C93600

Cast

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

Industrial

backs for lined bearings, bushings for corrosion/lubrication/pressure, cam bushings for diesel engines, crankshaft main bearings, deep well pump line shaft bearings, electric motor bearings, flow monitor valves, guide bushings for piston rods, guide bushings for valves, hydraulic gland seals, locomotive bearing parts, main bearings for presses, piston pin bearings, pump sleeves, rod bushings, rolling mill bearings, seals, sleeve bushings (for cranes, etc.), spacer bushings (for pumps, etc.), steel mill bushings, wrist pin bushings

Similar or Equivalent Specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C93600	B505 B505M					

Chemical Composition

Cu%	Pb%	Sn%	Zn%	Fe%	P%	Ni%[1]	Al%	S%	Sb%	Si%
79.00- 83.00	11.00- 13.00	6.00- 8.00	1.00	0.20	1.50	1.00	0.005	0.08	0.55	0.005

Chemical Composition according to ASTM B505/B505M-18

[1]Ni value includes Co.
Note: Cu + Sum of Named Elements, 99.3% min. Single values represent maximums.

Machinability

Copper Alloy UNS No.	Machinability Rating	Density (lb/in³ at 68 °F)
C93600	80	0.325

CONCAST METAL PRODUCTS CO.

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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	
33	227	20	138	10	65	

Mechanical Properties according to ASTM B505/B505M-18

Physical Properties

	US Customary	Metric
Melting Point – Liquidus	1720 ˚F	938 ˚C
Melting Point – Solidus	1550 ˚F	843 ˚C
Density	0.325 lb/in^3 at 68 ˚F	9 gm/cm^3 at 20 ˚C
Specific Gravity	9	9
Electrical Conductivity	11% IACS at 68 ˚F	0.064 MegaSiemens/cm at 20 ˚C
Thermal Conductivity	28.5 Btu/sq ft/ft hr/˚F at 68 ˚F	49.36 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
Modulas of Elasticity in Tension	14000 ksi	96516 MPa

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.