

C86400

Material

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

Applications: Free machining manganese bronze valve stems, marine fittings, lever arms, brackets, light-duty gears.

Classified under: Manganese and leaded manganese bronze alloys. ASTM B584; formerly ASTM B147-7A, ASTM B132-A

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

Key Words: Leaded Manganese Bronze, ASTM B584; ASTM B147-7A, ASTM B132-A

Physical Properties	Metric	English	Comments
Density	8.32 g/cc	0.301 lb/in ³	
Mechanical Properties	Metric	English	Comments
Hardness, Brinell	105	105	
Tensile Strength, Ultimate	450 MPa	65300 psi	
Tensile Strength, Yield	170 MPa	24700 psi	
Elongation at Break	20 %	20 %	in 50 mm
Modulus of Elasticity	96.0 GPa	13900 ksi	
Compressive Strength	150 MPa	21800 psi	at permanent set of 0.1%
	600 MPa	87000 psi	at permanent set of 10%
Machinability	60 %	60 %	UNS C36000 (free-cutting brass) = 100%
Izod Impact	40.0 J	29.5 ft-lb	
Charpy Impact	34.0 J	25.1 ft-lb	V-notch
Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000078368 ohm-cm @Temperature 20.0 °C	0.0000078368 ohm-cm @Temperature 68.0 °F	Calculated from 22% IACS
Thermal Properties	Metric	English	Comments
CTE, linear	20.0 µm/m-°C @Temperature 21.0 - 204 °C	11.1 µin/in-°F @Temperature 69.8 - 399 °F	
Specific Heat Capacity	0.376 J/g-°C	0.0899 BTU/lb-°F	
Thermal	88.0 W/m-K	611 BTU-in/hr-ft ² -°F	

Conductivity @Temperature 20.0 °C @Temperature 68.0 °F

Melting Point	860 - 880 °C	1580 - 1620 °F
Solidus	860 °C	1580 °F
Liquidus	880 °C	1620 °F

Processing Properties	Metric	English	Comments
Annealing Temperature	260 °C	500 °F	
Casting Temperature	955 - 1040 °C	1750 - 1900 °F	Heavy castings
	1040 - 1120 °C	1900 - 2050 °F	Light castings

Component Elements Properties	Metric	English	Comments
Aluminum, Al	<= 1.5 %	<= 1.5 %	
Copper, Cu	56 - 62 %	56 - 62 %	
Iron, Fe	<= 2.0 %	<= 2.0 %	
Lead, Pb	0.50 - 1.5 %	0.50 - 1.5 %	
Manganese, Mn	<= 1.5 %	<= 1.5 %	
Nickel, Ni	<= 1.0 %	<= 1.0 %	
Tin, Sn	<= 1.5 %	<= 1.5 %	
Zinc, Zn	37 %	37 %	