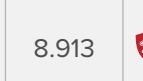
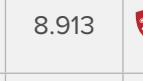
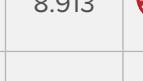
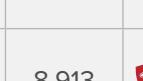
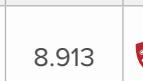
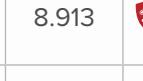
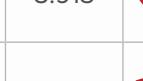
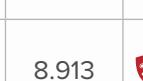
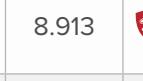
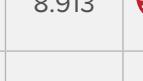
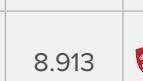
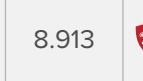
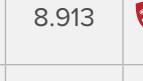
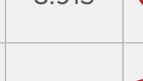


Stamping Material Selection Guide

Bend Rating Key:		 Green	 Yellow	 Orange	 Red
ESI's Bend Rating scale measures the formability of a material based on its ability to bend or form without tearing or breaking. "Green" designates easier formability all the way through "red" as most difficult.	Easy formability	Moderate formability; possible strain	Limited formability; chance of tearing	Difficult formability; likelihood of tearing	
Radii for various thicknesses, whereas "t"=times thickness.	0t to 3t	3t to 6t	6t to 9t	9t +	

Copper

	Summary	Recommended Finishes?	Applications	Conditions Available	Bend Rating	Magnetic?	Tensile Strength Minimum (KSI)		Elongation Minimum (% 2" Gauge)	Yield Strength Minimum (0.2% offset)		Hardness (Min-Max)	Density (lb/cu in)		Corrosion Resistance	Cost?
							KSI	MPa		KSI	MPa		(lb/in ³)	(g/cm ³)		
110	C110 is comprised of 99.9% pure copper. It is extremely ductile with high electrical conductivity, outstanding thermal conductivity, and high resistance to soil corrosion.	Tin, Nickel, Electroless Nickel, Silver	Bus Bars, welding fixtures, anodes, ground straps, plumbing fitting, electrical components	110 Copper Annealed		No	26	179	45%	10	69	15T 47-57	0.322	8.913		\$\$\$\$
				C110 1/4 Hard		No	36	248	25%	28	193	Rockwell B 25 Min	0.322	8.913		\$\$\$\$
				C110 1/2 Hard		No	40	276	22%	34	234	Rockwell B 40 Min	0.322	8.913		\$\$\$\$
				C110 Hard		No	48	331	12%	43	296	Rockwell B 50 Min	0.322	8.913		\$\$\$\$
				C110 Extra Hard		No	53	365	6%	48	331	Rockwell B 60 Min	0.322	8.913		\$\$\$\$
				C110 Spring		No	55	379	4%	51	352	Rockwell B 62 Min	0.322	8.913		\$\$\$\$
194	C194 is a first generation high performance alloy used around the world. It combines excellent electrical conductivity with high tensile strength, good solderability, and plateability. It appears in applications such as semiconductor pins and leadframes, connectors, sockets, and mass terminations.	Tin, Nickel, Electroless Nickel, Silver	Connectors, semiconductor pins and leadframes, sockets, mass terminations	C194 Annealed		No	40	276	26%	36	248	Rockwell B 40 Min	0.322	8.913		\$\$\$\$
				C194 1/4 Hard		No	45	310	23%	21	145	Rockwell B 48 Min	0.322	8.913		\$\$\$\$
				C194 1/2 Hard		No	53	365	17%	43	296	Rockwell B 52 Min	0.322	8.913		\$\$\$\$
				C194 Hard		No	60	414	7%	58	400	Rockwell B 61 Min	0.322	8.913		\$\$\$\$
				C194 Extra Hard		No	67	462	3%	65	448	Rockwell B 67 Min	0.322	8.913		\$\$\$\$
				C194 Spring		No	70	483	2%	68	469	Rockwell B 68 Min	0.322	8.913		\$\$\$\$
195	Alloy C195 is a high strength, high electrical conductivity copper alloy. With a balanced combination of strength and conductivity, this alloy is used in an array of applications, including electrical hardware. It allows parts to be reduced in size without forgoing performance.	Tin, Nickel, Electroless Nickel, Silver	Electrical hardware, spring terminal applications	C195 Annealed		No	50-60	345-414	26%	28	193	Rockwell B 50 Min	0.322	8.913		\$\$\$\$
				C195 1/4 Hard		No	60-72	414-496	14%	57	393	Rockwell B 61 Min	0.322	8.913		\$\$\$\$
				C195 1/2 Hard		No	68-78	469-538	6%	71	490	Rockwell B 69 Min	0.322	8.913		\$\$\$\$
				C195 3/4 Hard		No	75-85	517-586	3%	77	531	Rockwell B 72 Min	0.322	8.913		\$\$\$\$
				C195 Hard		No	82-90	565-621	2%	83	572	Rockwell B 73 Min	0.322	8.913		\$\$\$\$
				C195 Spring		No	88-97	607-669	2%	88	607	Rockwell B 74 Min	0.322	8.913		\$\$\$\$

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