

ToughMet® 3 TS Rod, Tube & Wire Data Sheet

ToughMet 3 TS Alloy is a cold worked, spinodally hardened alloy designed to provide high strength for the most demanding static structural loads and pressures. It provides high toughness combined with high strength to resist dynamic impact loading. ToughMet 3 TS provides galling resistance, high bearing performance and compatibility with many sour environments or salt water. It is non-magnetic and very easy to machine into complex components.

CHEMICAL COMPOSITION (weight percent)

Nickel	Tin	Copper
15	8	Balance

PHYSICAL PROPERTIES

Elastic Modulus	Poisson's Ratio	Electrical Conductivity	Thermal Conductivity	Coefficient of Thermal Expansion	Density	Magnetic Permeability
21 x 10 ⁶ psi 144 kN/mm ²	0.33	<7% IACS <4 MS/m	22 Btu/ft/hr/°F 38 W/m/°C	9.1 x 10 ⁻⁶ in/in/°F 16.4 x 10 ⁻⁶ m/m/°C	0.325 lb/in ³ 9.00 g/cm ³	<1.001

MINIMUM MECHANICAL PROPERTIES

Temper		Diameter		0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation	Hardness	Average CVN Impact Toughness	
		inch	mm	ksi	N/mm ²	ksi	N/mm ²	% (in 4D)	HRC	ft-lbs	J
Rod	TS 95	0.75 - 3.25	19 - 83	95	655	106	730	18	97 HRB	30*	40*
	TS 120U	0.75 - 1.59	19 - 40.9	110	755	120	825	15	24	15	20
		1.6 - 3.25	41 - 83	110	755	120	825	15	24	12	16
	TS160U	0.25	<6.35	150	1035	160	1100	5	32		
		0.26 - 0.4	6.35 - 10	150	1035	160	1100	7	32		
		0.41 - 0.75	10.1 - 19	150	1035	165	1140	7	36		
		0.76 - 1.6	19.1 - 41	150	1035	165	1140	5	34		
	1.61 - 3.25	41.1 - 83	150	1035	160	1105	3	34			
Wire	TS160U	0.25	< 6.35	150	1035	160	1105	5	32		
		0.26 - 0.4	6.35 - 10	150	1035	160	1105	7	32		
Tube	TS 150	1.30-3.00.(O.D.)	33- 76.(O.D.)	150	1035	158	1090	5	36		

* no single value less than 24 ft-lbs (32 J)

STANDARD TOLERANCES ROD/WIRE

Temper	Form	Diameter		Diameter Tolerance		Straightness Tolerance	
		inch	mm	inch	mm	inch	mm
TS 95, TS120U	Rod	0.75 -1.6	19 – 40.9	+0.02/+0.08	+0.5/+2.0	<0.5 inches deviation in 10 ft. length	<12 mm deviation in 3048 mm length
		1.61 -2.75	41 - 70	+0.02/+0.10	+0.5/+2.5		
		2.76 - 3.25	70.1 - 83	+0.02/+0.145	+0.5/+3.7		
TS160U	Rod	0.25 -0.39	6.35 – 9.9	+/- 0.002	+/- 0.05	<0.25 inches deviation in 10 ft. length	<6.35 mm deviation in 3048 length
		0.4 - 0.74	10 – 18.9	+0.005/-0	+0.13/-0		
		0.75 - 1.6	19 - 41	+0.02/+0.08	+0.5/+2.0	<0.5 inches deviation in 10 ft. length	<12 mm deviation in 3048 mm length
		1.61 - 2.75	41.1 - 70	+0.02/+0.100	+0.5/+2.5		
		2.76 - 3.25	70.1 - 83	+0.020/+0.145	+0.5/+3.7		
TS160U	Wire	<0.4	<10	+/- 0.002	+/- 0.05	-	-

STANDARD TOLERANCES TUBE

Temper	Outside Diameter		Inside Diameter	Diameter Tolerance		Straightness Tolerance	
	inch	mm		inch	mm	inch	mm
TS150	1.30-1.99	33-52	Wall thickness 8-20% of OD*	+/- 0.008	+/- 0.20	<0.5 inches deviation in 10 ft length**	<12 mm deviation in 3048 mm length
	2.00-3.00	53-79	Wall thickness 6-10% of OD*	+/-0.010	+/-0.25		

* This is only a guideline. Check with mill with actual required dimensions

**Tighter straightness tolerance may be available

STANDARD AVAILABILITY

Rod: Nominal 6-12 ft (1829-3658 mm) random mill lengths

Wire: Coil size up to 300 lbs (136 kg)

Surface: Mill hardened finish

SPECIFICATIONS AND STANDARDS

UNS C72900, AMS 4597, NACE MRO175/ISO 15156

CONTACT INFORMATION

Domestic Sales	Pricing, availability, tolerances, etc	800-521-8800
Technical Service	Properties, application and design assistance, fabrication and processing assistance, etc.	800-375-4205 +(1) 216-692-3108
International Sales World-wide Distribution	Link to US and international distributors and international sales offices	http://bit.ly/GetToughMet



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