

C89844 Lead-Free Replacement for C844

Product Description:	Bismuth Tin Bronze
Solids:	½" to 10" O.D.
Tubes:	1 ½" 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 AB1953

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

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)
C89844	70	0.31

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	
28	193	13	90	5	55	

Physical Properties

	US Customary	Metric
Melting Point - Liquidus	1850 °F	1010 °C
Melting Point - Solidus	1550 °F	853 °C
Density	0.31 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	46.7 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

Technique	Suitability
Soldering	Excellent
Brazing*	Good
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Not Recommended
Coated Metal Arc Welding	Not Recommended
Machinability Rating	70

Fabrication Properties provided by CDA

*Since brazing is performed within the hot-short range, strain must be avoided during brazing and cooling.

Thermal Properties

Treatment	Value*	Time**
Stress Relief	500	
Solution Treatment		0

Thermal Properties provided by CDA

*Temperature is measured in Fahrenheit. **For Stress Relief, Solution Treatment and Annealing - Time is measured in hours/inch of thickness. For Precipitation Heat Treatment - Time is measured in hours.