



TYPICAL USES

Industrial Restaurant Equipment, Worm Wheels, Gears, Bearings for Heavy Loads and Relatively Low Speeds, Bearings, Gear Boxes, Speed Reducers, Valve Bodies, Worm Gears

Bronze Family: High Tin Bronze
Solids: 1/2" to 10" OD
Tubes: 1" to 16" OD
Rectangles: Up to 20"
Standard Lengths: 144"

SIMILAR OR EQUIVALENT SPECIFICATION

| CDA | ASTM | ASARCON | SAE | AMS | FEDERAL | INGOT | MILITARY | OTHER |
|--------|-----------|---------|--------------------------------|-----|--------------------|-------|----------|----------------|
| C90700 | ASTM B505 | 110 | SAE 65 SAE J461 SAE J462 | | QQ-C-390B TYPE III | 205 | | Tin Bronze, 65 |

CHEMICAL COMPOSITION

| Alloy | Cu% | Sn% | Pb% | Zn% | Fe% | Ni% | Sb% | P% | S% | Al% | Mn% | Si% |
|--------|-------------|-------------|------|------|------|-------|------|-----|------|-------|-----|-------|
| C90700 | 88.00-90.00 | 10.00-12.00 | 0.50 | 0.50 | 0.15 | 0.50* | 0.20 | 1.5 | 0.05 | 0.005 | N/A | 0.005 |

Chemical Composition according to ASTM B505-08

Note: Single values represent maximums.

*In determining copper minimum, copper may be calculate as copper plus nickel.

MACHINABILITY

| Alloy | Machinability Rating | Density (lb/cu in.) |
|--------|----------------------|---------------------|
| C90700 | 20 | 0.317 |

MECHANICAL PROPERTIES

| Tensile Strength, min | | Yield Strength, at .5% extension under load min | | Elongation in 2 in. or 50 mm min, % | Brinell Hardness, min | Remarks |
|-----------------------|-----|---|-----|-------------------------------------|-----------------------|---------|
| ksi | MPa | ksi | MPa | | | |
| 40 | 276 | 25 | 172 | 10 | N/A | |

Mechanical Properties according to ASTM B505-08

PHYSICAL PROPERTIES

ALLOY: C90700 CONTINUED

| | US Customary | Metric |
|----------------------------------|---|---|
| Melting Point - Liquidus | 1830 F | 999 C |
| Melting Point - Solidus | 1528 F | 831 C |
| Density | 0.317 lb/in ³ at 68 F | 8.77 gm/cm ³ @ 20 C |
| Specific Gravity | 8.770 | 8.77 |
| Electrical Resistivity | 107.40 ohms-cmil/ft @ 68 F | 17.86 microhm-cm @ 20 C |
| Electrical Conductivity | 10 %IACS @ 68 F | 0.056 MegaSiemens/cm @ 20 C |
| Thermal Conductivity | 40.80 Btu · ft/(hr · ft ² ·oF)at 68F | 70.6 W/m · oK at 20 C |
| Coefficient of Thermal Expansion | 10.20 · 10 ⁻⁶ per oF (68-392 F) | 18.4 · 10 ⁻⁶ per oC (20-200 C) |
| Specific Heat Capacity | 0.090 Btu/lb/oF at 68 F | 377.1 J/kg · oK at 293 K |
| Modulus of Elasticity in Tension | 15000 ksi | 103400 MPa |
| Magnetic Permeability | 1 | 1.0 |

Physical Properties provided by CDA

FABRICATION PRACTICES

| Joining Technique | Suitability |
|--------------------------|-------------|
| Soldering | Excellent |
| Brazing | Good |
| Oxyacetylene Welding | Fair |
| Gas Shielded Arc Welding | Fair |
| Coated Metal Arc Welding | Fair |

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 | None | |
| Precipitation Value | | |
| Precipitation Time | | |
| Precipitation Medium | None | |
| Annealing Minimum | | |
| Annealing Maximum | | |
| Annealing Time | | |
| Hot Works Minimum | | |
| Hot Works Maximum | | |

Thermal Properties provided by CDA