

C 863 Manganese Bronze

Bronze Family: Manganese and Leaded Manganese Bronzes

863
Color
Code

C 863 Manganese Bronze is a high strength alloy used as bushings, bearings, gears, gibs, screw down nuts, bridge pins, valve stems and hydraulic cylinder parts. This alloy is generally used in heavy load applications. It performs best at low speeds with reliable lubrication. It finds use in Steel Mill Equipment, Wood Pulp Industry, Marine Applications and Earth Moving Machinery.

Equivalent Specifications				
ASTM B505/B505M (Copper Alloy UNS No. 86300 Continuous Cast)				
ASTM B271 (Copper Alloy UNS No. 86300 Centrifugal Cast)				
Reference Specifications				
SAE	Federal Specification	Military Specification	Ingot Number	CDA
SAE 430B SAE J461 SAE J462	QQ-C-390	MIL-C-22229 Comp. 8	424	C86300

Equivalent specifications are verified and updated annually.
Specifications shown are current as of May 4, 2010.

Chemical Composition (%)**							
Cu*	Fe	Al	Mn	Zn	Sn	Pb	Ni***
60.0 – 66.0	2.0 – 4.0	5.0 - 7.5	2.5 – 5.0	22.0 – 28.0	0.20 max.	0.20 max.	1.0 max.
Sum of all named elements = 99.0%							
Mechanical Properties							
	English		Metric				
Tensile Strength, min.	110 ksi		758 MPa				
Yield Strength, min.	62 ksi		427 MPa				
Elongation in 2 in. or 50 mm, min.	14%		14%				

* In determining copper minimum, copper may be calculated as copper plus nickel
** Values shown pertain to ASTM B505/505M only
Values for ASTM B271 differ slightly. Contact our QA department for clarification
*** Nickel including Cobalt

Machinability Rating 8 (Free Cutting Brass = 100)

Available from stock at Morgan Bronze in:

Rounds



Tubes





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(continued)

Physical Properties		
	English	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 @ 20° C
Specific Gravity	7.830	7.83
Electrical Conductivity	8% IACS @ 68° F	0.046 MegaSiemens/cm @ 20° C
Thermal Conductivity	20.50 Btu · ft/(hr · ft ² ·°F) @ 68° F	35.5 W/m · °K @ 20° C
Coefficient of Thermal Expansion	12 · 10 ⁻⁶ per °F (68-572° F)	21.6 · 10 ⁻⁶ per °C (20-300° C)
Specific Heat Capacity	0.090 Btu/lb/°F @ 68°F	377.1 J/kg · °K @293 K
Modulus of Elasticity in Tension	14,200 ksi	97,900 MPa

Physical Properties provided by CDA

Fabrication Practices		Thermal Properties	
Soldering	Poor	Stress Relieving Temperatures	500 F or 260 C
Brazing	Poor		
Oxyacetylene Welding	Poor	Time @ Temperature	1 Hr. per inch of wall thickness
Gas Shielded Arc Welding	Poor		
Coated Metal Arc Welding	Good	Responds to Heat Treatment	No
Carbon Arc Welding	Poor		

Thermal Properties provided by CDA

Fabrication Practices provided by CDA

DISCLAIMER:

The Physical, Fabrication and Thermal Properties shown here represent reasonable approximations suitable for general engineering use. Due to commercial variations in compositions and to manufacturing limitations, they should not be used for specification purposes. See applicable ASTM International specification references.