

# C86500

Cast

<b>Product Description:</b>	Manganese Bronze
<b>Solids:</b>	½" to 9" O.D.
<b>Tubes:</b>	1⅝" to 9" O.D.
<b>Rectangles:</b>	Up to 15"
<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

<b>Automotive</b>	weld guns
<b>Builders Hardware</b>	brackets
<b>Electrical</b>	electrical hardware
<b>Industrial</b>	compressors, forming dies for wood pulp industry, frames, gears, hooks, lever arms, machinery, machinery parts (substituted for steel and malleable iron), machinery parts requiring high strength, pressing dies for wood pulp, struts, wear rings for pressing dies for wood pulp industry
<b>Marine</b>	boat parts, clamps, covers for marine hardware, propellers for salt and fresh water, rudders

## Similar or Equivalent Specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C86500	B505 B505M	J461 J462	4860	QQ-C-390, C3 QQ-B-726, Class A	MIL-C-22229, Comp 7	

## Chemical Composition

Cu% <sup>1</sup>	Pb%	Sn%	Zn%	Fe%	Ni% <sup>1,2</sup>	Al%	Mn%
55.00- 60.00	0.40	1.00	36.00- 42.00	0.40- 2.00	1.00	0.50- 1.50	0.10- 1.50

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, 99.0% min. Single values represent maximums.



## Machinability

Copper Alloy UNS No.	Machinability Rating	Density (lb/in <sup>3</sup> at 68 °F)
C86500	26	0.301

## Mechanical Properties

Tensile Strength, min		Yield Strength, at 0.5% Extension Under Load, min		Elongation, in 2 in. or 50 mm min	Brinell Hardness (3000 kg load)	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
70	483	25	172	25	130	

Mechanical Properties according to ASTM B505/B505M-18

## Physical Properties

	US Customary	Metric
Melting Point – Liquidus	1616 °F	880 °C
Melting Point – Solidus	1583 °F	862 °C
Density	0.301 lb/in <sup>3</sup> at 68 °F	8.33 gm/cm <sup>3</sup> at 20 °C
Specific Gravity	8.33	8.33
Electrical Conductivity	22% IACS at 68 °F	0.128 MegaSiemens/cm at 20 °C
Thermal Conductivity	49.6 Btu/sq ft/ft hr/°F at 68 °F	85.8 W/m at 20 °C
Coefficient of Thermal Expansion 68-212	11.3 · 10 <sup>-6</sup> per °F (68-212 °F)	19.5 · 10 <sup>-6</sup> per °C (20-100 °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*	1.09	1.09

Physical Properties provided by CDA

\*Field Strength 16 kA/m

## Fabrication Properties

Technique	Suitability
Soldering	Fair
Brazing	Fair
Oxyacetylene Welding	Poor
Gas Shielded Arc Welding	Poor
Coated Metal Arc Welding	Poor
Machinability Rating	26

Fabrication Properties provided by CDA

## 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.