




# High Performance Alloy

# C197

Alloy C197 is a high conductivity copper alloy possessing an excellent combination of strength, conductivity and softening resistance. This alloy can be substituted for medium tempers of brass and bronze when higher electrical conductivity is required or better solderability is needed. Alloy C197 is an improved version of alloy C194 and has substantially greater conductivity at the same strength levels.



## Mechanical Properties

  ROUND & SQUARE WIRE...as drawn			
Temper	Tensile Strength PSI	Nom. Yield Strength PSI	Nominal Elongation %
Annealed	39-47,000	—	30
1/4 Hard	50-65,000	55,000	4
Half Hard	60-75,000	66,000	3
3/4 Hard	70-85,000	76,000	2
Hard	80-95,000	87,000	2
Spring	90,000 Min.	88,000 Min.	1
 ROLLED FLAT WIRE...wire other than square			
Temper	Tensile Strength PSI	Nom. Yield Strength PSI	Nominal Elongation %
Annealed	43-53,000	23,000	20
Half Hard	53-63,000	48,000	17
Hard	60-70,000	60,000	7
Spring	70-76,000	70,000	5

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)	1986°F	1086°C
Melting Point (Solidus)	1956°F	1069°C
Density	.319 lbs/cu in	8.84 gm/cu cm
Thermal Conductivity (Annealed)	185 Btu ft/sq ft hr °F @ 68°F	.770 cal cm/sq cm sec °C @ 20°C
Coefficient of Thermal Expansion	.0000097°F (68-572°F)	.0000°C (20-300°C)
Electrical Resistivity (Annealed)	13.0 ohm (cir mil/ft) @ 68°F	2.54 microhm-cm @ 20°C
Electrical Conductivity (Annealed)	80% IACS* @ 68°F	.464 megmho/cm @ 20°C
Electrical Conductivity (Rolled or Drawn)	77% IACS* @ 68°F	.447 megmho @ 20°C
Modulus of Elasticity	17,200,000 psi	12,100 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
Iron	0.8%
Phosphorus	0.2%
Magnesium	0.1%
Composition Limits	
Copper	Remainder
Iron	0.3 - 1.2%
Phosphorus	0.1 - 0.4%
Magnesium	0.01 - 0.2%
Zinc	0.2% Max.
Tin	0.2% Max.
Others	0.05% Max.

## Specifications

ASTM B250  
ASTM B465

## 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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