

C89831 Lead-Free Replacement for C844

Cast • GreenAlloy™

Product Description:	Bismuth Tin Bronze
Solids:	½" to 10" O.D.
Tubes:	1⅝" to 9" O.D.
Rectangles:	Up to 15"
Standard Lengths:	144"
Shape/Form:	semi-finished, mill stock or near-net shapes, anode, bar stock, billet/bloom, squares, hex, plate, profile or structural shape, flats/rectangular bar
Compliance:	C89831 is compliant with key legislation including (1) Federal Safe Drinking Water Act 1974 – SDWA, (2) Federal Reduction of Lead in Drinking Water Act of 2011 and (3) California AF1953

Typical Uses

Industrial corrosion-resistant/pressure-tight castings, high-speed/heavy-pressure bearings, impellers, pumps

Chemical Composition

Cu% ¹	Pb%	Sn%	Zn%	Fe%	P%	Ni% ²	Al%	Bi%	S%	Sb%	Si%
87.00-91.00	0.10	2.70-3.70	2.00-4.00	0.30	0.05	1.00	0.005	2.70-3.70	0.08	0.25	0.005

¹.01 - 2.0% as any single or combination of Ce La or other rare earth(x) elements as agreed upon. (x)ASM International definition: one of the group of chemically similar metals with atomic numbers 57 through 71 commonly referred to as lanthanides ²Ni value includes Co.
 Note: Cu + Sum of Named Elements, 99.0% min. Single values represent maximums.

Machinability

Copper Alloy UNS No.	Machinability Rating	Density (lb/cu in at 68 °F)
C89831	85	0.318

Mechanical Properties

Tensile Strength, min		Yield Strength, at .5% Extension Under Load, min		Elongation, in 2 in. or 50 mm min	Brinell Hardness	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
29	200	13	90	5	55 (500 kg)	

Physical Properties

C89831 continued

	US Customary	Metric
Melting Point – Liquidus	1893 °F	1033 °C
Melting Point – Solidus	1518 °F	825 °C
Density	0.318 lb/in ³ at 68 °F	8.81 gm/cm ³ at 20 °C
Specific Gravity	8.81	8.81
Electrical Conductivity	20.38% IACS at 68 °F	0.117 MegaSiemens/cm at 20 °C
Thermal Conductivity	50 Btu/sq ft/ft hr/°F at 68 °F	86.6 W/m at 20 °C
Coefficient of Thermal Expansion 68-392	10 · 10 ⁻⁶ per °F (68-392 °F)	17.3 · 10 ⁻⁶ per °C (20-200 °C)
Specific Heat Capacity	0.092 Btu/lb/°F at 68 °F	385.4 J/kg at 20 °C
Modulus of Elasticity in Tension	13700 ksi	94458 MPa

Physical Properties provided by CDA