

MECHANICAL AND PHYSICAL PROPERTIES OF Alloy C19020

ALLOY
DATA

Alloy C19020 has been introduced to meet the needs of the automotive, electronic and electrical markets. This alloy is licensed by Olin from Dowa Metals in Japan. It was developed as Alloy NB105 to meet the increasing requirements of current carrying capacity, stiffness, formability and service temperature survivability now being demanded by the automotive and electronic industries. Should higher electrical conductivity or strengths be required, consider Olin C19720 or C18080. For more information contact Olin Market Development Engineering at 618-258-5255, OlinBrass.com or email us at info@olinbrass.com.

**Table 1
Composition Limits of C19020**

Copper¹	Remainder
Nickel	0.50-3.0%
Tin	0.30-.9%
Phosphorus	0.01-0.20%

1. Copper plus Named Elements, 99.8%

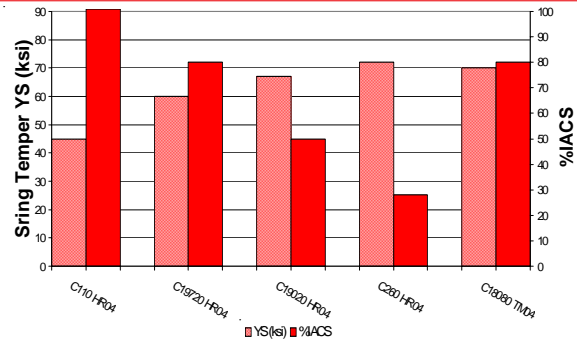


Figure 1: Comparison of Electrical Conductivity and strength for automotive Junction Box buss bar alloys.

**Table 2
Physical Properties of C19020**

	English Units	Metric Units
Density	0.322 lb/in ³ @ 68°F	8.91 g/cm ³ @ 20°C
Thermal Conductivity	115 Btu-ft/ft ² -hr-°F @ 68°F	200 W/mK @ 20°C
Electrical Resistivity	20.74 ohm circ mils/ft @ 68°F	3.448 microhm-cm @ 20°C
Electrical Conductivity (Annealed)	50 I.A.C.S. † @ 68°F	29 MS/m @ 20°C
Modulus of Elasticity	18,800,000 psi	129 kN/mm ²
Coefficient of Thermal Expansion 68-572°F (20-300°C)	9.7 PPM/°F	17.5 PPM/°C

† International Annealed Copper Standard

**Table 3
Mechanical Properties of C19020**

Temper	Tensile Strength		Nominal Yield Strength (0.2% Offset)		Nominal % Elong. in 2 Inch (51mm)	90° Bend Formability GW/BW ²
	ksi	N/mm ²	ksi	N/mm ²		
½ Hard	58 – 70	400 – 485	63	435	7	0.5/0.5
Hard	65 – 74	450 – 510	67	460	5	0.8/1.0
Ex. Hard	71 – 80	490 – 550	73	505	4	1.3/1.8
Spring	77 Min.	530 Min.	74 Min.	510 Min.	3	2.0/2.8

2. R/T = Bend Radius/Material Thickness @ <0.012" (0.3mm) thick 11/16 inch (17.5mm) wide.

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