

# C90700

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**Material**

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

**Applications:** Gears, bearing bushings.

**Key Words:** Gear Bronze

<b>Physical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Density	8.77 g/cc	0.317 lb/in <sup>3</sup>	
<b>Mechanical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
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%
<b>Electrical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Electrical Resistivity	0.0000150 ohm-cm	0.0000150 ohm-cm	
Magnetic Permeability	1.0	1.0	
<b>Thermal Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
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-K @Temperature 20.0 °C	493 BTU-in/hr-ft <sup>2</sup> $\cdot^\circ\text{F}$ @Temperature 68.0 °F	
Melting Point	832 - 1000 °C	1530 - 1830 °F	
Solidus	832 °C	1530 °F	
Liquidus	1000 °C	1830 °F	

<b>Component Elements Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
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 %	