

Material data Sheet: Inconel 718 As-Built

Description:

Parts built from NickelAlloy IN718 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 NickelAlloy IN718 can be easily post-hardened by precipitation-hardening heat treatments. In both as-built and age-hardened states the parts can be machined, sparkeroded, welded, micro shot-peened, polished and coated if required.

Physical properties:		
Density:	8,15	g/cm ³
Relative density:	99,90	%

Mechanical properties*:			
Yield strength (Rp 0,2%):	630,00	±50	MPa
Tensile strength (UTS):	980,00	±50	MPa
Elastic modulus:	160,00		GPa
Elongation at break:	31,00	±5	%

* Test on as-built specimens

Geometrical data:			
Layer Thickness:	40		µm
Typical part accuracy:	±0,30	mm	(approx)
Smallest wall thickness:	0,3 - 0,4	mm	(approx)
Surface roughness:			
As built:	Ra	13	±5
After shot peening:	Ra	5	±2

Chemical composition*:		
Fe	Balance	
Ni	50-55	%
Nb	4,75-5,5	%
Mo	2,8-3,3	%
Ti	0,65-1,15	%
Al	0,2-0,8	%
Co	≤ 1,00	%
Cu	≤ 0,30	%
C	≤ 0,08	%
Si	≤ 0,35	%
Mn	≤ 0,35	%
P	≤ 0,015	%
S	≤ 0,015	%
B	≤ 0,006	%

* Chemical composition of the powder

The reported values have to be considered only just for reference.