

# MECHANICAL AND PHYSICAL PROPERTIES OF Alloy C52180

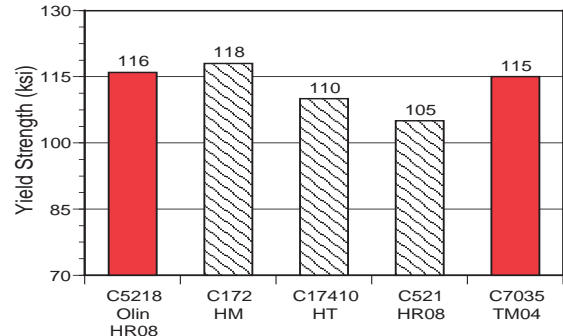
**ALLOY**  
**DATA**

Olin Alloy C5218 is a dispersion and solid solution strengthened alloy developed for use in the electronic and automotive connector market. It provides a strength to bend improvement over C521 at the same strength and can be used as a very cost effective alternative to some beryllium alloys. Should even higher strengths or improved bend formability be necessary, consider Olin C5248 or Olin C7035. For more information please contact Olin Market Development Engineering at 618-258-5255, OlinBrass.com, or email us at info@olinbrass.com.

**Table 1**  
**Composition Limits of C5218**

<b>Copper<sup>1</sup></b>	<b>Remainder</b>
<b>Tin</b>	<b>7.0-9.0%</b>
<b>Iron</b>	<b>0.05-0.20%</b>
<b>Nickel</b>	<b>0.05-0.20%</b>
<b>Phosphorus</b>	<b>0.01-0.35%</b>
Zinc	0.30%Max.
Lead	0.05%Max.

1. Copper plus Named Elements, 99.5%



**Figure 1:** Alloy strength comparison for Telecom, Network, and Miniature Electronic Connectors

**Table 2**  
**Physical Properties of C5218**

	<b>English Units</b>	<b>Metric Units</b>
Density	0.318 lbs/in <sup>3</sup> @ 68°F	8.80 gm/cm <sup>3</sup> @ 20°C
Thermal Conductivity	36 Btu-ft/ft <sup>2</sup> -hr-°F @ 68°F	62.26 W/m <sup>2</sup> K @ 20°C
Electrical Resistivity	79.8 ohm circ mils/ft @ 68°F	13.26 microhm-cm @ 20°C
Electrical Conductivity (Annealed)	13% I.A.C.S. † @ 68°F	7.5 MS/m @ 20°C
Modulus of Elasticity	16,000,000 psi	110 k N/mm <sup>2</sup>

†International Annealed Copper Standard

**Table 3**  
**Mechanical Properties of C5218**

Temper <sup>1</sup>	Tensile Strength		Nominal Yield Strength (0.2% offset)		Nominal % Elong. in 2 inch (51 mm)	Typical 90° Bend Formability R/T GW/BW <sup>2,3</sup>
	ksi	N/mm <sup>2</sup>	ksi	N/mm <sup>2</sup>		
1/2 Hard (HR02)	90-105	620-725	92	635	25	0.0/1.0
3/4 Hard (HR03)	97-112	670-770	96	660	20	0.5/1.5
Hard (HR04)	105-120	720-830	104	720	18	0.5/2.0
Ex. Hard (HR06)	108-125	745-860	110	760	12	1.0/3.0
Spring (HR08)	115-132	790-910	115	790	8	2.0/4.0
Ex. Spr. (HR10)	120-140	830-965	120	830	3	3.0/6.0

- Other tempers may be available. Contact Olin for more information.
- R/T = Bend Radius/Material Thickness @ <0.012" (0.3mm) thick.
- Relief annealed product recommended for maximum formability.

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