C84400

Material Notes: Casting methods recommended for this alloy: Centrifugal, Continuous, and Sand.

Applications: General hardware, ornamental castings. plumbing supplies and fixtures, low-pressure valves and fittings.

Classified under: Semi-red brasses and leaded semi-red brasses. ASTM B584; formerly ASTM B145-5A

As cast values below are for sand casting. Alloy does not respond to heat treating. Casting shrinkage allowance is 2%

Key Words: Leaded Semi-Red Brass, valve metal, 81-3-7-9, CA 844, ASTM B30 (CA844), ASTM B271, ASTM B505, ASTM B584; ASTM B145-5A

Physical Properties	Metric	English	Comments
Density	8.70 g/cc	0.314 lb/in³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	55	55	
Tensile Strength, Ultimate	235 MPa	34100 psi	
Tensile Strength, Yield	105 MPa @Strain 0.500 %	15200 psi @Strain 0.500 %	
Elongation at Break	26 %	26 %	In 50 mm
Modulus of Elasticity	90.0 GPa	13100 ksi	
Machinability	90 %	90 %	UNS C36000 (free-cutting brass) = 100%
Izod Impact	11.0 J	8.11 ft-lb	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000010513 ohm-cm @Temperature 20.0 °C	0.000010513 ohm-cm @Temperature 68.0 °F	Calculated from 16.4% IACS
Magnetic Permeability	1.0	1.0	

Thermal Properties	Metric	English	Comments
CTE, linear	18.0 µm/m-°C @Temperature 20.0 - 260 °C	10.0 µin/in-°F @Temperature 68.0 - 500 °F	
Specific Heat Capacity	0.380 J/g-°C	0.0908 BTU/lb-°F	
Thermal	72.5 W/m-K	503 BTU-in/hr-ft²-°F	

Conductivity	@Temperature 20.0 °C	@Temperature 68.0 °F
Melting Point	840 - 1005 °C	1540 - 1841 °F
Solidus	840 °C	1540 °F
Liquidus	1005 °C	1841 °F

Component Elements Properties	**Metric**	**English**	**Comments**
Aluminum, Al	<= 0.0050 %	<= 0.0050 %	
Antimony, Sb	<= 0.25 %	<= 0.25 %	
Copper, Cu	78 - 82 %	78 - 82 %	
Iron, Fe	<= 0.40 %	<= 0.40 %	
Lead, Pb	6.0 - 8.0 %	6.0 - 8.0 %	
Nickel, Ni	<= 1.0 %	<= 1.0 %	
Phosphorous, P	<= 0.020 %	<= 0.020 %	
Silicon, Si	<= 0.0050 %	<= 0.0050 %	
Sulfur, S	<= 0.080 %	<= 0.080 %	
Tin, Sn	2.3 - 3.5 %	2.3 - 3.5 %	
Zinc, Zn	7.0 - 10 %	7.0 - 10 %	