

Olin Brass Alloy C51180 is a dispersion and solid solution strengthened alloy developed for use in the electronic and automotive connector market. It offers users, or those considering alloy C52100, the same or better forming characteristics with higher electrical conductivity. Designers looking for a material with an edge over traditional phosphor bronze alloys will find a solution in C51180.

### Chemical Composition

<b>Copper<sup>1</sup></b>	<b>Remainder</b>
<b>Tin</b>	<b>3.5-4.9%</b>
<b>Iron</b>	<b>0.05-0.20%</b>
<b>Nickel</b>	<b>0.05-0.20%</b>
<b>Phosphorous</b>	<b>0.01-0.35%</b>
<b>Zinc</b>	<b>0.30% Max</b>
<b>Lead</b>	<b>0.05% Max</b>

1. Cu plus Named Elements = 99.5% min

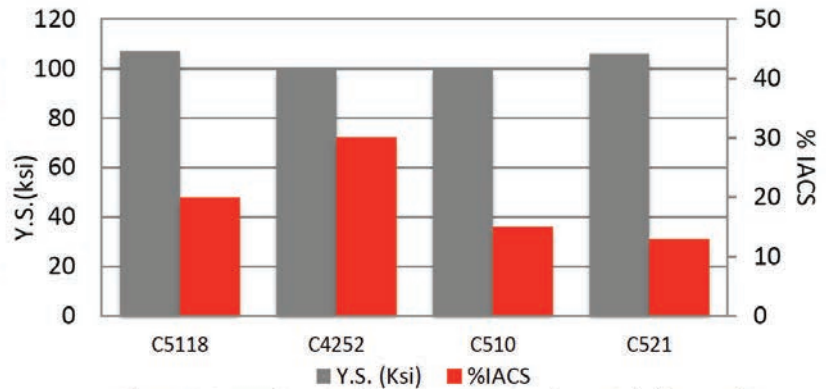


Figure 1: Strength vs Conductivity comparison for typical alloys used in telecom and miniaturized electronics connector applications.

### Physical Properties

	English Units	Metric Units
Density	0.321 lb/in <sup>3</sup> @ 68°F	8.89 g/cm <sup>3</sup>
Thermal Conductivity	50 BTU-ft/ft <sup>2</sup> -hr-°F	86 W/m <sup>2</sup> K
Electrical Resistivity	51.85 ohm circ mils/ft	8.62 microhm-cm
Electrical Conductivity (annealed)	20% IACS*	0.120 megamho/cm
Modulus of Elasticity	16,000,000 psi	110 kN/mm <sup>2</sup>
Coeff. Of Thermal Expansion		
68-572°F (20-300°C)	9.9 PPM/°F	17.8 PPM/°C

\*International Annealed Copper Standard

### Mechanical Properties

Temper <sup>1</sup>	Tensile Strength		Yield Strength <sup>2</sup>		% Elongation <sup>2</sup>	Typical 90° Bend Formability GW/BW <sup>3,4</sup>	
	ksi	N/mm <sup>2</sup>	ksi	N/mm <sup>2</sup>			
1/2 Hard	69-84	475-580	70	480	22	-	-
3/4 Hard	80-92	550-635	82	565	18	-	0.5
Hard	85-100	585-690	87	600	10	0.3	1.5
Extra Hard	97-112	670-770	101	695	8	0.6	2.8
Spring	105-119	725-820	107	740	5	1.2	4.0
Extra Spring	110-122	760-840	112	770	3		

<sup>1</sup> Mechanical properties subject to change. All tempers listed are made to a Tensile Strength specification unless otherwise noted.

<sup>2</sup> Nominal Values      <sup>3</sup> DATA FOR REFERENCE ONLY. R/T = Bend Radius/Material Thickness <0.016" (0.4mm) thick, 11/16 (17.5mm) wide.

<sup>4</sup> Relief annealed product recommended for maximum formability.