HONGCHEN METAL
INDUSTRIAL METAL MATERIALS

PRODUCT DATA SHEET
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PRODUCT SPECIFICATIONS · PLATE

Inconel 625 Plate

Chemical composition, mechanical properties and material characteristics

Features

- Inconel 625 plate is made of a nickel-based high-temperature alloy composed of nickel, chromium, molybdenum, niobium and other elements.
- It has excellent high temperature resistance, strength and good oxidation resistance, and is widely used in aerospace, energy, chemical industry and other fields.

Typical Applications

- Chosen for seawater, chemical process and aerospace ducting / bellows service where a combination of strength, toughness and broad corrosion resistance is required without mandatory age hardening.

Product Parameters

Product Name	Inconel 625 Plate
Type	Ni-Cr-Mo Alloy (Inconel 625)
Standard	UNS N06625; ASTM B443 / B444 / B446
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	Chosen for seawater, chemical process and aerospace ducting / bellows service where a combination of strength, toughness and broad corrosion resistance is required without mandatory age hardening.
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. Cut-to-length, leveling, plasma / waterjet cutting and surface grinding available.
Edge Processing	Mill, slit or trimmed edge; final edge condition confirmed by thickness, width tolerance and downstream welding / forming needs.
Thickness	0.3mm-200mm
Length	2000mm, 2438mm, 3000mm, 5800mm, 6000mm, 12000mm, etc.
Width	40mm-600mm, 1000mm, 1219mm, 1500mm, 1800mm, 2000mm, 2500mm, 3000mm, 3500mm, etc.

Chemical Composition

C	Mg	Al	Si	P	S	Ti	Cr	Fe	Co	Ni	Mo	Cb (Nb Ta)
0.1 max	0.5 max	0.4 max	0.5 max	0.015 max	0.015 max	0.4 max	20.00 - 23.00	5.0 max	1.0 max	58.0 min	8.0 - 10.0	3.15 - 4.15

Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
120	60	30

Physical Performance

	Units	Temperature in°C
Density	8.44 g/cm³	Room
Specific Heat	0.098 Kcal/kg.C	21°
Melting Range	1290-1350°C	-
Modulus of Elasticity	207.5 KN/mm²	21°
Electrical Resistivity	129 μΩ.cm	21°
Coefficient of Expansion	12.8 μm/m °C	21 - 93°
Thermal Conductivity	9.8 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	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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