

# C89831 Lead-Free Replacement for C844

Cast • GreenAlloy™

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

## Typical Uses

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

## Chemical Composition

Cu% <sup>1</sup>	Pb%	Sn%	Zn%	Fe%	P%	Ni% <sup>2</sup>	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

<sup>1</sup>.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 <sup>2</sup>Ni 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 <sup>3</sup> at 68° F	8.81 gm/cm <sup>3</sup> 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 · ft/(hr · ft <sup>2</sup> · °F) at 68° F	86.6 W/m at 20° C
Coefficient of Thermal Expansion	10 · 10 <sup>-6</sup> per °F (68°-392° F)	17.3 · 10 <sup>-6</sup> per °C (20°-200° C)
Specific Heat Capacity	0.092 Btu/lb/°F at 68° F	385.4 J/kg at 293° C
Modulus of Elasticity in Tension	13700 ksi	94458 MPa

Physical Properties provided by CDA