

This page is mainly introduced the Inconel 718 chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of Inconel 718, such as it is commonly used in bars, sheet, plates, steel coils, steel pipes, forged and other materials application.

Data Table for Grades Superalloys Inconel 718

Inconel 718 Standard Number:		
ITEM	Standard Number	Descriptions
1	SAE AMS 5383E (2007)	Nickel Alloy, Corrosion and Heat-Resistant, Investment Castings 52.5Ni - 19Cr - 3.0Mo - 5.1Cb(Nb) - 0.90Ti - 0.60Al - 18Fe Vacuum Melted Homogenization and Solution Heat Treated
2	SAE AMS 5589F (2013)	Nickel Alloy, Corrosion and Heat-Resistant, Seamless Tubing 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode Remelted or Vacuum Induction Melted 1775°F (968°C) Solution Heat Treated
3	SAE AMS 5590F (2010)	Nickel Alloy, Corrosion and Heat Resistant, Seamless Tubing 52.5Ni - 19Cr - 3.0Mo - 5.1Cb - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1950°F (1066°C) Solution Heat Treated
4	SAE AMS 5596K (2007)	Nickel Alloy, Corrosion and Heat-Resistant, Sheet, Strip, Foil and Plate 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode Remelted or Vacuum Induction Melted 1775°F (968°C) Solution Heat Treated
5	SAE AMS 5597F (2009)	Nickel Alloy, Corrosion and Heat Resistant, Sheet, Strip, and Plate 52.5Ni - 19Cr - 3.0Mo - 5.1Cb - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1950°F (1066°C) Solution Heat Treated
6	SAE AMS 5662M (2009)	Nickel Alloy, Corrosion and Heat-Resistant, Bars, Forgings, and Rings 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1775°F (968°C) Solution Heat Treated, Precipitation-Hardenable
7	SAE AMS 5663M (2009)	Nickel Alloy, Corrosion and Heat-Resistant, Bars, Forgings, and Rings 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1775°F (968°C) Solution and Precipitation Heat Treated
8	SAE AMS 5664E (2006)	Nickel Alloy, Corrosion and Heat Resistant, Bars, Forgings, and Rings 52.5Ni - 19Cr - 3.0Mo - 5.1Cb - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1950°F (1066°C) Solution Heat Treated, Precipitation Hardenable
9	SAE AMS 5832G (2010)	Nickel Alloy, Corrosion and Heat Resistant, Welding Wire 52.5Ni - 19Cr - 3.0Mo - 5.1Cb - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted
10	SAE J 467b (1968)	Special Purpose Alloys ("Superalloys")
11	SAE AMS 5917 (2011)	Metal Injection Molded Nickel Based, Alloy 718 Parts, Hot Isostatically Pressed, Solutioned and Aged

Inconel 718 Chemical composition(mass fraction)(wt.%)		
Chemical	Min.(%)	Max.(%)
C		0.03
Cr	17.0	21.0
Mo	2.80	3.30
Ni	50.0	55.0

Al	0.20	0.60
Nb	4.75	5.50
Fe		Bal
Si		0.35
Mn		0.35
P		0.015
S		0.015
B		0.006

Inconel 718 Physical Properties		
Tensile strength	115-234	σ_b /MPa
Yield Strength	23	$\sigma_{0.2} \geq$ /MPa
Elongation	65	$\delta 5 \geq$ (%)
ψ	-	$\psi \geq$ (%)
Akv	-	$Akv \geq$ /J
HBS	123-321	-
HRC	30	-

Inconel 718 Mechanical Properties		
Tensile strength	231-231	σ_b /MPa
Yield Strength	154	$\sigma_{0.2} \geq$ /MPa
Elongation	56	$\delta 5 \geq$ (%)
ψ	-	$\psi \geq$ (%)
Akv	-	$Akv \geq$ /J
HBS	235-268	-
HRC	30	-

Inconel 718 Heat Treatment Regime				
Annealing	Quenching	Tempering	Normalizing	Q & T
√	√	√	√	√

Inconel 718 Range of products				
Product type	Products	Dimension	Processes	Deliver Status
Plates / Sheets	Plates / Sheets	0.08-200mm(T)*W*L	Forging, hot rolling and cold rolling	Annealed, Solution and Aging, Q+T, ACID-

				WASHED, Shot Blasting
Steel Bar	Round Bar, Flat Bar, Square Bar	Φ8-1200mm*L	Forging, hot rolling and cold rolling, Cast	Black, Rough Turning, Shot Blasting,
Coil / Strip	Steel Coil /Steel Strip	0.03-16.0x1200mm	Cold-Rolled & Hot- Rolled	Annealed, Solution and Aging, Q+T, ACID- WASHED, Shot Blasting
Pipes / Tubes	Seamless Pipes/Tubes, Welded Pipes/Tubes	OD:6-219mm x WT:0.5-20.0mm	Hot extrusion, Cold Drawn, Welded	Annealed, Solution and Aging, Q+T, ACID- WASHED

We can produce Superalloys the specifications follows:

Note:

- (1) listed in the table apex diameter (d), to steel thickness (a) multiples said.
- (2) in the ASTM A6 standard specified scope can meet any additional conditions.
- (3) from the standard for 50 mm (2 in).

Mechanical properties

Mechanische Eigenschaften

Caracteristiques mecaniques

ReH Minimum yield strength / Mindestwert der oberen Streckgrenze / Limite d'élasticité minimale

Rm Tensile strength / Zugfestigkeit / Resistance a la traction

A Minimum elongation / Mindestwert der Bruchdehnung / Allongement minimal

J Notch impact test / Kerbschlagbiegeversuch / Essai de flexion par choc

Round bar:

Diameter : 1mm-2000mm

Square bar:

Size: 50mm * 50mm-600mm *600mm

Plate steel/flat bar:

Size: Thickness: 0.1mm-800mm Width: 10mm to 1500mm

Tube/pipe:

Size: OD: 6-219mm WT: 1-35 mm.

Cold-rolled sheet: Thickness: 2-5mm Width:1000mm Length: 2000mm

Hot-rolled sheet: Thickness:6-80mm Width: 210-610mm

Length: We can supply any length based on the customer's requirement.

Forging/hot rolling/ extrusion of steel.

Forging: Shafts with flanks/pipes/tubes/slugs/donuts/cubes/other shapes

Finished goods condition: hot forging/hot rolling + annealing/normalizing + tempering/quenching + tempering/any conditions based on the customer's requirement

Surface conditions: scaled (hot working finish)/ground/rough machining/fine machining/based on the customer's requirement

Furnaces for metallurgical processing: electrode arc + LF/VD/VOD/ESR/Vacuum consumable electrode.

Ultrasonic inspection: 100% ultrasonic inspection for any imperfections or based on the customer's requirement.

UTS according to SEP 1921 C/c,D/d,E/e;A388 or GB/T 6402

Excellent service for all kinds of industries, with advantages of technologies, equipment and price.

We serve you with our honesty, integrity, and professionalism.