

# Bronze

# C510

Alloy C510 is an alloy with good strength, formability and stress relaxation characteristics and solderability. Applications include electronic parts, springs, switches, contacts and fasteners.

## Mechanical Properties

ROUND & SQUARE WIRE...as drawn			
Temper	Tensile Strength PSI	Yield Strength PSI	Nominal Elongation %
Annealed	43-58,000	15-28,000	58
1/4 Hard	60-76,000	52-68,000	24
1/2 Hard	80-97,000	75-92,000	8
3/4 Hard	96-115,000	91-110,000	6
Hard	108-128,000	103-122,000	5
Spring: .025" & under	145,000 Min.	140,000 Min.	1
Over .025" to .0625"	135,000 Min.	130,000 Min.	1
Over .0625" to .125"	130,000 Min.	125,000 Min.	1
ROLLED FLAT WIRE...wire other than square			
Temper	Tensile Strength PSI	Nominal Yield Strength PSI	Nominal Elongation %
Annealed	43-58,000	19-29,000	55
Half Hard	58-73,000	57,000	15
Hard	76-91,000	81,000	10
Extra Hard	88-103,000	93,000	4
Spring	95-110,000	100,000	2

Note: Flat wire sections having a 3:1 width to thickness ratio or less are by commercial convention processed to the same tensile strength values as round or square wire.

## Physical Properties

Physical Properties	English Units	Metric Units
Melting Point (Liquidus)	1920°F	1050°C
Melting Point (Solidus)	1750°F	950°C
Density	.320 lbs/cu in	8.86 gm/cu cm
Thermal Conductivity (Annealed)	40 Btu ft/sq ft hr °F @ 68°F	.17 cal cm/sq cm sec °C @ 20°C
Coefficient of Thermal Expansion	.0000099°F (68-572°F)	.0000178°C (20-300°C)
Electrical Resistivity (Annealed)	69.1 ohm (cir mil/ft) @ 68°F	11.5 microhm-cm @ 20°C
Electrical Conductivity (Annealed)	15% IACS* @ 68°F	.087 megmho/cm @ 20°C
Modulus of Elasticity	16,000,000 psi	11,200 kg/sq mm

\*International Annealed Copper Standard

## Conversion Factors Metric Tensile Strengths

$$\text{kg/mm}^2 = \text{KSI} \times .7031$$

$$\text{Newtons/mm}^2 = \text{KSI} \times 6.895$$

or  
MPa



## Chemical Composition

Nominal	
Copper	Remainder
Tin	5%
Phosphorus	0.2%
Composition Limits	
Cu + Sn + P	99.5% Min.
Tin	4.2 - 5.8%
Phosphorus	0.03 - 0.35%
Lead	0.05% Max.
Iron	0.1% Max.
Zinc	0.3% Max.

## Specifications

ASTM B103  
ASTM B159  
ASTM B250

## Mill Limits

Round	.0010 - .1285 inch .0254 - 3.264 mm
Square and Rectangular	.0100 - .0808 inch .2540 - 1.905 mm Corner Radius as Specified
Flat	Thickness: .0100 - .0500 inch .2540 - 1.270 mm Width: .0150 - .2500 inch .3810 - 6.350 mm Edge Condition as Specified
Shapes	Special Shapes and Sizes Produced to Order

The information provided on this page is for reference purposes only.

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