

C90700

Material

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

Applications: Gears, bearing bushings.

Key Words: Gear Bronze

Physical Properties	Metric	English	Comments
Density	8.77 g/cc	0.317 lb/in ³	
Mechanical Properties	Metric	English	Comments
Hardness, Brinell	80	80	
Tensile Strength, Ultimate	305 MPa	44200 psi	
Tensile Strength, Yield	150 MPa	21800 psi	
Elongation at Break	20 %	20 %	
Modulus of Elasticity	105 GPa	15200 ksi	
Fatigue Strength	170 MPa @# of Cycles 1.00e+8	24700 psi @# of Cycles 1.00e+8	rotating beam, casting method not reported
Machinability	20 %	20 %	UNS C36000 (free-cutting brass) = 100%
Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000150 ohm-cm	0.0000150 ohm-cm	
Magnetic Permeability	1.0	1.0	
Thermal Properties	Metric	English	Comments
CTE, linear	18.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ @Temperature 20.0 - 200 °C	10.0 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ @Temperature 68.0 - 392 °F	
Specific Heat Capacity	0.376 J/g $\cdot^\circ\text{C}$	0.0899 BTU/lb $\cdot^\circ\text{F}$	
Thermal Conductivity	71.0 W/m $\cdot\text{K}$ @Temperature 20.0 °C	493 BTU-in/hr $\cdot\text{ft}^2\cdot^\circ\text{F}$ @Temperature 68.0 °F	
Melting Point	832 - 1000 °C	1530 - 1830 °F	
Solidus	832 °C	1530 °F	
Liquidus	1000 °C	1830 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	<= 0.0050 %	<= 0.0050 %	
Copper, Cu	88 - 90 %	88 - 90 %	
Iron, Fe	<= 0.15 %	<= 0.15 %	
Lead, Pb	<= 0.30 %	<= 0.30 %	
Phosphorous, P	0.10 - 0.30 %	0.10 - 0.30 %	
Tin, Sn	10 - 12 %	10 - 12 %	
Zinc, Zn	<= 0.50 %	<= 0.50 %	