



HSM Wire International, Inc

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Alloy 511 - Phosphor Bronze

Description: 511 Alloy offers an optimum combinations of engineering properties like: high strength and ductility, excellent spring properties, and good bearing qualities and wear resistance.

Applications: Typically used for Switch parts, Resistance wire, Electrical Connectors, Pots, Kettles, Fasteners, Lock Washers, Clutch Disks and Welding Rods.

Nominal Composition:	Cu%	Sn%	P%
	95.9%	4.0%	0.1%

Physical Properties - Age hardened products

	English Units	Metric Units
Specific Gravity	8.86 g/cu cm	
Coefficient of Thermal Expansion per °C	17.80 x 10 ⁻⁶ (20-300°C)	
Thermal Conductivity	48 Btu/ft ² /ft.hr/°F @ 68°F	
Modulus of Elasticity - Tension	16,000 ksi	
Electrical Conductivity at 68 °F	20% IACS	

Mechanical Properties

Temper	Tensile Strength: x Ksi (Kgf/mm ² - Ksi x 0.7031)	Elongation in 50 mm (2 in.), %	Yield Strength: x Ksi (0.2% offset)(Kgf/mm ² - Ksi x 0.7031)
Annealed	46-54	47	22
1/4 Hard	46-58	36	35
1/2 Hard	55-70	21	56
3/4 Hard	67-82	10	72
Hard	72-87	7	76
Extra Hard	84-99	4	88
Spring	91-105	3	94
Extra Spring	96-109	2 max.	98 min.

*To be used as a guideline only.

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