



## ToughMet® 3 TSI60U Rod

Materion Brush Performance Alloys' ToughMet® 3 TS I60U rod is a spinodal copper nickel tin alloy designed for use in applications such as high performance bearings and bushings requiring high strength and resistance to wear and corrosion.

### CHEMICAL COMPOSITION (weight percent)

Alloy	Nickel	Tin	Copper
ToughMet® 3 TS 160U	15	8	Balance

### PHYSICAL PROPERTIES

Elastic Modulus	Poisson's Ratio	Electrical Conductivity	Thermal Conductivity	Coefficient of Thermal Expansion	Density	Magnetic Permeability
21 x 10 <sup>6</sup> psi 144 kN/mm <sup>2</sup>	0.32	<7% IACS <4 MS/m	22 Btu/ft/hr/°F 38 W/m/°C	8.9 x 10 <sup>-6</sup> in/in/°F 16.1 x 10 <sup>-6</sup> m/m/°C	0.325 lb/in <sup>3</sup> 9.00 g/cm <sup>3</sup>	<1.001

### MECHANICAL PROPERTIES

Diameter		0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation	Hardness
inch	mm	ksi	N/mm <sup>2</sup>	ksi	N/mm <sup>2</sup>	%	HRC
0.4 – 0.75	10 – 19	150	1035	165	1138	7	36
0.75 – 1.6	19 – 41	150	1035	165	1138	5	34
1.6 – 3.25	41 – 82	150	1035	160	1105	3	34

Typical Minimum Values

### STANDARD AVAILABILITIES

Sizes: 0.40 to 2.75 inch (10 to 70 mm) diameter  
 Length: Nominal 6 to 14 ft (1829 to 4267 mm) with ends  
 Surface: Mill hardened finish  
 Straightness: <0.25 inch/10 ft (6.35 mm/3048 mm) for 0.4 to 0.74 inch (10 to 19 mm) diameter  
 <0.5 inch/10 ft (12 mm/3048 mm) for diameters greater than or equal to 0.75 inch  
 Tolerance: +0.005 inch (0.13 mm)/-0 for 0.4 to 0.74 inch (10 to 19 mm) diameter  
 +0.02 inch (0.5 mm)/-0 for 0.75 to 1.6 inch (19 to 41 mm) diameter  
 +0.08 inch (2 mm)/-0 for 1.6 to 2.75 inch (41 to 70 mm) diameter  
 +0.125 inch (3.2mm)/-0 for over 2.75 to 3.25 inch (over 70 to 83 mm) diameter

## SPECIFICATIONS/STANDARDS

UNS C72900, ASTM B 249, AMS 4597 for diameters  $\leq$  2.75 inch (70 mm)

## RELATED INFORMATION

Additional information on ToughMet® 3 TS 160U rod availability and size capability can be obtained by calling 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

TEL: +(91) 99606.33744  
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#### TAIWAN, R.O.C.

TEL: +(886) 2.2747.8800x121  
[brushalloysTW-info@materion.com](mailto:brushalloysTW-info@materion.com)

#### UNITED KINGDOM @ IRELAND

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

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).



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#### MATERION CORPORATION

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