

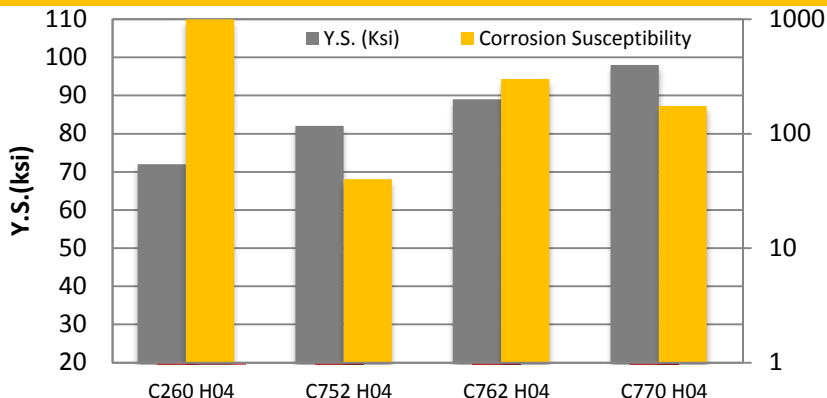
An excellent spring material, C770 combines high strength with excellent stiffness, formability, corrosion resistance and solderability. These characteristics make it extremely adaptable to a range of spring applications including flat and slightly formed springs. It is also used for switches, jacks and relays; in food processing, hospital medical equipment and in ferrules. Perhaps the most "white" of the copper alloys, C770 finds use as decorative metal trim on saddles, harness, and belt buckles.

**Chemical Composition**

<b>Copper<sup>1</sup></b>	<b>53.5-56.5%</b>
<b>Nickel<sup>2</sup></b>	<b>16.5-19.5%</b>
<b>Zinc</b>	<b>Remainder</b>
Iron	0.25% Max
Lead	0.05% Max
Manganese	0.50% Max

<sup>1</sup> Cu includes Ag; Copper plus named elements = 99.5%

<sup>2</sup> Ni Values Include Co



**Figure 1:** Comparison of Yield Strength and relative susceptibility to stress corrosion (Mattsson's solution and moist ammonia, 1000 = most susceptible).

**Physical Properties**

	English Units	Metric Units
Density	0.314 lb/in <sup>3</sup> @ 68°F	8.70 g/cm <sup>3</sup>
Thermal Conductivity	17 BTU-ft/ft <sup>2</sup> -hr-°F	29 W/m <sup>2</sup> K
Electrical Resistivity	189 ohm circ mils/ft	31.4 microhm-cm
Electrical Conductivity (annealed)	5.5% IACS*	0.0319 megamho/cm
Modulus of Elasticity	18,000,000 psi	124 kN/mm <sup>2</sup>
Thermal Capacity(Specific Heat)	0.090 Btu/lb/F° @ 68°F	377.1 J/kg · °C @ 20°C
Coeff. Of Thermal Expansion 68-572°F (20-300°C)	9.3 PPM/°F	16.7 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</sup>	
	ksi	N/mm <sup>2</sup>	ksi	N/mm <sup>2</sup>			
Annealed	61-76	420-525	32	220	43	-	-
1/4 Hard	69-87	475-600	63	435	26	0.8	0.8
1/2 Hard	78-95	540-655	78	540	14	1.0	1.0
3/4 Hard	88-101	605-695	92	635	8	1.5	1.5
Hard	92-107	635-740	98	675	4	2.0	2.0
Extra Hard	102-115	705-795	107	740	1 min	2.5	2.5
Spring	108-120	745-825	112	770	1 Max	3.0	3.0
Extra Spring	116 min	800 min	115 min	795 min	1 Max		

<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.

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