

C89831 Lead-Free Replacement for C844

Cast • GreenAlloy™

| | |
|-----------------------------|--|
| Product Description: | Bismuth Tin Bronze |
| Solids: | ½" to 10" OD |
| Tubes: | 1⅝" to 9" OD |
| 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 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 · ft/(hr · ft ² · °F) at 68° F | 86.6 W/m at 20° C |
| Coefficient of Thermal Expansion | 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 293° C |
| Modulus of Elasticity in Tension | 13700 ksi | 94458 MPa |

Physical Properties provided by CDA