

Bronze

C521

Alloy C521 is a high tin alloy of the phosphor bronze family. The additional tin relative to the more commonly used C510 results in higher mechanical properties with a modest reduction in electrical conductivity. Applications include electronic parts, springs, contacts, switch parts and fasteners.

Mechanical Properties

ROUND & SQUARE WIRE...as drawn	
Temper	Tensile Strength PSI
Annealed	53-68,000
1/4 Hard	74-91,000
1/2 Hard	95-115,000
3/4 Hard	113-135,000
Hard	125-150,000
ROLLED FLAT WIRE...wire other than square	
Temper	Tensile Strength PSI
Annealed	53-67,000
1/2 Half Hard	69-84,000
Hard	85-100,000
Extra Hard	97-112,000
Spring	105-119,000
Extra Spring	110-122,000

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)	1080°F	1020°C
Melting Point (Solidus)	1620°F	880°C
Density	.318 lb/cu in @ 68°F	8.80 gm/cu cm
Thermal Conductivity (Annealed)	36 Btu ft/sq ft hr °F @ 68°F	.15 cal cm/sq cm sec °C @ 20°C
Coefficient of Thermal Expansion	.0000101 per °F (68-572°F)	.0000182 per °C (20-300°C)
Electrical Resistivity (Annealed)	79.8 ohms (cir mil/ft) @ 68°F	13.3 microhm/cm @ 20°C
Electrical Conductivity (Annealed)	13% IACS*	.0754 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 Composition	
Copper	91.8%
Tin	8%
Phosphorus	0.2%
Composition Limits	
Copper	Remainder
Tin	7.0 - 9.0%
Phosphorus	0.03 - 0.35%
Lead	0.05% Max.
Iron	0.10% Max.
Zinc	0.20% 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.
Fisk Alloy Wire, Inc. • P.O. Box 26 • 10 Thomas Road • Hawthorne, NJ 07507 • U.S.A.
Phone (973) 427-7550 • Fax (973) 427-4585 • E-mail: sales@fiskalloy.com