

Alloy: C63000

Bronze Family: Aluminum Bronze

Tempers: Hr50 Drawn and Stress Relieved

Solids: 5/8" to 3" OD

Hex: 1/2" to 2" OD

Rectangles: Consult Mill

Standard Lengths: 144"

Typical Uses

Industrial Valve Seats, Plunger Tips, Condenser Tube for Power Stations and Desalting Units, Shafting, Pump Parts, Cams, Gears, Valve Guides, Aircraft Parts, Pump Shafts, Structural Members, Corrosion Resistant Articles, Hydraulic Bushings for Earth Moving Equipment, Valve Balls, Bushings, Bearings, Heat Exchanger Flanges, Heat Exchanger Headers, Tanks, Welded Piping Systems, Balls

Marine Nuts, Ship Propellers, Pump Parts, Bolts

Plumbing Faucets

Similar or Equivalent Specification

CDA	ASTM	ASARCON	SAE	AMS	FEDERAL	INGOT	MILITARY	OTHER
C63000	B150	77	J461 J462	4640	QQ-C-465B			Aluminum Bronze

Chemical Composition

Alloy	Cu%	Sn%	Pb%	Zn%	Fe%	Ni%	Al%	Mn%	Si%
C63000	Remainder	0.20	N/A	0.30	2.00- 4.00	4.00- 5.50	9.00- 11.00	0.00- 1.50	0.25

Chemical Composition according to ASTM B150-08

Note: Single values represent maximums.

Machinability

Alloy	Machinability Rating	Density (lb/cu in.)
C63000	30	0.274

Mechanical Properties

Mechanical Properties according to ASTM B150-08

C63000

HR50 DRAWN AND STRESS RELIEVED TEMPER

Size range: 1/2" to 1" rod

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	%		
100	690	50	345	5	N/A	

Size range: over 1" to 2" inclusive rod

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	%		
90	620	45	310	6	N/A	

Size range: over 2" to 3" inclusive rod

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	%		
85	585	42.5	295	10	N/A	

Physical Properties

	US Customary	Metric
Melting Point - Liquidus	1930 °F	1054 °C
Melting Point - Solidus	1895 °F	1035 °C
Density	0.274 lb/in ³ at 68 °F	7.58 gm/cm ³ @ 20 °C
Specific Gravity	7.580	7.58
Electrical Resistivity	116 ohms-cmil/ft @ 68 °F	19.28 microhm-cm @ 20 °C
Electrical Conductivity	70% IACS @ 68 °F	0.041 MegaSiemens/cm @ 20 °C
Thermal Conductivity	22.60 Btu/sq ft/ft hr/°F at 68 °F	39.1 W/m at 20 °C
Coefficient of Thermal Expansion	90 · 10 ⁻⁶ per °F (68-572 °F)	16.2 · 10 ⁻⁶ per °C (20-300 °C)
Specific Heat Capacity	0.090 Btu/lb/°F at 68 °F	377.1 J/kg at 293 K
Modulus of Elasticity in Tension	17500 ksi	121000 MPa
Modulus of Rigidity	6400 ksi	44130 MPa

Physical Properties provided by CDA

Fabrication Properties

Joining Technique	Suitability
Soldering	Not Recommended
Brazing	Fair
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Good
Coated Metal Arc Welding	Good
Spot Weld	Good
Seam Weld	Good
Butt Weld	Good
Capacity for Being Cold Worked	Poor
Capacity for Being Hot Formed	Good
Forgeability Rating	75

Fabrication Properties provided by CDA

Thermal Properties

Treatment	Temp./Time - US	Temp./Time - SI
Stress Temperature		
Solution Minimum		
Solution Maximum		
Solution Time		
Solution Medium	None	
Precipitation Value		
Precipitation Time		
Precipitation Medium	None	
Annealing Minimum	1100	594
Annealing Maximum	1300	705
Annealing Time		
Hot Works Minimum	1450	788
Hot Works Maximum	1700	927

Thermal Properties provided by CDA