

C72900 ToughMet® 3 Alloy Wire

ToughMet 3 Alloy from Materion Brush Performance Alloys is a performance, heat treatable, copper-nickel-tin alloy designed for severe service applications. Compared to other higher performance alloys, ToughMet 3 Alloy's properties provide customers with greater design flexibility in miniaturized applications, improved reliability with millions of flexural cycles, greater tolerance of large deflections, and longer life at elevated temperatures. ToughMet 3 Alloy's superior performance derives from exceptional yield strength, elastic limit, fatigue strength and resistance to stress relaxation at elevated temperatures. Heat treatment of ToughMet 3 Alloy is a simple process that provides parts with exceptionally high strength and very little dimensional distortion. The recommended heat treatment at 700°F/370°C provides peak strength. ToughMet 3 Alloy parts are corrosion resistant and resist atmospheric tarnishing; parts can be electroplated for additional corrosion protection.

CHEMICAL COMPOSITION (weight percent)

Alloy	Nickel	Tin	Copper
ToughMet 3 Alloy (C72900)	15%	8%	Balance

PHYSICAL PROPERTIES*

Elastic Modulus	Density	Thermal Expansion Coefficient	Electrical Conductivity/ Resistivity	Relative Magnetic Permeability	Stress Relaxation Resistance (Force Remaining after 1000 hrs.)	
					at 150°C	At 200°C
21,000 ksi 144 GPa	0.325 lb/in ³ 9.00 g/cm ³	9.1x10 ⁻⁶ in/in °F 16.4x10 ⁻⁶ m/m °C	7% IACS 4 MS/m	<1.01	90%	80%

*Properties specified for the spinodally hardened (heat treated) condition

MECHANICAL PROPERTIES*

Temper*	Heat Treatment	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation Percent	Hardness HV
		ksi	MPa	ksi	MPa		
A (TB00) ¼ H (TD01) H (TD04)	Before Heat Treatment	20-50	140-345	60-90	415-620	30-60	120-160
		70-90	485-620	75-105	515-725	10-25	180-220
		130-160	895-1105	135-165	930-1140	3-15	270-310
AT (TX00) ¼ HT (TX01) HT (TX04)	After 3 hours at 700°F/370°C	90-120	620-825	120-150	825-1035	10 min	270-310
		120-150	825-1035	135-165	930-1140	5 min	360-400
		180-210	1240-1450	185-215	1275-1480	2 min	380-420

*Properties may vary by diameter.

**Wire is typically provided in an annealed or cold drawn temper and heat treated after forming.

FORMS AVAILABLE

ToughMet 3 Alloy wire is supplied in loose coils or on spools or reels. ToughMet 3 Alloy is also available in rod, bar, plate, tube, and in parts finished by forging or extrusion.

SPECIFICATIONS AND STANDARDS

UNS C72900

TOLERANCES

Wire Diameter (inches)		Standard Diameter Tolerance (inches)		Wire Diameter (mm)		Standard Diameter Tolerance (mm)	
Over	Including	Cold Drawn Tempers	Annealed Temper	Over	Including	Cold Drawn Tempers	Annealed Temper
0.030	0.080	±0.0003	±0.001	0.76	1.5	±0.01	±0.03
0.0800	0.1250	±0.0004	±0.002	1.5	2.0	±0.01	±0.03
0.1250	0.2500	±0.0006	±0.002	2.0	3.8	±0.02	±0.05
0.2500	0.3125	±0.0007	±0.002	3.8	12.0	±0.03	±0.05
0.3125	0.5000	±0.0010	±0.002				

Additional tolerances are per ASTM B 250. Please specify the exact tolerances that you require when you place your order. Tighter tolerances may be available at additional cost. Please contact your local sales engineer to confirm the requested capability.

RELATED INFORMATION

Additional technical or safe handling information on ToughMet 3 Alloy may be obtained by phoning 800-375-4205 or your local sales office (listed below). For pricing and availability, please contact your local service center or sales office.

North American Service Centers – Sales Inquiries

For strip ≤0.060" (1.5 mm) thick.
wire and rod ≤0.5" (12.7 mm) diameter:

Elmhurst, IL

TOLL FREE: 800-323-2438
LOCAL: +(1) 630-832-9650
FAX: +(1) 630-832-9657

International Sales Offices

CHINA/HONG KONG

TEL: + (852) 2318-1960 / 1907
brushalloysHK-info@materion.com

CHINA/SHANGHAI

TEL: + (86) 21-5237-2328
brushalloysCN-info@materion.com

GERMANY

TEL: + (49) 711-830-930
brushalloysDE-info@materion.com

JAPAN

TEL: + (81) 33 230 2961
brushalloysJP-info@materion.com

REPUBLIC OF KOREA

TEL: + (82) 32-811-2171
brushalloysKR-info@materion.com

SINGAPORE/ASEAN

TEL: + (65) 6842-4456
brushalloysSG-info@materion.com

TAIWAN, R.O.C.

TEL: + (886) 2-2747-8800 x-121
brushalloysTW-info@materion.com

UNITED KINGDOM & IRELAND

TEL: + (44) 118-930-3733
brushalloysUK-info@materion.com

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