

# C92200

Continuous cast

Product description	Leaded tin bronze
Solids	1/2" 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 (%) <sup>1</sup>	Pb (%)	Sn (%)	Zn (%)	Fe (%)	P (%)	Ni (%) <sup>1,2</sup>	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-23

<sup>1</sup>In determining Cu min., Cu may be calculated as Cu + Ni. <sup>2</sup>Ni value includes Co.  
Note: Cu + sum of named elements, 99.3% min. Single values represent maximums.

## C92200 continued

### Machinability

Copper alloy UNS no.	Machinability rating	Density (lb/in <sup>3</sup> 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-23

### Physical properties

	US customary	Metric
Melting point – liquidus	1810 °F	988 °C
Melting point – solidus	1518 °F	826 °C
Density	0.312 lb/in <sup>3</sup> at 68 °F	8.64 gm/cm <sup>3</sup> 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 <sup>-6</sup> per °F (68-572 °F)	17.3 · 10 <sup>-6</sup> per °C (20-300 °C)
Specific heat capacity	0.09 Btu/lb/°F at 68 °F	377.1 J/kg at 20 °C
Modulus 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.

### Casting characteristics

Casting attribute	Level
Casting yield	Medium
Drossing	Low
Effect of section size	High
Fluidity	Medium
Gassing	Medium
Patternmakers shrinkage (inches per foot)	3/16
Shrinkage in solidification	Low

Casting characteristics provided by CDA