

C 544 Phosphor Bronze - Grade B

Bronze Family: Leaded Phosphor Bronze



C 544 Phosphor Bronze - Grade B is a Morgan standard alloy and finds use in electrical applications, as well as many industrial applications. It is used as electrical connectors and partially due to its excellent machinability finds use as bushings, gears, pinions, screw machine products, thrust washers, valve parts, and shafts.

Equivalent Specifications
ASTM B139/ B139M
Reference Specifications
SAE J461; SAE J463
ASTM B103
Copper Alloy UNS C54400

Equivalent specifications are verified and updated annually.
Specifications shown are current as of May 4, 2010.

Available from stock at Morgan Bronze in:

Rounds



Chemical Composition (%)					
Cu	Sn	P	Fe	Pb	Zn
Remainder	3.5 – 4.5	0.01 – 0.50	0.10 max.	3.0 - 4.0	1.5 – 4.5
Sum of all named elements = 99.5%					
Mechanical Properties					
Minimum Tensile Properties, English/Metric					
Temper HO4 hard					
Nominal Diameter		Tensile Strength		Elongation**	
Inches/mm		ksi	MPa	%	
1/4" – 1/2" incl./6 - 12 mm. incl.		60	415	10	
Over 1/2" to 1" incl./12-25 mm incl.		55	380	12	
Over 1.00"/25 mm		50	345	15	

**Elongation in 4D
Chemical Composition and Mechanical Properties shown pertain to ASTM B139/B139 M only.

Machinability Rating 80 (Free Cutting Brass = 100)



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(continued)

Physical Properties		
	English	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 (Annealed)	54.60 ohms-cmil/ft @ 68°F	9.08 microhm-cm @ 20° C
Electrical Conductivity (Annealed)	19%IACS @ 68° F	0.111 MegaSiemens/cm @ 20° C
Thermal Conductivity	50 Btu · ft/(hr · ft ² ·°F) @ 68° F	86.5 W/m · °K @20° C
Coefficient of Thermal Expansion	9.60 · 10 ⁻⁶ per °F (68-572° F)	17.3 ·10 ⁻⁶ per °C (20-300° C)
Specific Heat Capacity	0.090 Btu/lb/°F @ 68°F	377.1 J/kg · °K @ 293°K
Modulus of Elasticity in Tension	15,000 ksi	103,400 MPa

Physical Properties provided by CDA

Fabrication Practices			
Soldering	Excellent	Capacity for Being Cold Worked	Good
Brazing	Good		
Oxyacetylene Welding	Not Recommended	Annealing Temperature – Minimum	900° F or 483° C
Gas Shielded Arc Welding	Not Recommended	Annealing Temperature – Maximum	1250° F or 677° C
Coated Metal Arc Welding	Not Recommended		
Resistance Welding – Spot	Not Recommended		
Resistance Welding – Seam	Not Recommended		
Resistance Welding – Butt	Fair		

Fabrication Practices provided by CDA

DISCLAIMER:

The Physical, Fabrication and Thermal Properties shown here represent reasonable approximations suitable for general engineering use. Due to commercial variations in compositions and to manufacturing limitations, they should not be used for specification purposes. See applicable ASTM International specification references.