C92200

Cast

Product Description:	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

Architecture	ornamental castings
Building	cooling equipment, heating equipment
Fasteners	nuts
Industrial	bearings, bushings, cryogenic valves, fittings used to 550 ˚F, gears, medium-pressure hydraulic equipment, piston rings, pump impellers, pumps used to 550 ˚F, valve components, valves for water meters
Marine	marine castings
Plumbing	medium-pressure steam equipment to 550 ˚F

Similar or Equivalent Specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C92200	B505 B505M B61 B143-2A	622 J461 J462		QQ-C-390, D4 QQ-B-1005, Comp 1	MIL-B-11553, Comp 1 MIL-B-16541	Navy M Bronze

Chemical Composition

Cu%[1]	Pb%	Sn%	Zn%	Fe%	P%	Ni%[1,2]	Al%	S%	Sb%	Si%
86.00-90.00	1.00-2.00	5.50-6.50	3.00-5.00	0.25	1.50	1.00	0.005	0.05	0.25	0.005

Chemical Composition according to ASTM B505/B505M-18

[1]In determining Cu min., Cu may be calculated as Cu + Ni. [2]Ni value includes Co.
Note: Cu + Sum of Named Elements, 99.3% min. Single values represent maximums.

CONCAST METAL PRODUCTS CO.

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Machinability

Copper Alloy UNS No.	Machinability Rating	Density (lb/in³ at 68 ˚F)
C92200	42	0.312

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	
38	262	19	131	18	65	

Mechanical Properties according to ASTM B505/B505M-18

Physical Properties

	US Customary	Metric
Melting Point – Liquidus	1810 ˚F	988 ˚C
Melting Point – Solidus	1518 ˚F	826 ˚C
Density	0.312 lb/in³ at 68 ˚F	8.64 gm/cm³ at 20 ˚C
Specific Gravity	8.64	8.64
Electrical Conductivity	14% IACS at 68 ˚F	0.083 MegaSiemens/cm at 20 ˚C
Thermal Conductivity	40.2 Btu/sq ft/ft hr/˚F at 68 ˚F	69.6 W/m at 20 ˚C
Coefficient of Thermal Expansion 68-572	10 · 10^{-6} per ˚F (68-572 ˚F)	17.3 · 10^{-6} per ˚C (20-300 ˚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	96500 MPa
Incipient Melting	600 ˚F	316 ˚C
Magnetic Permeability	1	1

Physical Properties provided by CDA

Fabrication Properties

Technique	Suitability
Soldering	Excellent
Brazing*	Excellent
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Not Recommended
Coated Metal Arc Welding	Not Recommended
Machinability Rating	42

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.

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