C464 Brass - C46400 (Naval Brass)

Overview

C464 Naval Brass (C46400) is a copper-zinc-tin alloy nominally composed of 60% copper, 39.2% zinc, and 0.8% tin. The addition of tin provides high corrosion resistance to seawater and gives the alloy inherent resistance to dezincification. It is the most widely used tin brass and is considered a lead-free product with maximum lead content of 0.2%.

Chemical Composition

Element	Content (%)
Copper (Cu)	59.0 - 62.0
Zinc (Zn)	Balance (~39)
Tin (Sn)	0.50 - 1.0
Lead (Pb)	≤ 0.20
Iron (Fe)	≤ 0.10

Key Properties

- Excellent seawater corrosion resistance
- Good strength and rigidity (alpha+beta duplex structure)
- Resistance to dezincification, wear, fatigue, and galling
- Resistance to stress corrosion cracking
- Excellent hot workability and forgeability
- Hot forgeability rating: 90
- Machinability Rating: 30-35% of C360
- Lead-free product

Fabrication

- Hot working temperature: 649-816°C (1200-1500°F)
- Annealing temperature: 427-593°C (800-1100°F)
- Excellent hot workability
- Fair cold workability
- Can be soldered, brazed, and oxyacetylene welded

Applications

- Marine hardware and decorative fittings
- Propeller shafts and turnbuckles
- Valve stems and pump shafts

- Condenser plates and tubesheets
- Nuts, bolts, rivets, bearings, and bushings
- Aircraft turnbuckle barrels
- Heat exchanger tubes
- Welding rod material

Specifications

- UNS: C46400
- AMS: 4611
- ASTM: B21, B171