

Monel 400 / UNS N44000 / DIN 2.4360

High Temperature Nickel Copper Alloy

Alloy 400 Data Sheet

Introduction

Monel Alloy 400 is a high temperature alloy with typical composition of 67% Nickel & 23% Copper. Due to this exotic combination, it offers great resistance to steam, salt water, alkalis, sulphuric & phosphoric acid. Widely used in marine, chemical & hydrocarbon processing industries. Alloy 400 posses good weldability, workability & general corrosion resistance as well.

Chemical Composition (Typical)

Element	Limits	
	min	max
Carbon	0.000	0.300
Manganese	0.000	2.000
Sulphur	0.000	0.024
Silicon	0.000	0.500
Iron	0.000	2.500
Copper	28.000	34.000
Nickel	63.000	--

Mechanical Properties (Typical)

Parameter	Value
Yield 0.2 % (Mpa/Nmm ²), Min	172
Tensile (Mpa/Nmm ²), Min	483
Elongation (% in 50MM), Min	35
Reduction Area(%), Min	--
Hardness (BHN), Max	223*

*Cold Drawn Stress Relieved

Physical Properties

Parameter	Value
Density (Kg/m ³)	8800
Elastic Modulus (Gpa)	179
*Co-eff of Expansion ($\mu\text{m}/\text{m}/^\circ\text{C}$)	7.7
*Thermal Condc. (W/m.K)	16.7
Electric Resistivity (n Ω .m) 25°C	307

*Note : @20°C

Corrosion Data

Monel alloy 400 offers great stress corrosion cracking in most freshwaters. Due to Copper it offers resistance to marine application (salt water), steam water even at high temperature. Good Resistance to hydrochloric acid , sulphuric acids while de-aerated. Resistance to Neutral & Alkaline salts. Resistance to chloride stress corrosion cracking.

Equivalent Grade Designation

Monel 400
Alloy 400
UNS N04400
EN DIN 2.4360
W.Nr 2.4361
BS NA 13
ISO NiCu30
DIN NiCu30Fe
AFNOR NU30

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Available Product Forms

Round, Square, Hexagon ,Flat Bars & Wires
Seamless / Welded Pipes
Seamless / Welded Tubes
Hot & Cold Rolled Plates & Sheets
Forged Bars
Forged Flanges
Butt-Weld Pipe Fittings
Socket-Weld/Forged Pipe Fittings
Machined Components
Ferrule Compression Fittings
Welding Consumables

Common Manufacturing Specifications

ASTM B127, ASTM B163, ASTM B164 CLASS A, ASTM B165, ASTM B366, ASTM B513, ASTM B564, ASTM F467, ASTM F468, ASTM F96, ASME AB127, ASME A B163, ASME A B164, ASME A B165, ASME A B366, ASME A B513, ASME A B564, ASME A F467, ASME A F468, ASME A F96, AMS 4574, AMS 4575, AMS 4675, AMS 4730, AMS 4731, MIL N-24106, MIL T-1368, MIL T-23520, QQ N281

Alternate to Alloy

Monel Alloy K500 is suitable alternative to Monel Alloy 400.

Applications & Industries

Marine Fixtures & Equipments
Chemical & Hydro-Carbon Processing Industries
Heat Exchangers & Pressure Vessels
Feedwater Heaters & De-aerating heaters
Valves Body & parts
Pumps & Shafts
Fasteners- Nuts, Bolts, Anchor Rods & Springs etc

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