C3604 / CC3604 Brass (Free-Cutting Brass)

Overview

C3604 brass is a widely used free-cutting brass alloy known for its excellent machinability, high strength, and corrosion resistance. It belongs to the C36000 brass category in the Unified Numbering System (UNS) and is primarily used in precision machining applications, electrical components, plumbing fittings, and industrial hardware. The lead content (1.8-3.7%) improves machinability, making C3604 one of the best free-cutting brass alloys available.

Chemical Composition

Element	Content (%)
Copper (Cu)	57.0 - 61.0
Zinc (Zn)	Balance (32-39)
Lead (Pb)	1.8 - 3.7
Iron (Fe)	≤ 0.5
Tin + Iron	≤ 1.2

Mechanical Properties

- Tensile Strength: 360-450 MPa
- Hardness: 80 Vickers (0.5)
- Machinability Rating: 100% (reference standard)
- Density: 8.4 g/cm³
- Thermal Conductivity: 96.5 W/(m·K)
- Electrical Conductivity: 26% IACS

Physical Characteristics

- Good hot machining properties and weldability
- Poor cold machining properties
- Excellent corrosion resistance
- High electrical and thermal conductivity

Applications

- Automotive components: bushings, fittings, valves
- Electrical connectors: terminals, switch components
- Precision machined parts: screws, nuts, gears, shafts
- Plumbing fittings: faucets, pipe connectors, couplings
- Aviation parts: connectors, plugs, sockets

- Watch and camera components

International Equivalents

- JIS: H3250 C3604
- ASTM: C38000
- DIN: CuZn39Pb3 / Ms58Pb3
- GB (China): HPb60-2
- EN: CW614N