

C86200

Continuous Cast

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

Builders Hardware	brackets, structural parts
Fasteners	screw down nuts
Industrial	bushings, cams, frames, gears, high-strength machine parts, hooks, marine racing propellers, press dies, shafts, struts, valve stems, wear rings for pressing dies for wood pulp industry, worm gears
Marine	boat parts, clamps, marine castings, rudders
Ordinance	gun mounts

Similar or Equivalent Specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C86200	B505 B505M B271 B271M	J461 J462		QQ-C-523	MIL-C-11866	

Chemical Composition

Cu% ¹	Pb%	Sn%	Zn%	Fe%	Ni% ^{1,2}	Al%	Mn%
60.00- 66.00	0.20	0.20	22.00- 28.00	2.00- 4.00	1.00	3.00- 4.90	2.50- 5.00

Chemical Composition according to ASTM B505/B505M-18

¹In determining Cu min., Cu may be calculated as Cu + Ni.
Note: Single values represent maximums.

²Ni value includes Co.



Machinability

Copper Alloy UNS No.	Machinability Rating	Density (lb/in ³ at 68 °F)
C86200	30	0.288

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	
90	621	45	310	18	180	

Mechanical Properties according to ASTM B505/B505M-18

Physical Properties

	US Customary	Metric
Melting Point – Liquidus	1725 °F	941 °C
Melting Point – Solidus	1650 °F	899 °C
Density	0.288 lb/in ³ at 68 °F	7.97 gm/cm ³ at 20 °C
Specific Gravity	7.97	7.97
Electrical Conductivity	8% IACS at 68 °F	0.044 MegaSiemens/cm at 20 °C
Thermal Conductivity	20.5 Btu/sq ft/ft hr/°F at 68 °F	35.5 W/m at 20 °C
Coefficient of Thermal Expansion 68-572	12 · 10 ⁻⁶ per °F (68-572 °F)	20.7 · 10 ⁻⁶ 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	15000 ksi	103400 MPa
Magnetic Permeability*	1.24	1.24

Physical Properties provided by CDA

*Field Strength 16 kA/m

Fabrication Properties

Technique	Suitability
Soldering	Poor
Brazing	Poor
Oxyacetylene Welding	Good
Gas Shielded Arc Welding	Fair
Coated Metal Arc Welding	Good
Machinability Rating	30

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.