

## Alloy 390E Strip

Materion Brush Performance Alloys' Alloy 390E is a copper beryllium alloy that provides a unique combination of high strength, high electrical conductivity, and excellent formability. Copper beryllium alloys are well known for their superior stress relaxation resistance and fatigue strength. This amalgamation of properties allows engineers the flexibility to design small form factor signal and power interconnects that can be used in harsh environments.

### PHYSICAL PROPERTIES

Elastic Modulus	Melting Point (Solidus)	Electrical Conductivity Resistivity	Density	Thermal Expansion	Thermal Conductivity (25 °C)	Heat Capacity (25 °C)
20,000 ksi 138 GPa	1885 °F 1029 °C	42% IACS min. 3.74 μΩ-cm	0.311 lbs/in <sup>3</sup> 8.61 g/cm <sup>3</sup>	9.8×10 <sup>-6</sup> in/in °F 17.6×10 <sup>-6</sup> m/m °C	120 BTU/ft hr °F 208 W/ m K	0.1 BTU/ lb /°F 419 J/kg * K

### TYPICAL MECHANICAL PROPERTIES

Temper	0.2% Offset Yield Strength (min)		Ultimate Tensile Strength (min)		Elongation (min) *	Hardness (min)
	ksi	MPa	ksi	MPa		
EHT	138	951	143	986	2	300

\*Percent elongation valid for strip 0.004" (0.10 mm) and thicker per ASTM.

Formability (90° Bend)			Nominal Fatigue Strength 10 <sup>7</sup> Cycle R=0		**1000 Hour Stress Relaxation Resistance	
Strip Thickness	L	T	ksi	MPa	150°C	200°C
≤0.002" (0.05 mm)	1.0	1.0				
≤0.004" (0.10 mm)	2.0	2.5	80	552	85%	69%
≤0.006" (0.15 mm)	2.5	3.5				
≤0.008" (0.20 mm)	3.5	3.5				

\*\* Stress Remaining after 1000 hours exposure. Initial stress = 75% of the 0.2% offset yield strength.

**FORMS AVAILABLE:** Alloy 390E strip is available in widths ranging from 0.050" to 16" (1.27 mm to 452.7 mm), minimum thickness of 0.00197" (0.05 mm). Thinner gages may be available upon request, please contact your local Brush Wellman Sales Office for more information.

**RELATED INFORMATION:** Additional information on Alloy 390E strip may be obtained by contacting Technical Support 800-375-4205.

## North American Service Centers – Sales Inquiries

For strip, wire and rod under 0.4" (10 mm) diameter

### Elmhurst, IL

TOLL FREE: 800.323.2438  
LOCAL: +(1) 630.832.9650  
FAX: +(1) 630.832.9657

For plate, tube, bar, and rod 0.4" (10 mm) diameter and over

### Warren, MI

TOLL FREE: 800.521.8800  
LOCAL: +(1) 586.772.2700  
FAX: +(1) 586.772.2472

## International Sales Offices

### CHINA/HONG KONG

TEL: +852.2318.1960/1907  
[brushalloysHK-info@materion.com](mailto:brushalloysHK-info@materion.com)

### CHINA/SHANGHAI

TEL: +(86) 21.5237.2328  
[brushalloysCN-info@materion.com](mailto:brushalloysCN-info@materion.com)

### GERMANY

TEL: +(49) 711.830.930  
[brushalloysDE-info@materion.com](mailto:brushalloysDE-info@materion.com)

### INDIA/PUNE

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### SINGAPORE/ASEAN

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### TAIWAN, R.O.C.

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[brushalloysTW-info@materion.com](mailto:brushalloysTW-info@materion.com)

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To obtain a complete list of Materion's global distributor/agent network, visit us online at [www.materion.com/BrushAlloys/ContactUs](http://www.materion.com/BrushAlloys/ContactUs).