

# C93800

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

### Industrial

bearings, railroad engine casings, pumps, industrial centrifuges, machine parts, low friction, moderate pressure bushings, railroad applications, acid resisting applications, backs for lined journal bearings for passenger cars, general service bearings for moderate pressure, wearing material for rod bushings, wearing material for wedges, wearing material for shoes, pump impellers for acid mine water, pump bodies for acid mine water, freight car bearings, backs for lined journal bearings for locomotives

### Marine

large bearings for ships

## Similar or Equivalent Specification

CDA	ASTM	Asarcon	SAE	AMS	Federal	Military	Other
C93800	B505 B505M B66 B143-3D	715			QQ-C-390, E6 QQ-B-1005, COMP 19	MIL-B-11553, COMP 19	Anti-Acid Metal

## Chemical Composition

Cu%	Pb%	Sn%	Zn%	Fe%	P% <sup>1</sup>	Ni% <sup>2</sup>	Al%	S%	Sb%	Si%
75.00- 79.00	13.00- 16.00	6.30- 7.50	0.80	0.15	0.05	1.00	0.005	0.08	0.80	0.005

Chemical Composition according to ASTM B505/B505M-18

<sup>1</sup>For continuous castings, P shall be 1.5% max.      <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/cu in at 68 °F)
C93800	80	0.334



## Mechanical Properties

C93800 continued

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	
25	172	16	110	5	55 (500 kg)	

Mechanical Properties according to ASTM B505/B505M-18

## 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	10500 ksi	72400 MPa
Incipient Melting	600 °F	316 °C
Magnetic Permeability	1	1

Physical Properties provided by CDA

## Fabrication Properties

Joining Technique	Suitability
Soldering	Good
Brazing	Poor
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		

Fabrication Properties provided by CDA

