

ToughMet® 3 CX Alloy Tempers Rod and Tube

ToughMet 3 Alloy is Materion's 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

Typical Physical Properties

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

*Fatigue at 10⁶ cycles.

Typical 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.

Industry Standards and Specifications

ASTM B505, UNS# C96900

Related Information

Additional technical information on ToughMet 3 alloy rod or tube can be obtained by calling +1.800.375.4205. For pricing and availability, phone +1.800.521.8800.

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)	1/4" (6.35 mm)	1/2" (12.7 mm)
> 3 - 5" (> 76.2 - 127 mm)	3/8" (9.5 mm)	1" (25.4 mm)
> 5 - 7.5" (> 127 - 191 mm)	1/2" (12.7 mm)	2" (50.8 mm)
> 7.5 - 10" (> 191 - 254 mm)	5/8" (15.9 mm)	3" (76.2 mm)
> 10" (> 254 mm)	Consult a Materion Performance Alloys and Composites 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).

Disclaimer:

Only the buyer can determine the appropriateness of any processing practice, end-product or application. Materion does not make any warranty regarding its recommendations, the suitability of Materion's product, or its processing suggestions for buyer's end product, application or equipment.

The properties presented on this data sheet are for reference purposes only, intended only to initiate the material selection process. They do not constitute, nor are they intended to constitute, a material specification. Material will be produced to one of the applicable industry standards, if any, listed in the Industry Standards and Specification section.

Actual properties may vary by thickness and/or part number. Please contact your local sales engineer for detailed properties to be used in simulation.

Any properties marked as preliminary are subject to change at any time as the manufacturing process is further refined.