HONGCHEN METAL
INDUSTRIAL METAL MATERIALS

PRODUCT DATA SHEET
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PRODUCT SPECIFICATIONS · BAR

Inconel 601 Round Bar

Chemical composition, mechanical properties and material characteristics

Features

- Inconel 601 plate is made of a high-strength, corrosion-resistant nickel-based alloy that is widely used in various high-temperature equipment.
- As a material with good mechanical properties and corrosion resistance, Inconel 601 is widely used in aviation, chemical industry, marine engineering and other fields.

Typical Applications

- Preferred for thermal-processing, radiant tubes and other cyclic high-temperature duties where aluminum helps form a protective oxide scale.

Product Parameters

Product Name	Inconel 601 Bar
Type	Ni-Cr-Al Alloy (Inconel 601)
Standard	UNS N06601; ASTM B168 / B167 / B166
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	Preferred for thermal-processing, radiant tubes and other cyclic high-temperature duties where aluminum helps form a protective oxide scale.
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

C	Al	Si	S	Cr	Mn	Fe	Ni	Cu
0.1 max	1.0-1.7	0.5 max	0.015 max	21.0-25.0	1.0 max	Remainder	58.0-63.0	1.0 max

Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
80	30	30

Physical Performance

	Units	Temperature in°C
Density	8.11 g/cm³	Room
Specific Heat	0.107 Kcal/kg.C	20°
Melting Range	1360-1411°C	-
Modulus of Elasticity	206.5 KN/mm²	20°
Electrical Resistivity	118 μΩ.cm	20°
Coefficient of Expansion	13.75 μm/m °C	20 - 100°
Thermal Conductivity	11.2 w/m-° K	20°

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

Related Properties

High-Temperature Strength	Retains useful tensile and yield strength at temperatures where ordinary stainless softens rapidly. Allowable stress still depends on grade, product form, hold time and whether the duty is continuous or cyclic—always check the design curve for the intended temperature.
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	Can be formed, machined and welded with practices suited to nickel alloys. Expect rapid work hardening, higher cutting forces and the need for clean, low-contamination fabrication to protect later high-temperature performance.
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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