ALLOY DATA

C19400
ASTM B465

wieland

Developed by Olin Brass in 1964, C194 is a High Performance Alloy used worldwide for a variety of applications including automotive and electrical connectors. Offering a unique combination of good electrical and thermal conductivity with high strength, good solderability and plateability make this alloy an excellent choice to replace standard copper or brass alloys for enhanced performance.

Chemical Composition

Copper	**97.0%min**
Iron	**2.1-2.6%**
Phosphorus	**0.015-0.15%**
Zinc	**0.05-0.20%**
Lead	0.03% max

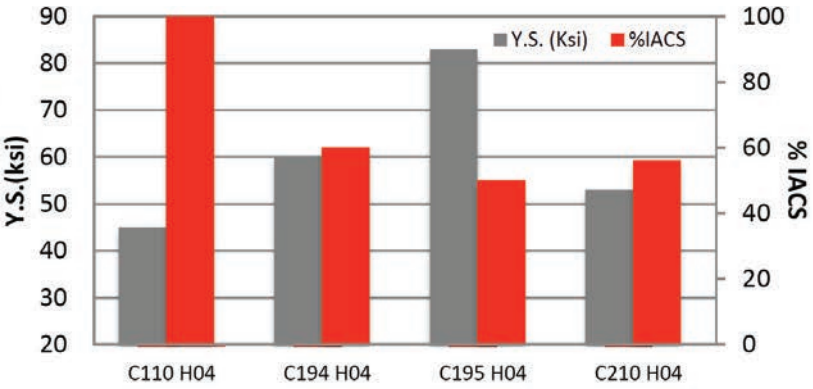

Figure 1: Comparison of Yield Strength and Electrical Conductivity performance of select automotive and electrical connector materials.

Physical Properties

	English Units	Metric Units
Density	0.322 lb/in^3 @ 68ºF	8.92 g/cm^3
Thermal Conductivity	150 BTU-ft/ft^2-hr-ºF	260 W/mºK
Electrical Resistivity	17.28 ohm circ mils/ft	2.87 microhm-cm
Electrical Conductivity (annealed)	60% IACS*	0.348 megamho/cm
Modulus of Elasticity	17,500,000 psi	121 kN/mm^2
Coeff. Of Thermal Expansion		
68-572ºF (20-300ºC)	9.8 PPM/ºF	17.6 PPM/ºC
68-392ºF (20-200ºC)	9.6 PPM/ºF	17.2 PPM/ºC
68-212ºF (20-100ºC)	9.3 PPM/ºF	16.7 PPM/ºC

*International Annealed Copper Standard

Mechanical Properties

Temper[1]	Tensile Strength		Yield Strength[2]		% Elongation[2]	Typical 90º Bend Formability GW/BW[3]	
	ksi	N/mm^2	ksi	N/mm^2			
Annealed	40-63	275-435	38	260	23	-	-
Light Anneal	45-55	310-380	23	160	26	-	-
1/2 Hard	53-63	365-435	45	310	17	0.8	1.0
Hard	60-70	415-485	60	415	7	1.0	1.3
Extra Hard	67-73	460-505	67	460	3	1.5	1.5
Spring Hard	70-76	485-525	70	485	2	1.8	1.8
Extra Spring Hard	73-80	505-550	73	505	2 max		

[1] Mechanical properties subject to change. All tempers listed are made to a Tensile Strength specification unless otherwise noted.

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