Alloy: C51000

Bronze Family: Phosphor Bronze 5% A
Tempers: H04 Hard, H08 Spring
Solids: 3/8” to 2-1/2” OD
Hex: 3/8” to 2” OD
Rectangles: Consult Mill
Standard Lengths: 144”

Typical Uses

Architecture Bridge Bearing Plates

Electrical Resistance Wire, Fuse Clips, Electromechanical Spring Components, Electrical Flexing Contact Blades, Electrical Connectors, Wire Brushes, Switch Parts, Electronic and Precision Insturment Parts

Fasteners Cotter Pins, Lock Washers

Industrial Bourdon Tubes, Bellows, Perforated Sheets, Chemical Hardware, Truss Wire, Springs, Sleeve Bushings, Diaphragms, Clutch Disks, Pressure Responsive Elements, Beater Bars, Textile Machinery, Welding Rods

Similar or Equivalent Specification

CDA	ASTM	ASARCON	SAE	AMS	FEDERAL	INGOT	MILITARY	OTHER
C51000	ASTM B139		SAE J461 SAE J463	AMS 4625				Phosphor Bronze 5% A

Chemical Composition

Alloy	Cu%	Sn%	Pb%	Zn%	Fe%	P%
C51000	Remainder	4.20-5.80	0.05	0.30	0.10	0.03- 0.35

Chemical Composition according to ASTM B139-07
Note: Single values represent maximums.

Machinability

Alloy	Machinability Rating	Density (lb/cu in.)
C51000	20	0.320

Mechanical Properties

Mechanical Properties according to ASTM B139-07

C51000
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**			
70	485	N/A	N/A	13	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**			
60	415	N/A	N/A	15	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**			
55	380	N/A	N/A	18	N/A	

C51000
H08 SPRING TEMPER

Size range: 3/8” to 1/2” round

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	N/A	N/A	9	N/A	

Dura-Bar® Metal Services

Alloy: C51000

Physical Properties

	US Customary	Metric
Melting Point - Liquidus	1920 F	1049 C
Melting Point - Solidus	1750 F	954 C
Density	0.320 lb/in3 at 68 F	8.86 gm/cm3 @ 20 C
Specific Gravity	8.860	8.86
Electrical Resistivity	69.10 ohms-cmil/ft @ 68 F	11.49 microhm-cm @ 20 C
Electrical Conductivity*	15 %IACS @ 68 F	0.088 MegaSiemens/cm @ 20 C
Thermal Conductivity	40 Btu · ft/(hr · ft2·oF)at 68F	69.2 W/m · oK at 20 C
Coefficient of Thermal Expansion	9.90 ·10-6 per oF (68-572 F)	17.8 ·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
Modulas of Elasticity in Tension	16000 ksi	110000 MPa
Modulas of Rigidity	6000 ksi	41370 MPa

Physical Properties provided by CDA
*Determined on an alloy containing 5% tin and .2% phosphorus. This value will vary with the composition.

Fabrication Properties

Joining Technique	Suitability
Soldering	Excellent
Brazing	Excellent
Oxyacetylene Welding	Fair
Gas Shielded Arc Welding	Good
Coated Metal Arc Welding	Fair
Spot Weld	Good
Seam Weld	Fair
Butt Weld	Excellent
Capacity for Being Cold Worked	Excellent
Capacity for Being Hot Formed	Poor

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

For more information contact Dura-Bar Metal Services
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888-387-2227 | **dura-barms.com**