

DATA SHEET

ALLOY 718 | 2.4668

Major specifications

UNS N07718 | AMS 5662 | AMS 5663 | ASTM B637 | AMS 5596 | ASTM B670 | DMD 424 - 22 | API 6A | NACE MR0175

Product forms

Round bars in AMS 5662

Round bars in AMS 5663

Sheets and plates

Plates ≤ 25,4 mm according to AMS 5596

The current Stock Range can be found on www.sd-metals.com. Further dimensions available upon request.

Key features

Alloy 718 is a precipitation hardened nickel-chromium alloy with additions of niobium, molybdenum, aluminium and titanium for improved corrosion resistance combined with extremely high strength and excellent weldability, including resistance to cracking after welding. For aerospace applications (AMS 5662/5663) Alloy 718 has excellent creep rupture strength at temperatures up to 700 °C. Alloy 718 achieves its strength through a precipitation hardening heat treatment and can be supplied in the annealed condition (AMS 5662) for ease of fabrication, requiring later heat treatment to develop full strength, or in the fully precipitation strengthened condition (AMS 5663).

Though originally developed for aerospace applications the unique combination of strength and corrosion resistance of alloy 718 made it candidate for applications in the oil and gas sector. As well environments became more severe stress corrosion and hydrogen embrittlement became a challenge the chemistry and microstructure of alloy 718 was optimised to offer the greatest resistance and distinguishes today's oil field grade (API 6A) from aerospace grades. For oil and gas applications alloy 718 is produced to meet API 6A and NACE MR0175 requirements. The specification API6A has tighter controls on chemistry and is heat treated following a different solution annealing and precipitation hardening procedure as compared to the AMS specifications.

With different specification and heat treatment procedures resulting in optimised properties for the industry sector it is important to understand which specification is required.

Areas of application

Gas turbine compressor blades, disks and shafts; high strength springs; high strength fasteners; pumps and valves.

CHARACTERISTIC

Chemical composition - limits in %

	AMS5662/5663	API 6A
Ni	50.0 - 55.0	50.0 - 55.0
Cr	17,0 - 21,0	17,0 - 21,0
Nb	4,75 - 5,50	4,87 - 5,20
Mo	2,80 - 3,30	2,80 - 3,30
Co	max. 1,00	max. 1,00
Ti	0,65 - 1,15	0,80 - 1,15
Al	0,20 - 0,80	0,40 - 0,60
Mn	max. 0,35	max. 0,35
C	max. 0,08	max. 0,045
P	max. 0,015	max. 0,010
S	max. 0,015	max. 0,010
Pb	max. 0,0005	max. 0,001
Se	max. 0,0003	max. 0,0005
Bi	max. 0,00003	max. 0,00005
Fe	Rest	Rest

Physical constants and thermal properties

Density	8,19 g/cm ³
Melting point	1260 - 1336 °C
Thermal conductivity at 20°C	9,5 W/m • °C
Coefficient of expansion at 21 - 93°C	13 µm/m • °C

Typical mechanical properties (room temperature)

AMS 5663	
Streckgrenze	min. 1034 MPa
Zugfestigkeit	min. 1275 MPa
Dehnung	min. 12 %
AMS 5596	
Streckgrenze	min. 1034 MPa
Zugfestigkeit	min. 1240 MPa
Dehnung	min. 12 %
API 6A	
Streckgrenze	min. 827 MPa
Zugfestigkeit	min. 1034 MPa
Dehnung	min. 20%
Härte	32-40 HRC*

*NACE MR0175 requires hardness 40 HRC max. only.
All information is subject to change without notice.

The properties correspond to the material in the heading.
They may vary for other specifications. Please contact us for more details.

Do you have any questions? Contact us:

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