

C89833 Lead-free replacement for C836

	Continuous cast	GreenAlloys™
Product description	Bismuth tin bronze	
Solids	1/2" to 10" O.D.	
Tubes	1 1/8" 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	C89833 is compliant with key legislation including (1) Federal Safe Drinking Water Act - SDWA, (2) S. 3874 Federal Reduction of Lead in Drinking Water Act, (3) California AB1953, (4) Vermont Act 193, and is NSF/ANSI/CAN 61-2022 compliant	

Typical uses

Industrial

Corrosion-resistant/
pressure-tight castings,
impellers, pumps

Chemical composition

Cu (%)	Pb (%)	Sn (%)	Zn (%)	Fe (%)	P (%)	Ni (%) ¹	Al (%)	Bi (%)	S (%)	Sb (%)	Si (%)
86.00-91.00	0.09	4.00-6.00	2.00-6.00	0.30	0.05	1.00	0.005	1.70-2.70	0.08	0.25	0.005

Chemical composition provided by CDA

¹Ni value includes Co.

Note: Cu + sum of named elements, 99.3% min. Single values represent maximums.

Machinability

Copper alloy UNS no.	Machinability rating	Density (lb/in ³ at 68° F)
C89833	81	0.317

Mechanical properties

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, in 2 in. or 50 mm, min	Brinell hardness (500 kg load)	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
30	207	14	97	6	60	

Physical properties

	US customary	Metric
Melting point – liquidus	1877 °F	1025 °C
Melting point – solidus	1454 °F	790 °C
Density	0.317 lb/in ³ at 68 °F	8.78 gm/cm ³ at 20 °C
Specific gravity	8.78	8.78
Electrical conductivity	17.8% IACS at 68 °F	0.103 MegaSiemens/cm at 20 °C
Thermal conductivity	41 Btu/sq ft/ft hr/°F at 68 °F	71 W/m at 20 °C
Coefficient of thermal expansion 68-392	13 · 10 ⁻⁶ per °F (68-392 °F)	22.5 · 10 ⁻⁶ per °C (20-200 °C)
Specific heat capacity	0.085 Btu/lb/°F at 68 °F	356.1 J/kg at 20 °C
Modulus of elasticity in tension	15500 ksi	106869 MPa

Physical properties provided by CDA

Fabrication properties

Technique	Suitability
Soldering	Excellent
Brazing	Good
Oxyacetylene welding	Not recommended
Gas shielded arc welding	Not recommended
Coated metal arc welding	Poor
Machinability rating	81

Fabrication properties provided by CDA

Casting characteristics

Casting attribute	Level
Casting yield	High
Drossing	Low
Effect of section size	Low
Fluidity	Medium
Gassing	Medium
Patternmakers shrinkage (inches per foot)	11/64
Shrinkage in solidification	Low

Casting characteristics provided by CDA