

ToughMet® 2 CX Tempers Rod, Tube & Rectangles

ToughMet 2 Alloy is Materion's sustainable solution to 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 material to provide attributes beyond those typically found in a high-strength copper alloy. ToughMet 2 alloy in the cast and spinodally hardened (CX90) condition exhibits tensile strength above 105 ksi and hardness exceeding HRC 27. This copper-9% nickel-6% tin alloy combines low coefficient of friction with wear resistance and 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 – consult the Materion sales team for more information.

ToughMet® 2 CX90 Alloy is not recommended for use in plastic injection mold tooling where glossy or semi-glossy surface finishes are required. Use MoldMAX® XL material instead.

Typical Physical Properties

Young Modulus	Poisson's Ratio	Electrical Conductivity	Thermal Conductivity	Thermal Expansion Coefficient (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 in/in °F 16.2 x 10 ⁻⁶ m/m °C	0.322 lb/in ³ 8.91g/cm ³	20 ksi 138 MPa at R = -1	< 1.001

*Fatigue at 10⁶ cycles.

Typical Mechanical Properties

Temper	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation	Hardness
	ksi	MPa	ksi	MPa	%	HRC
CX90	90	621	105	724	3	27

Minimum tensile strength and yield strength shall be reduced 10% for material having a cross section 4 inches (102 mm) or more. (The cross section is defined as the diameter of a round solid, the distance across the flats of a solid hexagon, the thickness of a rectangle, or the wall thickness of a tube.)

Standard Availability

Rod: Diameter from 2" to 4" (51 - 101 mm), in lengths up to 12 ft (3.66 m). Tube: Outside diameter from 2" to 15" (25 - 381 mm). Minimum wall thicknesses approximately 10-12% of the outside diameter. For sizes larger than 15" (381 mm) outside diameter, please consult a sales engineer for potential sizes and availability.

Specifications and Standards

ASTM B505, UNS C96970

Related Information

Additional technical information on ToughMet 2 CX Tempers Rod, Tube and Rectangles may 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.