ALLOY DATA

C63800
ASTM B422

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Coronze, or Alloy C638 is a high strength, cost effective, cobalt-modified aluminum silicon bronze which was developed for its corrosion resistant properties, particularly its oxidation resistance at elevated temperatures. A number of superior qualities, including surface characteristics, formability, strength and conductivity, make C638 an excellent choice for use in a wide range of applications including electrical connectors and spring contacts.

Chemical Composition

Copper[1]	**Remainder**
Aluminum	**2.5-3.1%**
Cobolt	**0.25-0.55%**
Silicon	**1.5-2.1%**
Iron	0.20% Max
Lead	0.05% Max
Manganese	0.10% Max
Nickel	0.20% Max
Zinc	0.8% Max

[1] Cu + Named Elements, 99.5% min

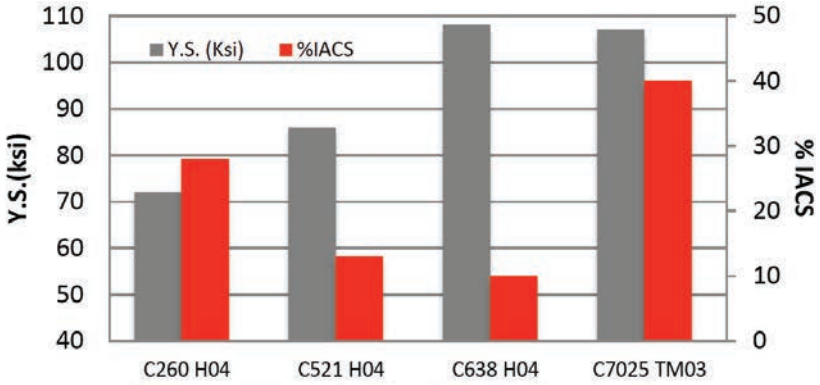

Figure 1: Comparison of Yield Strength and Electrical Conductivity performance of select high strength connector materials

Physical Properties

	English Units	Metric Units
Density	0.299 lb/in^3 @ 68ºF	8.28 g/cm^3
Thermal Conductivity	22.0 BTU-ft/ft^2-hr-ºF	38 W/mºK
Electrical Resistivity	104 ohm circ mils/ft	17.4 microhm-cm
Electrical Conductivity (annealed)	10% IACS*	0.058 megamho/cm
Modulus of Elasticity	16,700,000 psi	115 kN/mm^2
Thermal Capacity(Specific Heat)	0.090 Btu/lb/Fº @ 68ºF	377.1 J/kg · ºC @ 20ºC
Coeff. Of Thermal Expansion 68-572ºF (20-300ºC)	9.5 PPM/ºF	17.1 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	77-87	530-600	56	385	33	-	-
1/4 Hard	90-102	620-705	82	565	16	0.5	1.5
1/2 Hard	100-112	690-770	93	640	10	0.8	2.0
3/4 Hard	105-117	725-805	99	685	7	1.0	2.5
Hard	114-126	785-870	108	745	4	1.5	3.5
Extra Hard	118-130	815-895	112	770	3	2.3	4.5
Spring	123-134	850-925	116	800	2	3.0	7.0
Extra Spring	130 min	895 min	119 min	820 min	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.