

ToughMet® 2 CX Tempers Rod, Tube & Plate

ToughMet 2 alloy is Materion's solution to your severe service material problems. By applying our proprietary technology process to produce the EquaCast® microstructure, tailored alloying additions and spinodal hardening technology, we have engineered ToughMet alloys to provide attributes beyond those typically found in a high-strength copper alloy. ToughMet 2 alloy in the cast and spinodally hardened (CX) condition exhibits tensile strength in excess of 105 ksi and hardness exceeding HRC 27 with excellent machinability. This Copper-9Nickel-6Tin alloy combines low coefficient of friction with wear resistance.

- Outstanding lubricity and durability in demanding applications
- Exceptional resistance to wear, corrosion, and cavitation
- Highly uniform composition in all product forms
- Available in a wide range of continuous-cast shapes and sizes
- Tensile and yield strength greater than that of most other copper alloys

Typical Physical Properties

Young Modulus	Poisson's Ratio	Electrical Conductivity	Thermal Conductivity	CTE (70 - 215°F) (20 - 100°C)	Density	Fatigue Limit (estimated)	Magnetic Permeability
17 x 10 ⁶ psi (117 GPa)	0.3	13 - 14% IACS	30 Btu/ft/hr/°F (52 W/m/°C)	9.0 x 10 ⁻⁶ /°F (16.2 x 10 ⁻⁶ /°C)	0.322 lb/in ³ (8.91 g/cm ³)	20 ksi (138 MPa) at R=-1*	< 1.001

*Fatigue at 10⁶ cycles

Typical Mechanical Properties*

Form	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation	Hardness
	ksi	MPa	ksi	MPa	%	HRC
Rod & Tube	90	621	105	724	3	27
Plate	-	-	-	-	-	27

*Minimum values.

Standard Availability

- Plate: Thicknesses from 1.5" to 5.25" (19 mm - 133.35 mm), width up to 20" (508 mm), lengths up to 60" (1.52 m).
- Rod: Diameter from 2" to 12" (51 mm - 305 mm), in lengths up to 12 ft. (3.66 m).
- Tube: Outside diameter from 1" to 15" (25 mm - 381 mm), minimum wall thickness approximately 10% of the outside diameter.

For additional sizes and more shape options, please contact Materion's sales team.

Industry Standards and Specifications

ASTM B505 (Rod and Tube only), UNS C96970

Related Information

Additional technical information on ToughMet 2 rod, tube, or plate can be obtained by calling +1.800.375.4205. For pricing and availability, call +1.800.521.8800.

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.