

# C93700

## Continuous cast

Product description	High-leaded tin bronze
Solids	1/2" to 13" 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

### Builders hardware

Brackets

### Fasteners

Nuts, washers for engines

### Industrial

Applications requiring acid resistance to sulphite fluids, bearing plates, bearings, bushings, bushings for high speed and heavy pressure, corrosion-resistant castings, crank shafts, high speed/heavy load bearings, impellers, machine parts, parts for steel mill maintenance, pressure-tight castings, pumps, slide guides for steel mills

### Marine

Large bearings for ships

## Similar or equivalent specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C93700	B505 B505M	J461 J462		QQ-C-390, E10	MIL-B-11553, Comp 23	Bearing bronze 80-10-10 bronze

## Chemical composition

Cu (%)	Pb (%)	Sn (%)	Zn (%)	Fe (%) <sup>1</sup>	P (%)	Ni (%) <sup>2</sup>	Al (%)	S (%)	Sb (%)	Si (%)
78.00-82.00	8.00-11.00	9.00-11.00	0.80	0.70	1.50	0.50	0.005	0.08	0.50	0.005

Chemical composition according to ASTM B505/B505M-23

<sup>1</sup>Fe shall be 0.35% max, when used for steel-backed bearings. <sup>2</sup>Ni value includes Co.

Note: Cu + sum of named elements, 99.0% min. Single values represent maximums.

## C93700 continued

### Machinability

Copper alloy UNS no.	Machinability rating	Density (lb/in <sup>3</sup> at 68 °F)
C93700	80	0.32

### 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	
35	241	20	138	6	60	

Mechanical properties according to ASTM B505/B505M-23

### Physical properties

	US customary	Metric
Melting point – liquidus	1705 °F	929 °C
Melting point – solidus	1403 °F	762 °C
Density	0.32 lb/in <sup>3</sup> at 68 °F	8.86 gm/cm <sup>3</sup> at 20 °C
Specific gravity	8.86	8.86
Electrical conductivity	10% IACS at 68 °F	0.059 MegaSiemens/cm at 20 °C
Thermal conductivity	27.1 Btu/sq ft/ft hr/°F at 68 °F	46.9 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*	Good
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.