

BS1400: PB1 / CC481K is the standard grade of continually cast phosphor bronze or tin bronze used within Europe. Essentially a 10-12% tin containing copper alloy it has a small phosphorus content added to increase fluidity and de-oxidise the material during casting.

The high tin content of the PB1 / CC481K imparts a very good corrosion resistance in marine environments and brine, while also improving the strength and wear resistance. It also offers a good resistance to shock loading although the wrought grades can outperform the PB1 in this area. PB1 / CC481K can be soldered and brazed and has traditionally been utilised in the manufacture of pump and valves, gears, worm wheels, bushes and bearings for medium to heavy loading at high speed.

Related Standards

BS1400 PB1C	CC481K
CuSn11P-C	C91700 / C90700

Chemical Composition

Copper	Rem
Tin	10.2-11.5%
Phosphorus	0.6-1.0%
Others	0.60% max

Mechanical Properties (Minima all sizes Continuous Cast)

UTS	360 N/mm ²
0.2% Proof Strength	170 N/mm ²
Elongation	8%

Key Features

- Very good marine corrosion resistance
- Good Strength
- High wear resistance
- Good Machinability
- High resistance to shock loading

Typical Physical Properties

Melting Point	1000°C
Density	8.78 g/cm ³
Thermal conductivity (RT)	52 W/m ² K
Thermal expansion coefficient (20-200°C)	18.1 x 10 ⁻⁶
Electrical conductivity	10% IACS
Modulus of Elasticity	100GPa

Fabrication Properties

Hot Formability	Not Recommended
Cold Formability	Not Recommended
Machinability rating (free cutting brass = 100)	30%
Stress Relieving Temp. Range	260°C

Joining Methods

Soldering	Excellent
Brazing	Good
Oxy-acetylene welding	Fair
Gas-shielded arc welding	Fair

Typical Uses

Gears, bearings, heavy load bushes, worm wheels, valve and pump trim and other general engineering components requiring good strength coupled with high shock resistance.

This technical information is given by Holme Dodsworth Metals without charge and the user shall employ such information at their own discretion and risk. For more detailed technical advice on temper selection, fabrication, joining, machining, physical and mechanical data please contact us as space does not permit the listing of every feature of the material.