



TYPICAL USES

Electrical Electrical Connectors
Industrial Bushings, Gears, Pinions, Screw Machine Products, Thrust Washers, Valve Parts, Sleeve Bearings, Thrust Bearings, Bearings, Shafts

Bronze Family: Phosphor Bronze B2
Tempers: H04 HARD
Solids: 3/8" to 2-1/2" OD
Hex: 3/8" to 2" OD
Rectangles: Consult Mill
Standard Lengths: 144"

SIMILAR OR EQUIVALENT SPECIFICATION

CDA	ASTM	ASARCON	SAE	AMS	FEDERAL	INGOT	MILITARY	OTHER
C54400	ASTM B139		SAE J461 SAE J463					Phosphor Bronze B-2

CHEMICAL COMPOSITION

Alloy	Cu%	Sn%	Pb%	Zn%	Fe%	P%
C54400	Remainder	3.50- 4.50	3.00- 4.00	1.50- 4.50	0.10	0.01- 0.50

Chemical Composition according to ASTM B139-07

Note: Single values represent maximums.

MACHINABILITY

Alloy	Machinability Rating	Density (lb/cu in.)
C54400	80	0.320

MECHANICAL PROPERTIES

ALLOY: C54400 CONTINUED

Mechanical Properties according to ASTM B139-07

C54400

HO4 HARD TEMPER

SIZE RANGE: 1/4" TO 1/2" ROUND AND HEXAGONAL

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			
60	415	N/A	N/A	10	N/A	

SIZE RANGE: OVER 1/2" TO 1" INCLUSIVE ROUND AND HEXAGONAL

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			
55	380	N/A	N/A	12	N/A	

SIZE RANGE: OVER 1" ROUND AND HEXAGONAL

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			
50	345	N/A	N/A	15	N/A	

PHYSICAL PROPERTIES

	US Customary	Metric
Melting Point - Liquidus	1830 F	999 C
Melting Point - Solidus	1700 F	927 C
Density	0.320 lb/in ³ at 68 F	8.89 gm/cm ³ @ 20 C
Specific Gravity	8.890	8.89
Electrical Resistivity	54.60 ohms-cmil/ft @ 68 F	9.08 microhm-cm @ 20 C
Electrical Conductivity	190 %IACS @ 68 F	0.111 MegaSiemens/cm @ 20 C
Thermal Conductivity	500 Btu · ft/(hr · ft ² ·oF) at 68F	86.5 W/m · oK at 20 C
Coefficient of Thermal Expansion	9.60 · 10 ⁻⁶ per oF (68-572 F)	17.3 · 10 ⁻⁶ per oC (20-300 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
Modulus of Rigidity	5600 ksi	38610 MPa

Physical Properties provided by CDA

FABRICATION PRACTICES

Joining Technique	Suitability
Soldering	Excellent
Brazing	Good
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Not Recommended
Coated Metal Arc Welding	Not Recommended
Spot Weld	Not Recommended
Seam Weld	Not Recommended
Butt Weld	Fair
Capacity for Being Cold Worked	Good

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	900	483
Annealing Maximum	1250	677
Annealing Time		
Hot Works Minimum		
Hot Works Maximum		

Thermal Properties provided by CDA