



# Metal Alloys Corporation



## NAVAL BRASS "LEAD FREE"

### EQUIVALENT SPECIFICATIONS

SPECIFICATIONS	DESIGNATION
ISO	CuZn38Sn1
European	CuZn39Sn1
BS	CZ 133
JIS	C 4640
Russian	L060-1

Naval Brass C46400 is nominally composed of 60% copper, 39.2% zinc and 0.8% tin. As is typical of brass alloys with the duplex alpha + beta structure, C46400 has good strength and rigidity. By substituting tin for an equal quantity of zinc, a high corrosion resistance to seawater is achieved. The addition of tin also gives the alloy an inherent resistance to dezincification, thereby further inhibiting the impingement by seawater at higher than normal temperatures. The alloy is also noted for its resistance to wear, fatigue, galling, and stress corrosion cracking.

### TYPICAL APPLICATIONS:

**BUILDERS HARDWARE:** Lock Pins **ELECTRICAL:** Precision Shipboard Equipment **FASTENERS:** Rivets, Bolts, Nuts **INDUSTRIAL:** Welding Rod, Condenser Plates, Structural Uses, Valve Stems, Balls, Heat Exchanger Tube, Aircraft Turn Buckle Barrels, Bearings, Dies, Golf Ball Production, Pressure Vessels, Bearings, Bushings, Hub Cones **MARINE:** Propeller Shafts, Marine Hardware, Decorative Fittings, Shafting, Propeller Shafts, Turn buckles **ORDINANCE:** Missile Components **OTHER:** Baffle Plates and Flanges **PLUMBING:** Fittings

### CHEMICAL COMPOSITION

	Cu	Fe	Pb	Sn	Zn
Min/Max	59.0 - 62.0	0.1	0.2	0.5 - 1.0	Rem
Nominals	60.0000	-	-	0.7000	39.2000

### PHYSICAL PROPERTIES

Coefficient of Thermal Expansion	11.8 Å • 10-6 per oF (68-572 F)
Density	0.304 lb/in <sup>3</sup> @ 68 F
Electrical Conductivity	26 %IACS @ 68 F
Electrical Resistivity	39.9 ohms-cmil/ft @ 68 F
Melting Point Liquid US	1650 F
Melting Point Solid US	1630 F
Modulus of Elasticity in Tension	15000 ksi
Modulus of Rigidity	5600 ksi
Specific Gravity	8.41
Specific Heat Capacity	0.09 Btu/lb/Å ° F @ 68 F
Thermal Conductivity	67.0 Btu Å • ft/(hr Å • ft <sup>2</sup> Å • Å ° F) @ 68 F

### SIZES AVAILABLE :

HOLLOW RODS	Min Bore Size 20 mm and Max OD 100 mm
ROUND RODS/RODS	6mm To 130 mm
HEX	5mm To 60mm
SQUARE	4mm To 60mm
FLAT	5mm Min Thickness and max Width 120mm
PROFILES / SECTIONS	AS per Customer Drawing
BILLETS	Up to 200 mm
INGOTS	AS per Specification

### Regd. Office & Plant

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