

Monel R-405 Datasheet

Monel R405 is a free-machining nickel-copper alloy with excellent corrosion resistance and good mechanical strength, designed for high-speed machining and precision components in marine...

Alloy / Grade	Monel R-405
Common Forms	Round Bar, Hex Bar, Rod, Wire.
Key Feature	Excellent machinability for automatic screw machines.
Service Focus	The increased sulfur content creates manganese sulfide inclusions that break chips easily, allowing for higher cutting speeds and better surface...
Main Standard	Primarily furnished as bar and rod (ASTM B164).

1. Product Overview

Monel R-405 is the free-machining version of Monel 400 . It retains the excellent corrosion resistance and physical properties of Monel 400, but has a controlled amount of sulfur added to create sulfide inclusions that act as chip breakers during machining.

Grade	Core Description	Typical Service Focus
Monel R-405	Monel R-405 is the free-machining version of Monel 400 . It retains the excellent corrosion resistance and...	Select Monel R-405 when you need the corrosion resistance of Monel 400 but your application involves high-...
Supply Capability	Round Bar, Hex Bar, Rod, Wire.	Standard mill forms, cut-to-size material and project supply
Technical Review	Confirm final values by product form, heat treatment and material certificate	The increased sulfur content creates manganese sulfide inclusions that break chips easily, allowing for...

2. Key Features

- Select Monel R-405 when you need the corrosion resistance of Monel 400 but your application involves high-volume production of complex parts on...
- The increased sulfur content creates manganese sulfide inclusions that break chips easily, allowing for higher cutting speeds and better surface...
- Exhibits the same resistance as Monel 400 to sea water, hydrofluoric acid, sulfuric acid, and alkalis in most environments.
- Perfect for manufacturing intricate fasteners , valve components, and small hardware where machining cost is a major factor.

Further information under:	https://www.nickelcasting.com/nickel-alloys/monel-metal-alloys/monel-r405/
Home page:	www.nickelcasting.com
Email:	ni@Nickelcasting.com

Technical Data

The following values are provided as general reference data for engineering review and procurement planning. Confirm final values against the applicable specification, product form, heat treatment condition and material certificate.

3. Chemical Composition (%)

Element	Content (%)
Nickel (Ni)	63.0 min
Copper (Cu)	28.0 - 34.0
Iron (Fe)	2.5 max
Manganese (Mn)	2.0 max
Carbon (C)	0.3 max
Silicon (Si)	0.5 max
Sulfur (S)	0.025 - 0.060

4. Standard Specifications

Product Form	ASTM / ASME Standards
Bar & Rod (Cold-Drawn or Annealed)	ASTM B164, ASME SB164
Wire	ASTM B164

5. Mechanical Properties - Typical at Room Temperature

Property	Typical Values (Room Temp)
Tensile Strength	85 - 115 ksi (586 - 793 MPa)
Yield Strength (0.2% Offset)	50 - 90 ksi (345 - 621 MPa)
Elongation	35 - 15 %
Hardness (Brinell)	160 - 220 HB

Note: Values are typical or specification reference values. Purchase requirements should be confirmed against the required standard, drawing and material test report.

Applications and Ordering Information

Use this section to define inquiry requirements and accelerate technical confirmation for Monel R-405 products.

6. Typical Applications

Industry / Area	Typical Components
Industrial Service	*Note: Properties depend heavily on diameter and temper (annealed vs. cold-drawn).
Chemical / Process Equipment	High-volume production of small, complex components where machining efficiency is critical.
Oil, Gas & Marine	Nuts, bolts , and screws used in corrosive marine or chemical environments.
High-Temperature / Power	Valve seats, stems, and trim that require both corrosion resistance and precision machining.
Precision Components	Internal components for water meters exposed to various water conditions.

7. Available Supply Forms

Pipe & Tube	Plate & Sheet	Bar & Rod
Pipe Fittings	Flanges	Wire & Strip
Forgings	Custom Cutting	Project Supply

8. Information to Include When Requesting a Quote

- Required grade: Monel R-405, with ASTM / ASME / AMS specification if applicable.
- Product form: pipe, tube, plate, sheet, bar, fittings, flanges, forgings or machined parts.
- Dimensions: outside diameter, wall thickness, length, width, thickness or drawing number.
- Quantity, delivery destination and required delivery schedule.
- Special requirements: cutting, machining, heat treatment, NDT, PMI, test report or material certificate.

Company Information	
Address	Shanghai, China
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Home Page	www.nickelcasting.com
Product Page	https://www.nickelcasting.com/nickel-alloys/monel-metal-alloys/monel-r405/

Disclaimer

This datasheet is provided for general reference only. Actual values may vary by product form, heat treatment, manufacturing condition and applicable specification. Please contact us for confirmed specifications, test reports and material certificates before ordering.