# C91300

**Cast • GreenAlloys™**

| | |
|---|---|
| **Product Description:** | Tin Bronze |
| **Solids:** | 1" to 6" O.D. |
| **Tubes:** | 1" to 6" O.D. |
| **Rectangles:** | Up to 10" |
| **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:** | C91300 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

| | |
|---|---|
| **Consumer** | bells |
| **Industrial** | bearings, bushings, piston rings, valve bodies |

## Similar or Equivalent Specification

| CDA | ASTM | SAE | AMS | Federal | Military | Other |
|---|---|---|---|---|---|---|
| C91300 | B505<br>B505M<br>B22<br>B22M | | 7322 | QQ-C-390, D1 | | |

## Chemical Composition

| Cu%[1] | Pb% | Sn% | Zn% | Fe% | P% | Ni%[1,2] | Al% | S% | Sb% | Si% |
|---|---|---|---|---|---|---|---|---|---|---|
| 79.00-82.00 | 0.25 | 18.00-20.00 | 0.25 | 0.25 | 1.50 | 0.50 | 0.005 | 0.05 | 0.20 | 0.005 |

Chemical Composition according to ASTM B505/B505M-18

[1]In determining Cu min., Cu may be calculated as Cu + Ni. [2]Ni value includes Co.
Note: Cu + Sum of Named Elements, 99.4% min. Single values represent maximums.

## Machinability

| Copper Alloy UNS No. | Machinability Rating | Density (lb/in³ at 68 °F) |
|---|---|---|
| C91300 | 10 | 0.318 |

## Mechanical Properties

| Tensile Strength, min | | Yield Strength, at 0.5% Extension Under Load, min | | Elongation, in 2 in. or 50 mm min | Brinell Hardness (3000 kg load) | Remarks |
|---|---|---|---|---|---|---|
| ksi | MPa | ksi | MPa | % | minimum BHN | |
| | | | | | 160 | |

Mechanical Properties according to ASTM B505/B505M-18

## Physical Properties

| | US Customary | Metric |
|---|---|---|
| Melting Point – Liquidus | 1632 ˚F | 889 ˚C |
| Melting Point – Solidus | 1505 ˚F | 818 ˚C |
| Electrical Conductivity | 7% IACS at 68 ˚F | 0.04 MegaSiemens/cm at 20 ˚C |
| Specific Heat Capacity | 0.09 Btu/lb/˚F at 68 ˚F | 377.1 J/kg at 20 ˚C |
| Modulas of Elasticity in Tension | 16000 ksi | 110000 MPa |

Physical Properties provided by CDA

## Fabrication Properties

| Technique | Suitability |
|---|---|
| Soldering | Excellent |
| Brazing* | Good |
| Oxyacetylene Welding | Fair |
| Gas Shielded Arc Welding | Fair |
| Coated Metal Arc Welding | Fair |
| Machinability Rating | 10 |

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.



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