

# C90700

Continuous Cast • GreenAlloys™

<b>Product Description:</b>	Tin Bronze
<b>Solids:</b>	½" to 10" O.D.
<b>Tubes:</b>	1" to 16" O.D.
<b>Rectangles:</b>	Up to 20"
<b>Standard Lengths:</b>	144"
<b>Shape/Form:</b>	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** bearings, bearings for heavy loads and relatively low speeds, gear boxes, gears, restaurant equipment, speed reducers, valve bodies, worm gears, worm wheels

## Similar or Equivalent Specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C90700	B505 B505M	65 J461 J462				Tin Bronze, 65

## Chemical Composition

Cu% <sup>1</sup>	Pb%	Sn%	Zn%	Fe%	P%	Ni% <sup>1,2</sup>	Al%	S%	Sb%	Si%
88.00- 90.00	0.50	10.00- 12.00	0.50	0.15	1.50	0.50	0.005	0.05	0.20	0.005

Chemical Composition according to ASTM B505/B505M-18

<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, 99.4% min. Single values represent maximums.

## Machinability

Copper Alloy UNS No.	Machinability Rating	Density (lb/in <sup>3</sup> at 68 ° F)
C90700	20	0.317

## 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	
40	276	25	172	10	102	

Mechanical Properties according to ASTM B505/B505M-18

## Physical Properties

	US Customary	Metric
Melting Point – Liquidus	1830 °F	999 °C
Melting Point – Solidus	1528 °F	831 °C
Density	0.317 lb/in <sup>3</sup> at 68 °F	8.77 gm/cm <sup>3</sup> at 20 °C
Specific Gravity	8.77	8.77
Electrical Conductivity	10% IACS at 68 °F	0.056 MegaSiemens/cm at 20 °C
Thermal Conductivity	40.8 Btu/sq ft/ft hr/°F at 68 °F	70.6 W/m at 20 °C
Coefficient of Thermal Expansion 68-392	10.2 · 10 <sup>-6</sup> per °F (68-392 °F)	18.4 · 10 <sup>-6</sup> 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	15000 ksi	103400 MPa
Magnetic Permeability	1	1

Physical Properties provided by CDA

## Fabrication Properties

Technique	Suitability
Soldering	Excellent
Brazing*	Good
Oxyacetylene Welding	Fair
Gas Shielded Arc Welding	Fair
Coated Metal Arc Welding	Fair
Machinability Rating	20

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.