

ToughMet® 3 TS Alloy Plate & Flat Products

Materion's ToughMet 3 TS alloy is a cold worked, spinodally hardened alloy with properties designed for the most demanding dynamic loading applications. It combines exceptional toughness and high tensile strength to resist impact loading. ToughMet 3 TS alloy 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.

Nominal Chemical Composition (Weight Percent)

Alloy	Nickel	Tin	Copper
C72900	15	8	Balance

Typical Physical Properties

Elastic Modulus	Poisson's Ratio	Electrical Conductivity	Thermal Conductivity	Coefficient of Thermal Expansion (20 - 100 °C)	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

Typical Minimum Mechanical Properties

Temper		Thickness		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 2"/50mm)	HRC	ft-lbs	J
Plate	TS 95	0.25 - 0.375	6.35 - 9.52	95	655	106	730	18	93 HRB		
		0.500 - 1.750	127 - 44.45	95	655	105	725	18	93 HRB	30*	40*
	TS 120U	0.25 - 0.375	6.35 - 9.52	110	755	120	825	15	24		
		0.500 - 1.750	127 - 44.45	110	755	120	825	15	24	12**	16**
	TS130	0.25 - 1.750	6.35 - 44.45	130	895	140	965	10	24		
	TS160U	0.25 - 1.750	6.35 - 44.45	148	1020	160	1100	3	32		

*No single value less than 24 ft-lb (32 J)

**No single value less than 10 ft-lb (13.5 J)

Standard Tolerances Plate

Temper	Form	Thickness		Thickness Tolerance		Flatness Tolerance	
		inch	mm	inch	mm	inch	mm
TS 95, TS120U, TS130, TS160U	Plate	0.25 - 1.75	6.35 - 44.45	+0.030/- 0.000	+0.76/- 0.00	< 0.25 inches deviation in 5 ft. length	< 6.35 mm deviation in 1524 mm length

Standard Availability

Plate: Nominal 8 ft (2438 mm) length by 16 in (406) mill width.

Surface: Cold worked and mill hardened finish.

Industry Standards and Specifications

UNS# C72900

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.

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