



# HSM Wire International, Inc

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## Alloy 510 - Phosphor Bronze

**Description:** 510 Alloy is the most widely used of the phosphor bronzes, which offer an optimum combinations of engineering properties like: high strength and ductility, superior fatigue and spring characteristics, excellent corrosion resistance, durability for severe service and good bearing qualities.

**Applications:** Typically used for bearings, bushings, gears, pinions, shafts, thrust washers and valve parts. It is also used for resistance wire, fuse clips, bellows and electronic parts.

Nominal Composition:	Cu%	Sn%	P%
	94.9%	5.0%	0.1%

### Physical Properties - Age hardened products

	English Units	Metric Units
Specific Gravity	8.83 g/cu cm	
Coefficient of Thermal Expansion per °C	17.80 x 10 <sup>-6</sup> (20-300°C)	
Thermal Conductivity	40 Btu/ft <sup>2</sup> /ft.hr/°F @ 68°F	
Modulus of Elasticity - Tension	16,000 ksi	
Electrical Conductivity at 68 °F	15% IACS	

### Tensile Strength: x Ksi (Kgf/mm<sup>2</sup> - Ksi x 0.7031)

Temper	Tensile Strength: x Ksi (Kgf/mm <sup>2</sup> - Ksi x 0.7031)	Elongation in 50 mm (2 in.), %	Yield Strength: x Ksi (0.2% offset)(Kgf/mm <sup>2</sup> - Ksi x 0.7031)
Annealed	46-56	55	24
1/4 Hard	49-61	41	37
1/2 Hard	58-73	24	57
3/4 Hard	68-79	15	68
Hard	76-91	8	81
Extra Hard	88-103	4	93
Spring	95-110	3	100
Extra Spring	100-114	2 max.	104 min.

\*To be used as a guideline only.

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