

C63000

Wrought

Product Description:	Nickel Aluminum Bronze
Tempers:	HR50 Drawn and Stress Relieved (3/8" to 3" O.D.) TQ50 (over 3" O.D.)
Solids:	3/8" to 10" O.D.
Hex:	1/2" to 2" O.D.
Rectangles:	Consult Mill
Standard Lengths:	144"

Typical Uses

Industrial	aircraft parts, balls, bearings, bushings, cams, condenser tube for power stations and desalting units, corrosion resistant articles, gears, heat exchanger flanges, hydraulic bushings for earth moving equipment, plunger tips, pump parts, pump shafts, shafting, structural members, tanks, valve balls, valve guides, valve seats, welded piping systems
Marine	bolts, nuts, propellers, pump parts, ship propellers
Plumbing	faucets

Similar or Equivalent Specification

CDA	ASTM	Asarcon	SAE	AMS	Federal	Military	Other
C63000	B150 B150M		J461 J463	4640	QQ-C-465B AMD1		

Chemical Composition

Cu% ¹	Sn%	Zn%	Fe%	Ni% ²	Al%	Mn%	Si%
Rem.	0.20	0.30	2.00- 4.00	4.00- 5.50	9.00- 11.00	1.50	0.25

Chemical Composition according to ASTM B150/B150M-12(2017)

¹Cu value includes Ag.

²Ni value includes Co.

Note: Cu + Sum of Named Elements, 99.5% min. Single values represent maximums.

Machinability

Copper Alloy UNS No.	Machinability Rating	Density (lb/cu in at 68 °F)
C63000	30	0.274



Mechanical Properties

C63000 continued

Mechanical Properties according to ASTM B150/B150M-12(2017)

C63000

HR50 Drawn and Stress Relieved Temper (3/8" to 3" O.D.), TQ50 (over 3" O.D.)

SIZE RANGE: UP TO 1" ROD INCLUSIVE

Tensile Strength, min		Yield Strength, at .5% Extension Under Load, min		Elongation, 4x diameter or specimen thickness	Brinell Hardness (3000 kg load)	Remarks
ksi	MPa	ksi	MPa	%	min to max BHN	
110	760	68	470	10	201 to 248	

SIZE RANGE: OVER 1" TO 2" ROD INCLUSIVE

Tensile Strength, min		Yield Strength, at .5% Extension Under Load, min		Elongation, 4x diameter or specimen thickness	Brinell Hardness (3000 kg load)	Remarks
ksi	MPa	ksi	MPa	%	min to max BHN	
110	760	60	415	10	201 to 248	

SIZE RANGE: OVER 2" TO 3" ROD INCLUSIVE

Tensile Strength, min		Yield Strength, at .5% Extension Under Load, min		Elongation, 4x diameter or specimen thickness	Brinell Hardness (3000 kg load)	Remarks
ksi	MPa	ksi	MPa	%	min to max BHN	
105	725	55	380	10	187 to 241	

SIZE RANGE: OVER 3" TO 5" ROD INCLUSIVE

Tensile Strength, min		Yield Strength, at .5% Extension Under Load, min		Elongation, 4x diameter or specimen thickness	Brinell Hardness (3000 kg load)	Remarks
ksi	MPa	ksi	MPa	%	min to max BHN	
100	690	50	345	10	187 to 241	

SIZE RANGE: OVER 5" ROD

Tensile Strength, min		Yield Strength, at .5% Extension Under Load, min		Elongation, 4x diameter or specimen thickness	Brinell Hardness (3000 kg load)	Remarks
ksi	MPa	ksi	MPa	%	min to max BHN	
100	690	50	345	10	187 to 241	



Physical Properties

C63000 continued

	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 at 20 °C
Specific Gravity	7.58	7.58
Electrical Conductivity	7% IACS at 68 °F	0.041 MegaSiemens/cm at 20 °C
Thermal Conductivity	22.6 Btu/sq ft/hr/°F at 68 °F	39.1 W/m at 20 °C
Coefficient of Thermal Expansion	9.0 · 10 ⁻⁶ per °F (68-572 °F)	15.5 · 10 ⁻⁶ per °C (20-300 °C)
Specific Heat Capacity	0.09 Btu/lb/°F at 68 °F	377.1 J/kg at 20 °C
Modulus of Elasticity in Tension	17500 ksi	120650 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		
Precipitation Value		
Precipitation Time		
Precipitation Medium		
Annealing Minimum	1100	594
Annealing Maximum	1300	705
Annealing Time		
Hot Treatment Minimum	1450	788
Hot Treatment Maximum	1700	927

Thermal Properties provided by CDA

