

C 314 Commercial Bronze

Bronze Family: Leaded Commercial Bronze



C 314 Commercial Bronze is a Morgan standard alloy and finds use in hardware applications, electrical applications, as well as fasteners and industrial applications. Uses include various electrical connectors, screws and nuts, pickling crates, fixtures and racks. It is also common in screw machine applications.

| Equivalent Specifications |
|---|
| ASTM B140/ B140M (Copper Alloy UNS No. 31400) |
| Reference Specifications |
| Mil-V-18436 |

Equivalent specifications are verified and updated annually.
Specifications shown are current as of May 4, 2010.

Available from stock at Morgan Bronze in:

Rounds



| Chemical Composition (%) | | | | | |
|--|------------------|-----------|-----------------|-----------|--------------|
| Cu | Pb | Fe | Ni | Zn | |
| 87.5 – 90.5 | 1.3 – 2.5 | 0.10 max. | 0.7 max. | Remainder | |
| Sum of all named elements = 99.6% | | | | | |
| Mechanical Properties | | | | | |
| Minimum Tensile Properties, English/Metric | | | | | |
| Temper HO2 half hard | | | | | |
| Nominal Diameter | Tensile Strength | | Yield Strength* | | Elongation** |
| Inches/mm | ksi | MPa | ksi | MPa | % |
| ½" and under/ 12 mm | 50 | 345 | 30 | 205 | 7 |
| Over ½ to 1"/12-25 mm incl | 45 | 310 | 27 | 185 | 10 |
| Over 1.00"/25 mm | 40 | 275 | 25 | 170 | 12 |
| Temper HO4 hard | | | | | |
| Nominal Diameter | Tensile Strength | | Yield Strength* | | Elongation** |
| Inches/mm | ksi | MPa | ksi | MPa | % |
| 2" and under/50 mm | 53 | 365 | 40 | 275 | 6 |

* Yield Strength at 0.5% Extension under Load, min. ksi/MPa

**Elongation in 4D

Chemical and Physical Properties shown here pertain to ASTM B140/B140M only.

Machinability Rating 80 (Free Cutting Brass = 100)



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(continued)

| Physical Properties | | |
|------------------------------------|---|--|
| | English | Metric |
| Melting Point – Liquidus | 1900° F | 1038° C |
| Melting Point – Solidus | 1850° F | 1010° C |
| Density | 0.319 lb/in ³ at 68° F | 8.83 gm/cm ³ @ 20° C |
| Specific Gravity | 8.830 | 8.83 |
| Electrical Resistivity (Annealed) | 24.70 ohms-cmil/ft @ 68° F | 4.11 microhm-cm @ 20° C |
| Electrical Conductivity (Annealed) | 42% IACS @ 68° F | 0.246 MegaSiemens/cm @ 20° C |
| Thermal Conductivity | 104 Btu · ft/(hr · ft ² ·°F) @ 68° F | 180.0 W/m·°K @20° C |
| Coefficient of Thermal Expansion | 10.2 · 10 ⁻⁶ per °F (68-572° F) | 18.4 · 10 ⁻⁶ per °C (20-300° C) |
| Specific Heat Capacity | 0.090 Btu/lb/°F @ 68° F | 377.1 J/kg · °K @293° K |
| Modulus of Elasticity in Tension | 17,000 ksi | 117,000 MPa |

Physical Properties provided by CDA

| Fabrication Practices | | | |
|---------------------------|-----------------|---------------------------------|-------------------|
| Soldering | Excellent | Capacity for Being Cold Worked | Good |
| Brazing | Good | Capacity for Being Hot Formed | Poor |
| Oxyacetylene Welding | Not Recommended | | |
| Gas Shielded Arc Welding | Not Recommended | Annealing Temperature – Minimum | 800° F or 427° C |
| Coated Metal Arc Welding | Not Recommended | Annealing Temperature – Maximum | 1200° F or 649° C |
| Resistance Welding – Spot | Not Recommended | | |
| Resistance Welding – Seam | Not Recommended | | |
| Resistance Welding – Butt | Fair | | |

Fabrication Practices provided by CDA

DISCLAIMER:

The Physical, Fabrication and Thermal Properties shown here represent reasonable approximations suitable for general engineering use. Due to commercial variations in compositions and to manufacturing limitations, they should not be used for specification purposes. See applicable ASTM International specification references.