



ToughMet® 3 CX 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 ⁶ psi (144 GPa)	CTE (70 - 215 °F) (20-100°C)	8.9 x 10 ⁻⁶ /°F (16.0 x 10 ⁻⁶ /°C)
Poisson's Ratio	0.3	Density	0.325 lb/in ³ (9.00 g/cm ³)
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 10⁶ cycles

STANDARD AVAILABILITY

See reverse side

SPECIFICATIONS AND STANDARDS

ASTM B505, UNS C96900

RELATED INFORMATION

Additional technical information on ToughMet 3 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

International Sales Offices

CHINA/HONG KONG

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

JAPAN

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

TAIWAN, R.O.C.

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

CHINA/SHANGHAI

TEL: + (86) 21-5237-2328
brushalloysCN-info@materion.com

REPUBLIC OF KOREA

TEL: + (82) 32-811-2171
brushalloysKR-info@materion.com

UNITED KINGDOM & IRELAND

TEL: + (44) 118-930-3733
brushalloysUK-info@materion.com

GERMANY

TEL: + (49) 711-830-930
brushalloysDE-info@materion.com

SINGAPORE/ASEAN

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

To obtain a complete list of our global Distributor/Agent network, visit us online at www.materion.com/BrushAlloys/ContactUs



Materion Performance Alloys
6070 Parkland Boulevard
Mayfield Heights, OH 44124 USA
phone: 216.383.6800 fax:216.383.4005
email: BrushAlloys-info@materion.com

MATERION CORPORATION

www.materion.com/alloys

AD0012_0816

ToughMet® and EquaCast® are Registered Trademarks of Materion Brush Inc.

© 2017 Materion Brush Inc.