

C51000 Phosphorus Bronze

C51000 Phosphor Bronze Alloy, with a nominal composition of 94.80% copper and 5.0% tin, deoxidized with 0.2% phosphorus is the most widely used of the phosphor bronzes, which offering engineering properties as high strength, ductility, superior fatigue and spring characteristics, excellent corrosion resistance, durability for severe service, good bearing qualities with low friction and higher wear resistance, superior forming and spinning, resistance to stress relaxation and good joining properties.



APPLICATIONS

Architecture Bridge bearing plates

Electrical resistance wire, fuse clips, electromechanical spring components, electrical flexing contact blades, electrical connectors, electronic connectors, wire brushes, switch parts, electronic and precision instrument 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 bar, textile machinery, welding rods

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Equivalent Specifications:

Specifications	ASTM	BS	EN	JIS	DIN	ISO	IS
Designations	C51000	PB102	CW451K	C5102 / 3270	CuSn4	1634-CuSn5	7811

Chemical Composition:

	Cu	Pb	Sn	Zn	Fe	P
Min	-	-	4.2	-	-	0.03
Max	Rem.	0.05	5.8	0.3	0.1	0.35

Physical Properties:

Melting Point – Liquidus	1920°F
Melting Point – Solidus	1750°F
Density	0.32 lb/cu in. at 68°F
Specific Gravity	8.86
Electrical Conductivity*	15% IACS at 68°F
Thermal Conductivity	40 Btu/ sq ft/ ft hr/ °F at 68°F
Coefficient of Thermal Expansion 68-572	9.9 10 ⁻⁶ per °F (68 – 572°F)
Specific Heat Capacity	0.09 Btu/ lb /°F at 68°F
Modulus of Elasticity in Tension	16000 ksi
Modulus of Rigidity	6000 ksi

Specifications:

Product	Specification
Bar	ASM 4625, ASTM B103,ASTM B139/B139M
Bearings & Bushings	MILITARY MIL-B-13501
Bolts	ASTM F468
Bushing Stock	MILITARY MIL-B-13501
Nuts	ASTM F467
Plate	AMS 4510, ASTM B100, ASTM B103
Rod	AMS 4625, ASTM B139/B139M, SAE J461, SAE J463
Screws	ASTM F468
Shapes	ASTM B139/B139M
Sheet	AMS 4510, ASTM B100, ASTM B103, SAE J461, SAE J463
Studs	ASTM F468
Tube	AMS 4625, MILITARY MIL-T-3595
Wire	AMS 4720, ASTM B159/B159M, MILITARY MIL-W-6712, SAE J461, SAE J463

Fabrication Properties:

Joining Technique	Suitability
Brazing	Excellent
Butt Weld	Excellent
Capacity for Being Cold Worked	Excellent
Capacity for Being Hot Formed	Poor
Coated Metal Arc Welding	Fair
Gas Shielded Arc Welding	Good
Machinability Rating	20
Oxyacetylene Welding	Fair
Seam Weld	Fair
Soldering	Excellent
Spot Weld	Good

Sizes Available:

TUBES	6.35 mm to 110mm
ROUND WIRES	1 mm to 11mm
ROUND RODS	1.2 to 250 mm
HEX RODS	Min. 5 mm to Max. 60 mm
SQUARE RODS	Min. 4 mm to Max. 60 mm
FLATS	Min. 4 mm thickness and max width of 120mm
PROFILES	As per customer drawings
HOLLOW RODS	Min Bore Size 20mm and Max OD 130mm