HONGCHEN METAL
INDUSTRIAL METAL MATERIALS

PRODUCT DATA SHEET
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PRODUCT SPECIFICATIONS · BAR

Monel R-405 Round Bar

Chemical composition, mechanical properties and material characteristics

Features

- Monel R405 plate is made of an alloy with high strength and good corrosion resistance, belonging to the chromium-cobalt superalloy.
- It is widely used in aerospace, petrochemical, marine engineering and other fields due to its excellent properties.

Typical Applications

- A free-machining variant of Monel 400 for high-volume CNC parts that still require Ni-Cu corrosion performance in marine and chemical service.

Product Parameters

Product Name	Monel R-405 Bar
Type	Free-Machining Ni-Cu Alloy (Monel R-405)
Standard	UNS N04405; ASTM B164
Surface	Black, Bright Polished, Rough Turning, Matt Surface Treatment, NO.4, BA, etc.
Delivery Condition	Annealed / solution annealed; other tempers available by agreement.
Scope of Application	A free-machining variant of Monel 400 for high-volume CNC parts that still require Ni-Cu corrosion performance in marine and chemical 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. 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	Si	S	Mn	Fe	Ni	Cu
0.3 max	0.5 max	0.025 - 0.060	2.0 max	2.5 max	63.0 min	28.0 - 34.0

Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
85	50	15

Physical Performance

	Units	Temperature in°C
Density	8.80 g/cm³	Room
Specific Heat	0.102 Kcal/kg.C	21°
Melting Range	1300-1350°C	-
Modulus of Elasticity	179 KN/mm²	Room
Electrical Resistivity	51.1 μΩ.cm	21°
Coefficient of Expansion	14.2 μm/m °C	21 - 100°
Thermal Conductivity	22.0 w/m-° K	21°

Selection note: match grade to medium, temperature, chloride level and whether as-welded corrosion service is required.

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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