



## ToughMet® 3 CX Alloy Tempers Rod and Tube

ToughMet 3 Alloy is Materion Performance Alloys' solution to your severe service material problems. By applying our patented technology process to create the EquaCast® microstructure, tailored alloying additions and spinodal hardening technology, we have engineered ToughMet 3 Alloy to provide attributes beyond those typically found in a high-strength copper alloy. ToughMet 3 Alloy in the cast and spinodally hardened (CX) condition exhibits tensile strength up to 120 ksi and hardness up to HRC 34 in a Copper - 15% Nickel - 8% Tin alloy with excellent machinability.

- Exceptional resistance to corrosion and cavitation
- Outstanding lubricity and durability in demanding applications
- Highly uniform composition in all product forms
- Available in a wide range of continuous-cast shapes and sizes

### MECHANICAL PROPERTIES

Temper	Outside Diameter	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation	Hardness
		ksi	MPa	ksi	MPa	%	HRC
CX105	< 4" (102 mm)	105	724	110	758	4	30
CX105	≥ 4" (102 mm)	94.5	652	99	683	4	30
CX90		90	621	105	724	6	27

Typical minimum values.

### PHYSICAL PROPERTIES

Young Modulus	21 x 10 <sup>6</sup> psi (144 GPa)	CTE (70 - 215 °F) (20-100°C)	8.9 x 10 <sup>-6</sup> /°F (16.0 x 10 <sup>-6</sup> /°C)
Poisson's Ratio	0.3	Density	0.325 lb/in <sup>3</sup> (9.00 g/cm <sup>3</sup> )
Electrical	9% IACS	Fatigue Limit (estimated)	60 ksi (413 MPa) at R=-1*
Thermal	22 Btu/ft/hr/°F (38 W/m/°C)	Magnetic Permeability	<1.001

\*Fatigue at 10<sup>6</sup> cycles

### STANDARD AVAILABILITY

See reverse side

### SPECIFICATIONS AND STANDARDS

ASTM B505, UNS C96900

### RELATED INFORMATION

Additional technical information on ToughMet 3 alloy rod or tube can be obtained by calling 800-375-4205.

For pricing and availability, phone 800-521-8800, or the local sales number listed below.

### ROD STANDARD AVAILABILITY

1.5 – 3" (38.1 mm – 76.2 mm) diameter

### TUBE STANDARD AVAILABILITY

Outside Diameter	Minimum Wall	Minimum ID
1.125 – 3" (28.6 – 76.2 mm)	¼" (6.35 mm)	½" (12.7 mm)
> 3 – 5" (> 76.2 – 127 mm)	⅜" (9.5 mm)	1" (25.4 mm)
> 5 – 7.5" (> 127 – 191 mm)	½" (12.7 mm)	2" (50.8 mm)
> 7.5 – 10" (> 191 – 254 mm)	⅝" (15.9 mm)	3" (76.2 mm)
>10" (> 254 mm)	Consult Materion Performance Alloys sales engineer for sizes and availability.	

### SPECIALTY CAST SHAPES

Multi-hole cross sections and/or shapes with wall thickness greater than 0.400" (10.2 mm)

### North American Service Centers – Sales Inquiries

**For bar, tube, plate/sheet >0.060" (1.5 mm) thick and rod >0.5" (12.7 mm) diameter:**

**Warren, MI**

TOLL FREE: 800-521-8800  
LOCAL: +(1) 586-772-2700  
FAX: +(1) 586-772-2472

**For tube, bar, rod 0.4" (10 mm) diameter and over, plate 0.062" (1.57 mm) thickness and over:**

**Elmhurst, IL**

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

### International Sales Offices

**CHINA/HONG KONG**

TEL: + (852) 2318-1960 / 1907  
[brushalloysHK-info@materion.com](mailto:brushalloysHK-info@materion.com)

**JAPAN**

TEL: + (81) 33 230 2961  
[brushalloysJP-info@materion.com](mailto:brushalloysJP-info@materion.com)

**TAIWAN, R.O.C.**

TEL: + (886) 2-2747-8800 x-121  
[brushalloysTW-info@materion.com](mailto:brushalloysTW-info@materion.com)

**CHINA/SHANGHAI**

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**REPUBLIC OF KOREA**

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**UNITED KINGDOM & IRELAND**

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**SINGAPORE/ASEAN**

TEL: + (65) 6842-4456  
[brushalloysSG-info@materion.com](mailto:brushalloysSG-info@materion.com)

To obtain a complete list of our global Distributor/Agent network, see our [North American strip, wire and rod distributors](#) and [international strip, wire, rod distributors](#).



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**MATERION CORPORATION**

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