



## TYPICAL USES

- Building** Heavy Construction Equipment
- Electrical** Connectors
- Fasteners** Nuts
- Industrial** Bushings, Bearings, Clamps, Piston Rings, Pump Bodies, Valves, Seal Rings, Worm Gears, Expansion Bearings, Pump Impellers, Valve Bodies, Gears, Gear Blanks, Finishing Dies for Wood Pulp Industry
- Plumbing** Water Conditioners, Steam Fittings

**Bronze Family:** High Tin Bronze  
**Solids:** 1/2" to 10" OD  
**Tubes:** 1" to 16" OD  
**Rectangles:** Up to 20"  
**Standard Lengths:** 144"

## SIMILAR OR EQUIVALENT SPECIFICATION

CDA	ASTM	ASARCON	SAE	AMS	FEDERAL	INGOT	MILITARY	OTHER
C90500	ASTM B22 ASTM B505	100	SAE 62 SAE J461 SAE J462	AMS 4845	QQ-C-390B TYPE III QQ-B-1005, COMP. 16	225	MIL-B-11553 COMP 16	Gun Metal

## CHEMICAL COMPOSITION

Alloy	Cu%	Sn%	Pb%	Zn%	Fe%	Ni%	Sb%	P%	S%	Al%	Mn%	Si%
C90500	86.00- 89.00	9.00- 11.00	0.30	1.00- 3.00	0.20	1.00*	0.20	1.5	0.05	0.005	N/A	0.005

Chemical Composition according to ASTM B505-08

Note: Single values represent maximums.

\*In determining copper minimum, copper may be calculated as copper plus nickel.

## MACHINABILITY

Alloy	Machinability Rating	Density (lb/cu in.)
C90500	30	0.315

## MECHANICAL PROPERTIES

ALLOY: C90500 CONTINUED

Tensile Strength, min		Yield Strength, at .5% extension under load min		Elongation in 2 in. or 50 mm min, %	Brinell Hardness, min	Remarks
ksi	MPa	ksi	MPa			
44	303	25	172	10	N/A	

Mechanical Properties according to ASTM B505-08

## PHYSICAL PROPERTIES

	US Customary	Metric
Melting Point - Liquidus	1830 F	999 C
Melting Point - Solidus	1570 F	854 C
Density	0.315 lb/in <sup>3</sup> at 68 F	8.72 gm/cm <sup>3</sup> @ 20 C
Specific Gravity	8.720	8.72
Electrical Resistivity	940 ohms-cmil/ft @ 68 F	15.63 microhm-cm @ 20 C
Electrical Conductivity	11 %IACS @ 68 F	0.064 MegaSiemens/cm @ 20 C
Thermal Conductivity	43.20 Btu · ft/(hr · ft <sup>2</sup> ·oF) at 68F	74.8 W/m · oK at 20 C
Coefficient of Thermal Expansion	11 ·10 <sup>-6</sup> per oF (68-572 F)	19.8 ·10 <sup>-6</sup> per oC (20-300 C)
Specific Heat Capacity	0.090 Btu/lb/oF at 68 F	377.1 J/kg · oK at 293 K
Modulus of Elasticity in Tension	15000 ksi	103400 MPa
Magnetic Permeability	1	1.0

Physical Properties provided by CDA

## FABRICATION PRACTICES

Joining Technique	Suitability
Soldering	Excellent
Brazing	Good
Oxyacetylene Welding	Fair
Gas Shielded Arc Welding	Fair
Coated Metal Arc Welding	Fair

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	None	
Precipitation Value		
Precipitation Time		
Precipitation Medium	None	
Annealing Minimum		
Annealing Maximum		
Annealing Time		
Hot Works Minimum		
Hot Works Maximum		

Thermal Properties provided by CDA