

Alloy 400 is a ductile, nickel-copper based alloy comprised essentially of two-thirds nickel and one third copper. Alloy 400 is known for resistance to a variety of corrosive conditions, including alkalies (or acid like substances), saltwater, hydrofluoric acid and sulphuric acid. Other advantages of using this alloy are its toughness and high strength over a broad temperature range; it can also be manipulated to become magnetic if desired.

This alloy is supplied:  
Hot worked and annealed over 55mm diameter.  
Cold worked and stress-relieved up to 55mm diameter.

Bars 3/4 inch to 4 inch diameter are supplied with 3.2 Certification.

Bars are UT tested to DEF STAN 02-729

All bars are of European Origin.

### CHEMICAL COMPOSITION

ASTM B164-03 (2014) Alloy 400	
Element	% Present
Nickel (Ni)	63 min
Copper (Cu)	28 - 34
Iron (Fe)	2.5 max
Manganese (Mn)	2 max
Silicon (Si)	0.5 max
Carbon (C)	0.3 max
Sulphur (S)	0.02 max

### ALLOY DESIGNATIONS

ASTM B164-03 (2014) / UNS NO4400  
BS3076 NA13  
NACE MR0175/0103

### SUPPLIED FORMS

- Bar
- Forgings
- Rod

### GENERIC PHYSICAL PROPERTIES

Property	Value
Density	8.82 g/cm <sup>3</sup>
Melting Point	1300-1350 °C
Modulus of Elasticity	182 GPa
Thermal Conductivity	23.0 W/m.K

Room temperature Physical Properties are shown (20C) and most vary as temperature changes.

### MECHANICAL PROPERTIES

ASTM B164-03 (2014) Round Bar - Hot Worked, Annealed	
Property	Value
Proof Stress	170 Min MPa
Tensile Strength	480 Min MPa
Elongation A50 mm	35 Min %

ASTM B164-03 (2014) Round Bar - Cold Worked/Stress Relieved Under 12.7mm Dia	
Property	Value
Proof Stress	345 Min MPa
Tensile Strength	580 Min MPa
Elongation A50 mm	10 Min %

ASTM B164-03 (2014) Round Bar - Cold Worked/Stress relieved 12.7mm to 88.9mm Dia	
Property	Value
Proof Stress	415 Min MPa
Tensile Strength	600 Min MPa
Elongation A50 mm	20 Min %

ASTM B164-03 (2014)  
Round Bar - Cold Worked/Stress relieved  
88.9mm to 101.6mm Dia

Property	Value
Proof Stress	380 Min MPa
Tensile Strength	580 Min MPa
Elongation A50 mm	20 Min %

## CHARACTERISTICS

Excellent corrosion resistance  
High strength and hardness  
Broad temperature range  
Easily processed and machined

## APPLICATIONS

Pump and valve components  
Electrical components  
Marine hardware and fixtures  
Shafts  
Heat exchangers

## CONTACT

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## REVISION HISTORY

Datasheet Updated 18 July 2019

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