HONGCHEN METAL
INDUSTRIAL METAL MATERIALS

PRODUCT DATA SHEET
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PRODUCT SPECIFICATIONS · PLATE

Inconel 686 Plate

Chemical composition, mechanical properties and material characteristics

Features

- Inconel 686 is a nickel-chromium-molybdenum-tungsten alloy selected for high-temperature strength and resistance to localized corrosion, including pitting and crevice attack.

Typical Applications

- Used for chemical process equipment, coastal and marine atmospheres, food / pharmaceutical contact surfaces, heat exchangers, tanks and piping. Grade choice should follow the actual medium, chloride level, temperature and whether welded components remain in corrosive service.

Product Parameters

Product Name	686 Plate
Type	Corrosion-Resistant Alloy / Stainless Steel
Standard	UNS N06686; ASTM B575/B619/B622
Surface	BA, 2B, No.1, No.4, HL, 8K / polished, pickled or passivated as required.
Delivery Condition	Annealed / solution annealed; other tempers available by agreement.
Scope of Application	Used for chemical process equipment, coastal and marine atmospheres, food / pharmaceutical contact surfaces, heat exchangers, tanks and piping. Grade choice should follow the actual medium, chloride level, temperature and whether welded components remain in corrosive service.
Certificate	ISO / SGS / BV and EN 10204 3.1 MTC available; third-party inspection and PMI can be arranged per purchase order.
Production Technology	Hot rolling or cold rolling / drawing according to product form; solution treatment and pickling / passivation applied where corrosion performance or surface quality require it. 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	0.5-100 mm
Width	1000-2500 mm
Length	2000-12000 mm

Chemical Composition

Ni	Cr	Mo	W	Fe	C
Bal	19.0-23.0	15.0-17.0	3.0-4.4	≤5.0	≤0.01

Mechanical Properties

Tensile (MPa)	Yield (MPa)	Elongation (%)
≥690	≥310	≥45

Physical Performance

Density	Melting Range	Modulus
8.73 g/cm³	~1338-1380°C	~207 GPa

Reference: UNS N06686 Inconel 686 datasheet

Related Properties

Corrosion Resistance	Provides practical corrosion resistance in atmospheric exposure, fresh water, food-contact environments and many mild chemical media. Resistance drops when chlorides, reducing acids or high-temperature concentrated solutions become dominant—match the grade to the real medium, temperature and oxygen level.
Formability	Most austenitic corrosion grades form well by bending, rolling, deep drawing and stamping when tooling radii, lubrication and springback are set for the thickness and temper. Work hardening raises strength during cold work; intermediate anneal may be needed for severe multi-stage forming.
Weldability	Generally weldable with common fusion processes. For as-welded corrosive service, prefer low-carbon (L) or stabilized grades, control heat input, and specify filler that preserves corrosion resistance in the weld metal and HAZ. Post-weld cleaning and passivation improve finished performance.
Surface & Cleanliness	Final corrosion behavior is strongly affected by surface finish, free iron contamination and weld discoloration. Pickling, passivation or electropolishing after fabrication is often as important as grade selection for sanitary, marine and chemical equipment.
Selection Notes	Use molybdenum-bearing or higher-alloy variants when pitting, crevice attack or stronger chemical media are expected. Confirm product form (plate, tube, bar, wire) and heat-treatment condition against the project specification before ordering.

Material guidance for your next project

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

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