

C93800

Continuous Cast

Product Description:	High-Leaded Tin Bronze
Solids:	½" 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

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

Marine

large bearings for ships

Similar or Equivalent Specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C93800	B505 B505M	J461 J462		QQ-C-390, E6 QQ-B-1005, Comp 19	MIL-B-11553, Comp 19	Anti-Acid Metal SAE 67

Chemical Composition

Cu%	Pb%	Sn%	Zn%	Fe%	P%	Ni% ¹	Al%	S%	Sb%	Si%
75.00- 79.00	13.00- 16.00	6.30- 7.50	0.80	0.15	1.50	1.00	0.005	0.08	0.80	0.005

Chemical Composition according to ASTM B505/B505M-18

¹Ni 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 ³ at 68 ° F)
C93800	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	55	

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 ³ at 68 °F	9.25 gm/cm ³ 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 ⁻⁶ per °F (68-392 °F)	17.8 · 10 ⁻⁶ 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

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.

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.