

C86300

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
Electrical	electrical components, switches
Fasteners	screw down nuts
Industrial	bridge pins, bushings, cams, forming dies for wood pulp industry, frames, gears, gib, high-strength machine parts, hooks, hydraulic cylinder parts, large valve stems, propellers, slow-speed/heavy-load bearings, struts, wear rings for forming dies for wood pulp industry
Marine	boat parts, clamps, covers for marine hardware, marine hardware, rudders

Similar or Equivalent Specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C86300	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	5.00- 7.50	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)
C86300	8	0.283

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	
110	758	62	427	14	223	

Mechanical Properties according to ASTM B505/B505M-18

Note: Compression Deformation Limit min 55 ksi/380 MPa

Physical Properties

	US Customary	Metric
Melting Point – Liquidus	1693 °F	923 °C
Melting Point – Solidus	1625 °F	885 °C
Density	0.283 lb/in ³ at 68 °F	7.83 gm/cm ³ at 20 °C
Specific Gravity	7.83	7.83
Electrical Conductivity	8% IACS at 68 °F	0.046 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	14200 ksi	97900 MPa
Magnetic Permeability*	1.09	1.09

Physical Properties provided by CDA

*Field Strength 16 kA/m

Fabrication Properties

Technique	Suitability
Soldering	Poor
Brazing	Poor
Oxyacetylene Welding	Poor
Gas Shielded Arc Welding	Poor
Coated Metal Arc Welding	Good
Machinability Rating	8

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.