

# HM Wire International, Inc.

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## Alloy 651 - Silicon Bronze

**Description:** Alloy 651 is referred as Silicon Bronze and is coupled with excellent corrosion resistance.

**Applications:** Typically used for a welding rod and for mechanical fasteners and electrical connections.

<b>Nominal Composition:</b>	<b>Cu%</b>	<b>Si%</b>					
	98.5%	1.5%					
<b>Composition Limits:</b>	<b>Cu%</b>	<b>Si%</b>	<b>Mn%</b>	<b>Zn%</b>	<b>Fe%</b>	<b>Pb%</b>	
	Balance	0.8-2%	0.7% Max	1.5% Max	0.8% Max	0.05% Max	

## Physical Properties

	English Units	Metric Units
<b>Melting Point, Liquidus</b>	1080°F	1020°C
<b>Melting Point, Solidus</b>	1620°F	880°C
<b>Density</b>	0.318 lb/cu in @ 68°F	8.80 gm/cu cm
<b>Thermal Conductivity, Annealed</b>	36BTU ft/sq ft-hr-°F @ 68°F	0.15 cal cm/sq cm-sec-°C @ 20°C
<b>Coefficient of Thermal Expansion</b>	0.0000101 per °F (68 - 572°F)	0.0000182 per °C (20 - 300°C)
<b>Electrical Resistivity, Annealed</b>	79.8 ohms (circ mil/ft) @ 68°F	13.3 microhm/cm @ 20°C
<b>Electrical Conductivity, Annealed</b>	13% I.A.C.S	0.0754 megmho/cm @ 20°C
<b>Modulus of Elasticity</b>	16,000,000 psi	11,200 kg/sq mm

## Mechanical Properties

Round & Square Wire...as drawn		Rolled Flat Wire...wire other than square	
Temper	Tensile Strength PSI	Temper	Tensile Strength PSI
Annealed	53 - 68,000	Annealed	53 - 67,000
1/4 Hard	74 - 91,000	1/2 Hard	69 - 84,000
1/2 Hard	95 - 115,000	Hard	85 - 6100,000
3/4 Hard	113 - 135,000	Extra Hard	97 - 112,000
Hard	98 - 113,000	Spring	105 - 119,000
		Extra Spring	110 - 122,000

Note\* Flat Wire Sections having a 3:1 Width to Thickness Ratio or less are by commercial convention processed to the same tensile strength values as round or square wire.