

Alloy C151 was developed by Olin Brass for specific applications demanding high electrical conductivity and excellent resistance to stress relaxation at elevated temperatures. As a precipitation hardened alloy these properties are combined with good strength and bend formability to make Alloy C151 a material that meets the demands of a wide variety of applications including electronic devices, power switching systems and automotive hybrid electrical systems.

### Chemical Composition

Copper <sup>1</sup>	Remainder
Zirconium	0.05 - 0.15%

<sup>1</sup> Copper plus named elements, 99.9% min

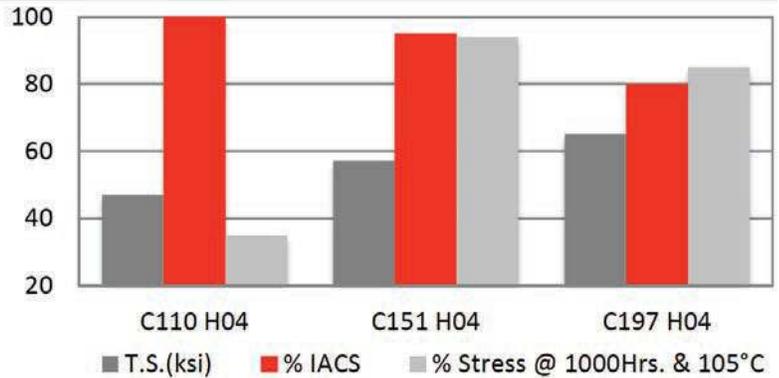


Figure 1: Comparison of Tensile Strength, Electrical Conductivity and Stress Relaxation performance of select highly conductive materials.

### Physical Properties

	English Units	Metric Units
Density	0.323 lb/in <sup>3</sup> @ 68°F	8.94 g/cm <sup>3</sup>
Thermal Conductivity	208 BTU-ft/ft <sup>2</sup> -hr-°F	371 W/m <sup>2</sup> K
Electrical Resistivity	10.9 ohm circ mils/ft	1.81 microhm-cm
Electrical Conductivity (annealed)	95% IACS*	0.551 megamho/cm
Electrical Conductivity (rolled)	90% IACS*	0.522 megamho/cm
Modulus of Elasticity	17,500,000 psi	123 kN/mm <sup>2</sup>
Coeff. Of Thermal Expansion		
68-572°F (20-300°C)	9.7 PPM/°F	17.6 PPM/°C
68-392°F (20-200°C)	9.4 PPM/°F	17.0 PPM/°C
68-212°F (20-100°C)	9.1 PPM/°F	16.3 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	37-42	255-290	13	90	38	-	-
1/4 Hard	40-45	275-310	35	240	22	0.5	0.5
1/2 Hard	43-51	295-350	42	290	10	0.8	0.8
3/4 Hard	47-56	325-385	50	345	5	1.3	1.3
Hard	53-62	365-425	56	385	3	1.5	1.5
Extra Hard	59-65	405-450	60	415	2	2.0	2.0
Spring Hard	64-71	440-490	66	455	1	2.5	2.5

<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.