

The Ultimate Guide to BS EN 1982 CuSn7Pb15-C (CC496K) Bronze for Bearings & Bushings

Discover why BS EN 1982 CuSn7Pb15-C (CC496K) high-lead bronze is the top choice for heavy-duty bearings and bushings. We analyze its properties, chemical composition, and equivalent grades like C93800.

Selecting the right material for high-performance wear parts is critical. When your application involves heavy loads, high speeds, or environments where regular lubrication is difficult to maintain, **BS EN 1982 CuSn7Pb15-C (CC496K)** stands out as one of the most reliable alloys available.

Commonly referred to as a high-lead tin bronze, this material is the industry standard for manufacturing industrial bronze bearings, bushings, and wear plates.

In this guide, we break down the chemical composition, mechanical properties, international equivalents, and key applications of CuSn7Pb15-C to help you determine if it is the right fit for your next project.

What is CuSn7Pb15-C (CC496K) Bronze?

CuSn7Pb15-C, designated under the BS EN 1982 standard as **CC496K**, is a leaded tin bronze alloy. Its name directly reflects its primary composition:

> **Cu (Copper)**: Base material

> **Sn7 (Tin)**: ~7% – Adds strength and load-bearing capacity

> **Pb15 (Lead)**: ~15% – Provides exceptional solid lubrication

The high lead content acts as an internal lubricant, giving the alloy outstanding anti-seizing properties. This makes it highly forgiving in applications where bearings may run temporarily dry or operate against unhardened steel shafts.

Chemical Composition (BS EN 1982)

To meet the strict BS EN 1982 standard, CC496K bronze must adhere to the following chemical ranges:

| Element | Percentage |
|-------------------------|-----------------|
| Copper + Nickel (Cu+Ni) | 74.00% - 80.00% |
| Lead (Pb) | 13.00% - 17.00% |
| Tin (Sn) | 6.00% - 8.00% |
| Nickel (Ni) | 0.50% - 2.00% |
| Zinc (Zn) | 2.00% max |
| Antimony (Sb) | 0.50% max |
| Iron (Fe) | 0.25% max |
| Manganese (Mn) | 0.20% max |
| Phosphorus (P) | 0.10% max |

This precise balance of tin for structure and lead for lubrication ensures the alloy maintains its integrity while offering self-lubricating properties.

Mechanical Properties (As-Cast)

Despite being heavily alloyed with lead, CC496K retains solid mechanical properties suitable for heavy industrial use:

- > **Tensile Strength (Rm):** 170 MPa (min)
- > **Yield Strength (Rp0.2):** 80 MPa (min)
- > **Elongation (A):** 8% (min)
- > **Hardness:** 60 HB (min)

International Equivalent Grades

Engineering is a global field. If your project specifications call for any of the following grades, CuSn7Pb15-C (CC496K) is an exact or highly comparable equivalent:

| Region | Standard | Grade Name |
|---------------|----------|-------------------------------|
| USA | ASTM | C93800 (also known as SAE 67) |
| Germany | DIN | CuPb15Sn (2.1182) |
| UK | BS 1400 | LB1 |
| Japan | JIS | LBC3 |
| International | ISO | CuPb15Sn7 |
| France | AFNOR | UE7Pb15 |

Top 3 Advantages of CC496K Bronze

1. Exceptional Anti-Friction Properties

With 15% lead content, this alloy effectively prevents galling and seizing. It is the ideal choice for applications where boundary lubrication (interrupted oil or grease supply) is a persistent concern.

2. High Embeddability & Conformability

In dirty environments, foreign particles can destroy standard bearings. The soft lead matrix in CuSn7Pb15-C allows abrasive particles to embed safely into the bronze, protecting the expensive steel shaft from scoring. It also conforms easily to minor shaft misalignments.

3. Excellent Machinability

The lead content acts as a natural chip-breaker, giving this alloy a very high machinability rating. This allows for precision CNC machining with tight tolerances, reducing both manufacturing time and costs.

Common Industry Applications

Due to its unique wear-resistant profile, CuSn7Pb15-C is primarily used in the automotive, marine, agricultural, and heavy machinery industries. Common cast and machined parts include:

- > Heavy-duty industrial bushings and bearings
- > Thrust washers and wear plates
- > Crankshaft bearings
- > Water pump impellers and components
- > Slide bearings for machine tools
- > Rolling mill bearings

Your One-Stop Solution for Metal Parts

Sourcing high-quality bronze castings and precision-machined parts doesn't have to be complicated. Whether you need raw ingots, continuous cast bronze bars, or fully finished CNC-machined bearings made to exact CuSn7Pb15-C (CC496K) specifications, we are here to help. We pride ourselves on being a **One-Stop Solution for Metal Parts**, taking your project from raw material casting to final precision machining—all under one roof.