HONGCHEN METAL
INDUSTRIAL METAL MATERIALS

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PRODUCT SPECIFICATIONS · BAR

Inconel 718 Round Bar

Chemical composition, mechanical properties and material characteristics

Features

- Inconel 718 pipe is made of a special type of high-strength superalloy whose nickel-chromium base makes it resistant to corrosion, high pressures and extreme temperatures up to 700°C.
- Due to its unique properties, Inconel 718 pipe has become useful in a wide range of applications from manufacturing operations to military equipment and the aerospace industry.

Typical Applications

- Widely used for aerospace discs, shafts and fasteners, oil-tool components and power-generation hardware that need high strength retained into elevated temperature. Strength depends on the selected aging condition; confirm load and temperature together against the design data sheet.

Product Parameters

Product Name	Inconel 718 Bar
Type	Precipitation-Hardened Nickel Alloy (Inconel 718)
Standard	UNS N07718; ASTM B637 / B670; AMS 5662 / 5663 / 5596 (as ordered)
Surface	Pickled, bright annealed, peeled / turned or polished; clean, low-contamination finish preferred for hot service.
Delivery Condition	Solution annealed and / or age-hardened to the ordered condition (e.g. AMS / ASTM temper).
Scope of Application	Widely used for aerospace discs, shafts and fasteners, oil-tool components and power-generation hardware that need high strength retained into elevated temperature. Strength depends on the selected aging condition; confirm load and temperature together against the design data sheet.
Certificate	EN 10204 3.1 MTC with chemistry and mechanical results; aerospace / oil-tool certifications and third-party inspection available when specified.
Production Technology	Produced by melting practices suited to nickel alloys, then hot worked / cold worked and heat treated to the specified condition. Machining and welding require nickel-alloy procedures. Hot-rolled, forged or cold-drawn routes depending on size; cut-to-length available.
Edge Processing	Cut ends as standard; chamfering, deburring, peeling or centerless grinding available on request.
Outer Diameter	Round Bar
Hexagon Bar	18mm-57mm (11/16″ to 2-3/4″)
Square Bar	18mm-47mm (11/16″ to 1-3/4″)
Flat Steel	1/2 "to 10", Thickness: 2mm-150mm, Can provide customized
Length	1-6 meters, Length can be customized

Chemical Composition

B	C	Al	Si	P	S	Ti	Cr	Mn	Fe	Co	Ni	Cu	Mo	Cb (Nb Ta)
0.006 max	0.08 max	0.20-0.80	0.35 max	0.015 max	0.015 max	0.65-1.15	17.00-21.00	0.35 max	Remainder	1.0 max	50.00 - 55.00	0.30 max	2.80 - 3.30	4.75 - 5.50

Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
180	150	12

Physical Performance

	Units	Temperature in°C
Density	8.19 g/cm³	Room
Specific Heat	0.104 Kcal/kg.C	21°
Melting Range	1260-1366°C	-
Modulus of Elasticity	199.9 KN/mm²	21°
Electrical Resistivity	125 μΩ.cm	Room
Coefficient of Expansion	13.0 μm/m °C	20 - 100°
Thermal Conductivity	11.1 w/m-° K	21°

Selection note: confirm allowable stress at the design temperature / hold time; atmosphere chemistry affects oxidation life.

Related Properties

High-Temperature Strength	Precipitation-hardened nickel alloy that keeps high strength into elevated-temperature aerospace, oil-tool and power-generation service. Confirm load, temperature and aging condition together against the design data sheet.
Oxidation Resistance	Forms a protective scale in hot air and many furnace atmospheres within the recommended range. Aggressive sulfidizing, carburizing or salt-laden gases can attack the scale; atmosphere chemistry and peak temperature should be reviewed together.
Creep & Rupture	Selected nickel and iron-nickel grades provide useful creep and stress-rupture resistance for sustained hot service such as heaters, reformers and turbine-related hardware. Long-term life estimates require grade-specific rupture data at the design stress.
Fabricability	Requires nickel-alloy machining and welding discipline; age after rough machining when final strength is needed. Control residual stress to limit distortion in thin sections.
Thermal Cycling	Repeated heat-up / cool-down can cause scale spalling or thermal-fatigue cracking at edges and welds. Design for expansion, avoid sharp thickness transitions, and follow any required solution or aging treatment after heavy fabrication.

Material guidance for your next project

Send your grade, size and application requirements to our team.

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