

# C89835 Lead-free replacement for C932, C836, C844

| Standard-stocked product   | Continuous cast   | GreenAlloys™ |
|----------------------------|---|--------------|
| <b>Product description</b> | Bismuth tin bronze  |              |
| <b>Solids</b>              | 1/2" to 8" O.D.   |              |
| <b>Tubes</b>               | 1 1/8" to 14" O.D.  |              |
| <b>Rectangles</b>          | Up to 15"   |              |
| <b>Standard lengths</b>    | 105"  |              |
| <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>          | C89835 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

Housing, small gears

### Industrial

Faucets, pipe fittings, plumbing goods, pump components, water pump impellers

| Chemical composition |        |           |           |        |       |                     |        |           |       |        |        |
|----------------------|--------|-----------|-----------|--------|-------|---------------------|--------|-----------|-------|--------|--------|
| Cu (%)               | Pb (%) | Sn (%)    | Zn (%)    | Fe (%) | P (%) | Ni (%) <sup>1</sup> | Al (%) | Bi (%)    | S (%) | Sb (%) | Si (%) |
| 85.00-89.00          | 0.09   | 6.00-7.50 | 2.00-4.00 | 0.20   | 0.10  | 1.00                | 0.005  | 1.70-2.70 | 0.08  | 0.35   | 0.005  |

Chemical composition provided by CDA

<sup>1</sup>Ni 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 <sup>3</sup> at 68 ° F) |
|----------------------|----------------------|--|
| C89835               | 70                   | 0.321                                  |

## 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                                  | 65                             |         |

## Physical properties

|   | US customary                             | Metric                                     |
|---|--|--|
| Melting point – liquidus                | 1855 °F                                  | 1012 °C                                    |
| Melting point – solidus                 | 1445 °F                                  | 785 °C                                     |
| Density                                 | 0.321 lb/in <sup>3</sup> at 68 °F        | 8.89 gm/cm <sup>3</sup> at 20 °C           |
| Specific gravity                        | 8.89                                     | 8.89                                       |
| Electrical conductivity                 | 14.5% IACS at 68 °F                      | 0.084 MegaSiemens/cm at 20 °C              |
| Thermal conductivity                    | 38 Btu/sq ft/ft hr/°F at 68 °F           | 65.8 W/m at 20 °C                          |
| Coefficient of thermal expansion 68-392 | 10 · 10 <sup>-6</sup> per °F (68-392 °F) | 17.3 · 10 <sup>-6</sup> per °C (20-200 °C) |
| Specific heat capacity                  | 0.093 Btu/lb/°F at 68 °F                 | 389.6 J/kg at 20 °C                        |
| Modulus of elasticity in tension        | 16900 ksi                                | 116522 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

## Casting characteristics

| Casting attribute                         | Level  |
|---|--------|
| Casting yield                             | High   |
| Drossing                                  | Low    |
| Effect of section size                    | Low    |
| Fluidity                                  | Medium |
| Gassing                                   | Medium |
| Patternmakers shrinkage (inches per foot) | 1/8    |
| Shrinkage in solidification               | Low    |

Casting characteristics provided by CDA