

# C93700

Continuous Cast

<b>Product Description:</b>	High-Leaded Tin Bronze
<b>Solids:</b>	½" to 10" O.D.
<b>Tubes:</b>	1" to 16" O.D.
<b>Rectangles:</b>	Up to 20"
<b>Standard Lengths:</b>	144"
<b>Shape/Form:</b>	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

<b>Builders Hardware</b>	brackets
<b>Fasteners</b>	nuts, washers for engines
<b>Industrial</b>	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
<b>Marine</b>	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-18

<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.



## 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-18

## 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/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.

## Thermal Properties

Treatment	Value*	Time**
Stress Relief	500	
Solution Treatment		0

Thermal Properties provided by CDA

\*Temperature is measured in Fahrenheit. \*\*For Stress Relief, Solution Treatment and Annealing - Time is measured in hours/inch of thickness. For Precipitation Heat Treatment - Time is measured in hours.