C86200

Material Notes: Casting methods recommended for this alloy: Centrifugal, Continuous, Die, Investment, Permanent Mold, and Sand.

Applications: Marine castings, gears, gun mounts, bushings and bearings.

Classified under: Manganese and leaded manganese bronze alloys. ASTM B584; formerly ASTM B147-8B

As cast values below are for sand casting. Alloy does not respond to heat treating

Key Words: High Strength Manganese Bronze, high strength yellow brass, CA 862, ASTM B30, ASTM B271, ASTM B505, ASTM B584; ASTM B147-8B, FED QQ-C-390, FED QQ-C-523, MIL-C-22087 (composition 9), MIL-C-11866 (composition 20), MIL-C-22229 (composition 9), Ingot code no. 423

Physical Properties	Metric	English	Comments
Density	7.90 g/cc	0.285 lb/in³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	180	180	
Tensile Strength, Ultimate	655 MPa	95000 psi	
Tensile Strength, Yield	330 MPa	47900 psi	
Elongation at Break	20 %	20 %	In 50 mm
Modulus of Elasticity	105 GPa	15200 ksi	
Compressive Strength	345 MPa	50000 psi	at permanent set of 0.1%
Machinability	30 %	30 %	UNS C36000 (free-cutting brass) = 100%
Izod Impact	16.0 J	11.8 ft-lb	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00002298 ohm-cm @Temperature 20.0 °C	0.00002298 ohm-cm @Temperature 68.0 °F	Calculated from 7.5% IACS
Magnetic Permeability	1.24	1.24	16 kA/m field strength

Thermal Properties	Metric	English	Comments
CTE, linear	22.0 µm/m-°C @Temperature 20.0 - 260 °C	12.2 µin/in-°F @Temperature 68.0 - 500 °F	
Specific Heat	0.376 J/g-°C	0.0899 BTU/lb-°F	

Capacity

Thermal Conductivity	35.0 W/m-K @Temperature 20.0 °C	243 BTU-in/hr-ft²-°F @Temperature 68.0 °F	
Melting Point	900 - 940 °C	1650 - 1720 °F	
Solidus	900 °C	1650 °F	
Liquidus	940 °C	1720 °F	

Processing Properties	**Metric**	**English**	**Comments**
Annealing Temperature	260 °C	500 °F	

Component Elements Properties	**Metric**	**English**	**Comments**
Aluminum, Al	3.0 - 7.5 %	3.0 - 7.5 %	
Copper, Cu	60 - 68 %	60 - 68 %	
Iron, Fe	2.0 - 4.0 %	2.0 - 4.0 %	
Lead, Pb	<= 0.20 %	<= 0.20 %	
Manganese, Mn	2.5 - 5.0 %	2.5 - 5.0 %	
Nickel, Ni	<= 1.0 %	<= 1.0 %	
Tin, Sn	<= 0.20 %	<= 0.20 %	
Zinc, Zn	26 %	26 %	