

ALLOY
DATA



MECHANICAL AND PHYSICAL PROPERTIES OF Alloy C18080

Olin Alloy C18080/K88 is a Cu Cr Ag Fe Ti Si system developed jointly by Olin Brass and Wieland-Werke of Germany. This alloy provides engineers a unique combination of properties. It incorporates very high electrical and thermal conductivity, excellent formability, good plateability and extremely high resistance to stress relaxation up to 200° C validating its use in high reliability electronics and relay springs. For more information contact Olin Market Development Engineering at 618-258-5255, OlinBrass.com, or email us at info@olinbrass.com.

Table 1
Composition Limits of C18080

Copper ¹	Remainder
Chromium	0.20-0.7%
Silver	0.01-0.30%
Iron	0.02-0.20%
Titanium	0.01-0.15%
Silicon	0.01-0.10%

1. Copper plus Named Elements, 99.8%

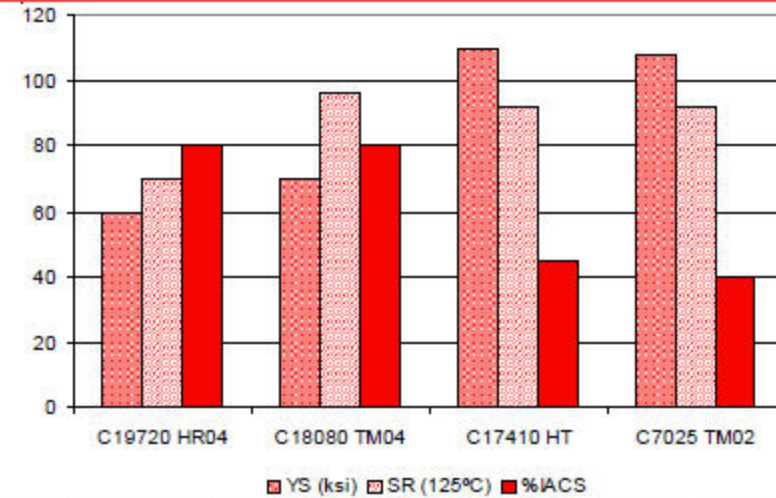


Figure 1: Comparison between typical alloys used in power electronics and automotive applications.

Table 2
Physical Properties of C18080

	English Units	Metric Units
Density	0.320 lb/in ³ @ 68°F	8.92 g/cm ³ @ 20°C
Thermal Conductivity	185 Btu-ft/ft ² -hr-°F @ 68°F	320 W/mK
Electrical Resistivity	12.96 ohm circ mils/ft @ 68°F	2.155 microhm-cm @ 20°C
Electrical Conductivity (Annealed)	80% I.A.C.S. † @ 68°F	46 MS/m @ 20°C
Modulus of Elasticity	TM04 20,300,000 psi TM08 18,500,000 psi	140 kN/mm ² 127 kN/mm ²
Coefficient of Thermal Expansion 68-572°F (20-300°C)	9.8 PPM/°F	17.6 PPM/°C
Magnetic Permeability	< 1.01	

† International Annealed Copper Standard

Table 3
Mechanical Properties of C18080

Temper	Tensile Strength ¹		Minimum Yield Strength (0.2% Offset)		Nominal % Elong. in 2 Inch (51mm)	90° Bend Formability GW/BW ³
	ksi	N/mm ²	ksi	N/mm ²		
TM04	70 – 81	480 – 560	65	450	8	0.8/0.5
TM08	78 – 91	540 – 600	75	520	4	1.4/1.2
TR08 ²	75 – 91	520 – 620	72	500	4	

1. C18080 is manufactured to a yield strength. Tensile strength and elongation are for reference only.
2. TR08 available above 0.016" (0.4mm). TM08 is limited in thickness.
3. R/T = Bend Radius/Material Thickness @ < 0.016" (0.4mm) thick 11/16 inch (17.5mm) wide.

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