

C86300

Cast

Product Description:	Manganese Bronze
Solids:	½" to 9" OD
Tubes:	1⅞" to 9" OD
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	switches, electrical components
Fasteners	screw down nuts
Industrial	bushings, high strength machine parts, hooks, frames, struts, gears, bridge pins, propellers, hydraulic cylinder parts, large valve stems, slow speed, heavy load bearings, gib, cams, hydraulic cylinder parts, forming dies for wood pulp industry, wear rings for forming dies for wood pulp industry
Marine	marine hardware, clamps, covers for marine hardware, boat parts, rudders

Similar or Equivalent Specification

CDA	ASTM	ASARCON	SAE	AMS	FEDERAL	MILITARY	OTHER
C86300	B505 B505M		430B J461 J462		QQ-C-390B, C7	MIL-C-22229, COMP 8	

Chemical Composition

Cu% ¹	Pb%	Sn%	Zn%	Fe%	Ni% 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-14

¹In determining Cu min., Cu may be calculated as Cu + Ni. ²Ni value includes Co.
Note: Cu + Sum of Named Elements, 99.0% min. Single values represent maximums.

Machinability

C86300 continued

Copper Alloy UNS No.	Machinability Rating	Density (lb/cu in at 68° F)
C86300	8	0.283

Mechanical Properties

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	
110	758	62	427	14	223 (3000 kg)	

Mechanical Properties according to ASTM B505/B505M-14

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 · ft/(hr · ft ² · °F) at 68° F	35.5 W/m at 20° C
Coefficient of Thermal Expansion	12 · 10 ⁻⁶ per °F (68°-572° F)	20.7 · 10 ⁻⁶ per °C (20°-300° C)
Specific Heat Capacity	0.090 Btu/lb/°F at 68° F	377.1 J/kg at 293° 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

Joining Technique	Suitability
Soldering	Poor
Brazing	Poor
Oxyacetylene Welding	Poor
Gas Shielded Arc Welding	Poor
Coated Metal Arc Welding	Good

Fabrication Properties provided by CDA

Thermal Properties

Treatment	Temp./Time - US	Temp./Time - SI
Stress Temperature*	1075	579
Solution Minimum		
Solution Maximum		
Solution Time	0	
Solution Medium		
Precipitation Value		
Precipitation Time		
Precipitation Medium		
Annealing Minimum		
Annealing Maximum		
Annealing Time		
Hot Treatment Minimum		
Hot Treatment Maximum		

*Stress-relief heat treatment schedule: 1075° F for 1 hour followed by air cool

