892-1:2009(B) Annex D	980 ± 50 MPa	Min. 1250 MPa
Yield Strenght (R _p 0.2%)	ISO 6892-1:2009(B) Annex D	700 ± 50 MPa	Min. 1050 MPa
Elongation at Break	ISO 6892-1:2009(B) Annex D	28 ± 3%	Min. 10 %
Young's Modulus	-	160 ± 20 GPa	170 ± 20 GPa
Hardness	DIN EN ISO 6508-1	Approx. 30 HRC	Approx. 45 HRC

Thermal properties

Max. Operating Temp.	-	Approx. 650°C
Oxidation Resistance to	-	Approx. 980° C

The information presented are typical values intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes.

End-use material performance can be impacted (+/-) by, but not limited to, part design, end-use conditions, etc. Actual values will vary with build conditions.

Product specifications are subject to change without notice.

The performance characteristics of these materials may vary according to application, operating conditions, or end use. Each user is responsible for determining that the material is safe, lawful and technical suitable for the intended laws and regulations. Zare makes no warranties of any kind, express or implied, including, but not limited to, the warranties of merchantability, fitness for a particular use, or warranty against patent infringement. All Trademarks included in this document are property of the respective owner.