

C89844 Lead-Free Replacement for C844

Cast • GreenAlloy™

Product Description:	Bismuth Tin Bronze
Solids:	½" to 10" O.D.
Tubes:	1½" 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:	C89844 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

Plumbing fittings/valves for potable water

Chemical Composition

Cu%	Pb%	Sn%	Zn%	Fe%	P%	Ni% ¹	Al%	Bi%	S%	Sb%	Si%
83.00- 86.00	0.20	3.00- 5.00	7.00- 10.00	0.30	0.05	1.00	0.005	2.00- 4.00	0.08	0.25	0.005

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/cu in at 68 °F)
C89844	70	0.310

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	
28	193	13	90	5	55 (500 kg)	

Physical Properties

C89844 continued

	US Customary	Metric
Melting Point – Liquidus	1850 °F	1010 °C
Melting Point – Solidus	1550 °F	853 °C
Density	0.310 lb/in ³ at 68 °F	8.58 gm/cm ³ at 20 °C
Specific Gravity	8.58	8.58
Electrical Conductivity	16.8% IACS at 68 °F	0.095 MegaSiemens/cm at 20 °C
Thermal Conductivity	46.70 Btu/sq ft/ft hr/°F at 68 °F	80.9 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	0.08 Btu/lb/°F at 68 °F	335.2 J/kg at 20 °C
Modulus of Elasticity in Tension	13000 ksi	89622 MPa

Physical Properties provided by CDA

Fabrication Properties

Joining Technique	Suitability
Soldering	Excellent
Brazing	Good
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Not Recommended
Coated Metal Arc Welding	Not Recommended

Fabrication Properties provided by CDA

Thermal Properties

Treatment	Temp./Time - US	Temp./Time - SI
Stress Temperature	500	260
Solution Minimum		
Solution Maximum		
Solution Time	0.0	
Solution Medium		
Precipitation Value		
Precipitation Time		
Precipitation Medium		
Annealing Minimum		
Annealing Maximum		
Annealing Time		
Hot Treatment Minimum		
Hot Treatment Maximum		

Thermal Properties provided by CDA