

## ToughMet® 3 AT Rings

Materion Brush Performance Alloys' ToughMet® 3 forged rings are a spinodal copper nickel tin alloy designed for use in heavy industrial machinery requiring plain bearings with high strength, low friction, wear resistance, corrosion resistance and good thermal conductivity.

### CHEMICAL COMPOSITION (weight percent)

Alloy	Nickel	Tin	Copper
ToughMet 3	15	8	Balance

### PHYSICAL PROPERTIES

Elastic Modulus	Fatigue Strength*	Poisson's Ratio	Coefficient of Thermal Expansion	Density	Thermal Conductivity
21 x 10 <sup>6</sup> psi 144 kN/mm <sup>2</sup>	50 ksi 345 MPa	0.33	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>	22 Btu/hr/ft/°F 38 W/m/°C

\*10<sup>6</sup> cycle fatigue limit

### TYPICAL MECHANICAL PROPERTIES

Outside 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
15 - 80	380 - 2000	115	795	135	930	11	28*

\*Converted from 271 HBW

### STANDARD AVAILABILITY\*

Outside Diameter: 80 inch (2032 mm) maximum  
 Inside Diameter: 13 inch (330 mm) minimum  
 Length: 30 inch (762 mm) maximum  
 Minor dimension (wall or height): 9 inch (229 mm) maximum

\*Above dimensions further constrained by 10,000 lbs. (453 kg) maximum weight limit per ring

### SPECIFICATIONS/STANDARDS

UNS C72900, NACE MR0175/ISO 15156



## RELATED INFORMATION

Additional information on ToughMet® 3 forged rings availability, size capability and pricing can be obtained by calling 800-375-4205, or one of the numbers below.

### 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)

**INDIA/PUNE**  
TEL: +(91) 99606.33744  
[brushalloysIN-info@materion.com](mailto:brushalloysIN-info@materion.com)

**SINGAPORE/ASEAN**  
TEL: +(65) 6842.4456  
[brushalloysSG-info@materion.com](mailto:brushalloysSG-info@materion.com)

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

**JAPAN**  
TEL: +(81) 33.230.2961  
[brushalloysJP-info@materion.com](mailto:brushalloysJP-info@materion.com)

**TAIWAN, R.O.C.**  
TEL: +(886) 2.2747.8800x121  
[brushalloysTW-info@materion.com](mailto:brushalloysTW-info@materion.com)

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

**REPUBLIC OF KOREA**  
TEL: +(82) 32.811.2171  
[brushalloysKR-info@materion.com](mailto:brushalloysKR-info@materion.com)

**UNITED KINGDOM @ IRELAND**  
TEL: +(44) 118.930.3733  
[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).



**Materion Brush Performance Alloys**  
6070 Parkland Boulevard  
Mayfield Heights, OH 44124 USA  
phone: 216.486.4200 fax: 216.383.4005  
email: [BrushAlloys-info@materion.com](mailto:BrushAlloys-info@materion.com)

**MATERION CORPORATION**

[www.materion.com/alloys](http://www.materion.com/alloys)

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