

**ALLOY**  
**DATA**



# MECHANICAL AND PHYSICAL PROPERTIES OF Alloy C42520

Olin Alloy C4252 is a dispersion and solid solution strengthened alloy developed for use in the electronic and automotive connector market. It was developed to provide a cost-effective solution to the increasing price pressures placed upon connector manufacturers using traditional phosphor bronze alloys. Its unique combination of properties provides higher current carrying capacity than Alloy C510 at the same strength. For more information contact Olin Market Development Engineering at 618-258-5255, OlinBrass.com or email us at [info@olinbrass.com](mailto:info@olinbrass.com).

**Table 1**  
**Composition Limits of C4252**

Copper <sup>1</sup>	88.0-91.0%
Tin	1.5-3.0%
Iron	0.05-0.20%
Nickel	0.05-0.20%
Phosphorus	0.01-0.20%
Zinc	Remainder
Lead	0.05% Max.

1. Cu plus Named Elements, 99.7% min.

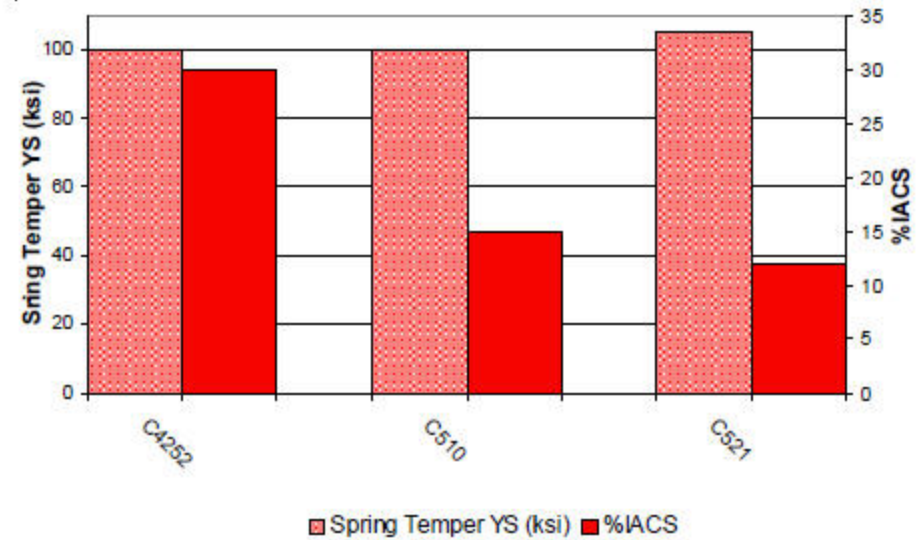


Figure 1: Strength vs Conductivity for three connector alloys.

**Table 2**  
**Physical Properties of C4252**

	English Units	Metric Units
Density	0.318 lb/in <sup>3</sup> @ 68°F	8.80 gm/cm <sup>3</sup> @ 20°C
Thermal Conductivity	70 Btu-ft/ft <sup>2</sup> -hr-°F @ 68°F	120 W/mK cal-cm/cm <sup>2</sup> -sec-°C @ 20°C
Electrical Resistivity	34.57 ohm circ mils/ft @ 68°F	5.75 microhm-cm @ 20°C
Electrical Conductivity (Annealed)	30% I.A.C.S. † @ 68°F	17 MS/m Megmho/cm @ 20°C
Modulus of Elasticity	16,000,000 psi	110 kN/mm <sup>2</sup>
Coefficient of Thermal Expansion 68-572°F (20-300°C)	10.2 PPM/°F	18.4 PPM/°C

† International Annealed Copper Standard

**Table 3**  
**Mechanical Properties of C4252**

Temper	Tensile Strength		Nominal Yield Strength (0.2% Offset)		Nominal % Elong. in 2 Inch (51mm)	90° Bend Formability GW/BW <sup>2,3</sup>
	ksi	N/mm <sup>2</sup>	ksi	N/mm <sup>2</sup>		
1/2 Hard	58 – 73	400 – 505	60	415	20	0.0/0.0
3/4 Hard	68 – 79	470 – 545	71	490	15	0.0/0.0
Hard	76 – 91	525 – 625	81	560	10	0.0/0.5
Ex. Hard	88 – 103	605 – 710	92	635	6	0.5/1.8
Spring	95 – 110	655 – 760	100	690	4	1.0/3.0
Ex. Spring	100 – 114	690 – 785	103	710	3	

2. R/T = Bend Radius/Material Thickness @ <0.012" (0.3mm) thick 11/16 inch (17.5mm) wide.  
3. Relief annealed product recommended for maximum formability.

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