

C90700

Cast • GreenAlloy™

Product Description:	Tin Bronze
Solids:	½" to 10" OD
Tubes:	1" to 16" OD
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 restaurant equipment, worm gears, gears, bearings for heavy loads and relatively low speeds, bearings, gear boxes, speed reducers, valve bodies, worm gears

Similar or Equivalent Specification

CDA	ASTM	ASARCON	SAE	AMS	FEDERAL	MILITARY	OTHER
C90700	B505 B505M	110	65 J461 J462	4845			Tin Bronze, 65

Chemical Composition

Cu% ¹	Pb%	Sn%	Zn%	Fe%	P% ²	Ni% ³	Al%	S%	Sb%	Si%
88.00- 90.00	0.50	10.00- 12.00	0.50	0.15	0.30	0.50	0.005	0.05	0.20	0.005

Chemical Composition according to ASTM B505/B505M-14

¹In determining Cu min., Cu may be calculated as Cu + Ni.

²For continuous castings, P shall be 1.5% max.

³Ni 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/cu in at 68° F)
C90700	20	0.317

Mechanical Properties

C90700 continued

Tensile Strength, min		Yield Strength, at .5% extension under load min		Elongation, in 2 in. or 50 mm min	Brinell Hardness	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
40	276	25	172	10	102 (500 kg)	

Mechanical Properties according to ASTM B505/B505M-14

Physical Properties

	US Customary	Metric
Melting Point – Liquidus	1830° F	999° C
Melting Point – Solidus	1528° F	831° C
Density	0.317 lb/in ³ at 68° F	8.77 gm/cm ³ 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 · ft/(hr · ft ² · °F) at 68° F	70.6 W/m at 20° C
Coefficient of Thermal Expansion	10.2 · 10 ⁻⁶ per °F (68°-392° F)	18.4 · 10 ⁻⁶ per °C (20°-200° C)
Specific Heat Capacity	0.09 Btu/lb/°F at 68° F	377.1 J/kg at 293° C
Modulus of Elasticity in Tension	15000 ksi	103400 MPa
Magnetic Permeability	1	1

Physical Properties provided by CDA

Fabrication Properties

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		
Precipitation Value		
Precipitation Time		
Precipitation Medium		
Annealing Minimum		
Annealing Maximum		
Annealing Time		
Hot Treatment Minimum		
Hot Treatment Maximum		

Thermal Properties provided by CDA