



ToughMet[®] 3 CX Tempers Rod and Tube

ToughMet 3 Alloy is Materion Brush 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 | | |
| T3 CX105 | < 4" (102 mm) | 105 | 724 | 110 | 758 | 4 | 30 |
| T3 CX105 | ≥ 4" (102 mm) | 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) (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 Conductivity | 9% IACS | Fatigue Limit (estimated) | 60 ksi (413 MPa) at R=-1* |
| Thermal Conductivity | 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 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 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

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



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MATERION CORPORATION

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