

# C93900

Continuous cast

Product description	High-lead tin bronze
Solids	1/2" to 10" O.D.
Tubes	1" to 16" O.D.
Rectangles	Up to 20"
Standard lengths	144"
Shape/form	Semi-finished, mill stock or near-net shapes, anode, bar stock, billet/bloom, squares, hex, plate, profile or structural shape, flats/rectangular bar

## Typical uses

### Industrial

Bearings, pump bodies, pump impellers for mine water

## Similar or equivalent specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C93900	B505 B505M	67 J461 J462		QQ-C-390, E5		79-6-15

## Chemical composition

Cu (%)	Pb (%)	Sn (%)	Zn (%)	Fe (%)	P (%)	Ni (%) <sup>1</sup>	Al (%)	S (%)	Sb (%)	Si (%)
76.50-79.50	14.00-18.00	5.00-7.00	1.50	0.40	1.50	0.80	0.005	0.08	0.50	0.005

Chemical composition according to ASTM B505/B505M-23

<sup>1</sup>Ni value includes Co.

Note: Cu + sum of named elements, 98.9% min. Single values represent maximums.

## Machinability

Copper alloy UNS no.	Machinability rating	Density (lb/in <sup>3</sup> at 68 ° F)
C93900	80	0.334

## Mechanical properties

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, in 2 in. or 50 mm, min	Brinell hardness (500 kg load)	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
25	172	16	110	5	63	

Mechanical properties according to ASTM B505/B505M-23

## Physical properties

	US customary	Metric
Melting point – liquidus	1730 °F	943 °C
Melting point – solidus	1570 °F	854 °C
Density	0.334 lb/in <sup>3</sup> at 68 °F	9.25 gm/cm <sup>3</sup> at 20 °C
Specific gravity	9.25	9.25
Electrical conductivity	11% IACS at 68 °F	0.066 MegaSiemens/cm at 20 °C
Thermal conductivity	30.2 Btu/sq ft/ft hr/°F at 68 °F	52.3 W/m at 20 °C
Coefficient of thermal expansion 68-392	10.3 · 10 <sup>-6</sup> per °F (68-392 °F)	17.8 · 10 <sup>-6</sup> per °C (20-200 °C)
Specific heat capacity	0.09 Btu/lb/°F at 68 °F	377.1 J/kg at 20 °C
Modulus of elasticity in tension	11000 ksi	75800 MPa
Incipient melting	600 °F	316 °C
Magnetic permeability	1	1

Physical properties provided by CDA

## Fabrication properties

Technique	Suitability
Soldering	Good
Brazing*	Poor
Oxyacetylene welding	Not recommended
Gas shielded arc welding	Not recommended
Coated metal arc welding	Not recommended
Machinability rating	80

Fabrication properties provided by CDA

\*Since brazing is performed within the hot-short range, strain must be avoided during brazing and cooling.

## Casting characteristics

Casting attribute	Level
Casting yield	High
Drossing	Low
Effect of section size	Low
Fluidity	High
Gassing	Medium
Patternmakers shrinkage (inches per foot)	1/8
Shrinkage in solidification	Low

Casting characteristics provided by CDA