

# C93700

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>	washers for engines, nuts
<b>Industrial</b>	crank shafts, bearings, bearing plates, machine parts, bushings, applications requiring acid resistance to sulphite fluids, parts for steel mill maintenance, slide guides for steel mills, high speed, heavy load bearings, pumps, pressure tight castings, impellers, corrosion resistant castings, bushings for high speed and heavy pressure
<b>Marine</b>	large bearings for ships

## Similar or Equivalent Specification

CDA	ASTM	Asarcon	SAE	AMS	Federal	Military	Other
C93700	B505 B505M B144-3A	1010	64 J461 J462		QQ-C-390, E10	MIL-B-11553, COMP 23	Bearing Bronze

## Chemical Composition

Cu%	Pb%	Sn%	Zn%	Fe% <sup>1</sup>	P% <sup>2</sup>	Ni% <sup>3</sup>	Al%	S%	Sb%	Si%
78.00- 82.00	8.00- 11.00	9.00- 11.00	0.80	0.70	0.10	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>For continuous castings, P shall be 1.5% max.

<sup>3</sup>Ni value includes Co.

Note: Cu + Sum of Named Elements, 99.0% min. Single values represent maximums.



## Machinability

C93700 continued

Copper Alloy UNS No.	Machinability Rating	Density (lb/cu in at 68° F)
C93700	80	0.320

## Mechanical Properties

Tensile Strength, min		Yield Strength, at .5% Extension Under Load, min		Elongation, in 2 in. or 50 mm min	Brinell Hardness	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
35	241	20	138	6	60 (500 kg)	

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
Incipient Melting	600° F	316° 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 · ft/(hr · ft <sup>2</sup> · °F) at 68° F	46.9 W/m at 20° C
Coefficient of Thermal Expansion	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 293° C
Modulus of Elasticity in Tension	11000 ksi	75800 MPa
Magnetic Permeability	1	1

Physical Properties provided by CDA

## Fabrication Properties

Joining Technique	Suitability
Soldering	Good
Brazing	Good
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Not Recommended
Coated Metal Arc Welding	Not Recommended

Fabrication Properties provided by CDA

## Thermal Properties

Treatment	Temp./Time - US	Temp./Time - SI
Stress Temperature	500	260
Solution Minimum		
Solution Maximum		
Solution Time	0.0	
Solution Medium		
Precipitation Value		
Precipitation Time		
Precipitation Medium		
Annealing Minimum		
Annealing Maximum		
Annealing Time		
Hot Treatment Minimum		
Hot Treatment Maximum		

Thermal Properties provided by CDA

