



ToughMet® 3 CX Tempers Rod and Tube

ToughMet is Materion Brush Performance Alloys' solution to your severe service material problems. By applying our EquaCast® process, tailored alloying additions and spinodal hardening technology, we have engineered ToughMet to provide attributes beyond those typically found in a high-strength copper alloy. ToughMet 3 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		
T3 CX105	< 4" (102)	105	724	110	758	4	30
T3 CX105	≥ 4" (102)	94.5	652	99	683	4	30
T3 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)	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 Conductivity	9% IACS	Fatigue Limit (estimated)	60 ksi (413 MPa) at R=-1*
Thermal Conductivity	22 Btu/ft/hr/°F (38 W/m/K)	Magnetic Permeability	<1.001

*Fatigue at 10⁶ cycles

STANDARD AVAILABILITY

See reverse side

SPECIFICATIONS AND STANDARDS

ASTM B505, UNS C96900

RELATED INFORMATION

Related information on ToughMet 3 can be obtained by calling 1-800-375-4205

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 Brush 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 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

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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.

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MATERION CORPORATION

www.materion.com/alloys

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