

Technical Data Sheet

AMPCO[®] 15

Extruded aluminum bronze rod



Description

A wrought aluminum-iron-copper alloy recommended for medium-duty applications involving wear and fatigue, especially where higher ductility is required for cold working.

Uses include: cams, bushings, bearing retainer cages, valve stems and guides, sleeve bearings.

AMPCO[®] 15 alloy will maintain mechanical properties at temperatures up to 600°F. It has a machinability rating of 50%. The alloy provides excellent corrosion resistance to sea water and non-oxidizing mineral acids. Can be welded with gas-shielded and shielded metal-arc processes. Brazing, soldering and oxyfuel gas welding are not recommended.

Hot and cold formability is good with a forgeability rating of 75%. AMPCO[®] 15 alloy can be hot worked at temperatures from 1400° to 1650°F and annealed between 1100° and 1200°F.

The consistent superiority of AMPCO[®] 15 alloy over commercial bronze is due, in large part, to the unique distribution of alloy microstructure, often referred to as the "Ampco-Phase". Only Ampco alloys offer this metallurgical advantage.

Chemistry

Copper 88%, Aluminum 9%, Iron 3%.

Mechanical Properties* (contd)

| | |
|--|--------|
| Ultimate in Compression (ksi)..... | 130 |
| Proportional Limit (ksi)..... | 18 |
| Fatigue Strength (ksi @ 10 ⁸ cycle) | 30 |
| Impact-Charpy V-notch (ft-lbs) | 22-25 |
| Izod (ft.-lbs.)..... | 32-35 |
| Modulus of Elasticity (Tension), ksi | 17,000 |
| Modulus of Rigidity (ksi)..... | 6,400 |
| Poisson's Ratio | .328 |
| *based on 1" dia. test bars | |

Physical Properties

| | |
|--|------------------------|
| Density (lbs./in. ³)..... | .276 |
| Specific Gravity | 7.65 |
| Specific Heat (Btu/lb./°F) | .09 |
| Coefficient of Thermal Expansion | |
| (in./in./°F) | 9.0 x 10 ⁻⁶ |
| Electrical Conductivity (% IACS) | 12 |
| Electrical Resistivity | |
| (Microhms-Meter @ 68°F) | 144 |
| Thermal Conductivity | |
| (Btu/sq. ft./ft./hr./°F @68°F) | 31.4 |
| Magnetic Permeability | 1.2 |

Specifications

| | |
|------------|-----------------------------|
| ASTM | B-150 C61900, B-150 C62300 |
| ASME | SB-150 C62300 (thru 3" dia) |
| SAE | J-463 C62300 (thru 3" dia) |
| AMS | 4635 (thru 3" dia) |

| Extruded-Drawn-Stress Relieved (Temper HR-50) | Tensile Strength Ksi | | Yield Strength Ksi | | Elongation % in 2" min. | Hardness Nom. BHN (Rockwell) | |
|---|----------------------|-------|--------------------|-------|-------------------------|------------------------------|-------|
| | min. | (Mpa) | min. | (Mpa) | | | |
| ½" and under | 90 | (620) | 50 | (310) | 15 | 183 | (89B) |
| Over ½" to 1" incl. | 88 | (605) | 44 | (305) | 15 | 174 | (88B) |
| Over 1" to 2" incl. | 85 | (586) | 42 | (289) | 20 | 170 | (87B) |
| Over 2" to 3" incl. | 80 | (551) | 37 | (255) | 30 | 163 | (85B) |