

DATA SHEET:

# TS Williamson M3 10 (1.545) 2093



Governing Units: Metric

Mechanical Specifications	Metric		Imperial	
Fully Annealed Al Cross-sectional Area*	1060.39	mm <sup>2</sup>	2092.64	kcmil
Encapsulated Aluminum Cross-Sectional Area	122.52	mm <sup>2</sup>	0.18991	in <sup>2</sup>
Diameter of Composite Core (Exclude Encapsulation)	10.0	mm	0.39400	in
Cross-sectional Area of Core (Exclude Encapsulation)	78.50	mm <sup>2</sup>	0.12174	in <sup>2</sup>
Overall Diameter of Conductor	39.243	mm	1.545	in
Cross-sectional Area of the Conductor (Exclude Covering)	1138.90	mm <sup>2</sup>	1.76535	in <sup>2</sup>
Ultimate Tensile Strength of Conductor 1) ,2)	277.97	kN	62.49	kip
Rated Strength of Core - 399 ksi (2750 MPa)	216.01	kN	48.56	kip
Core Mass per unit length (Exclude Encapsulation)	137.00	kg/km	92.08	lb/kft
Conductor Mass per unit length	3068.18	kg/km	2062.08	lb/kft
Fully Annealed Al Mass per unit length (Include Encapsulation)**	2931.18	kg/km	1970.00	lb/kft
Maximum Emergency Temperature at Surface 3)	200	°C	392	°F
Coefficient of Linear Expansion Above Thermal Kneepoint (core)	0.500	x10 <sup>-6</sup> /°C	0.278	x10 <sup>-6</sup> /°F
Coefficient of Linear Expansion Below Thermal Kneepoint (conductor)	19.257	x10 <sup>-6</sup> /°C	10.699	x10 <sup>-6</sup> /°F
Final Modulus of Elasticity Above Thermal Kneepoint (based on core area)	150.0	GPa	21.8	Msi
Final Modulus of Elasticity Below Thermal Kneepoint (based on conductor area)	61.6	GPa	8.9	Msi
Aluminum Heat Capacity	2718.2	Watt-s/m-°C	460.3	Watt-s/ft.°F
Core Heat Capacity	116.2	Watt-s/m-°C	19.7	Watt-s/ft.°F
Encapsulation Thickness	3.00	mm	0.11811	in
Stranding Ratio	1.0275			
Covered Thickness	0.000	mm	0.000	in
Electrical Specifications	Metric		Imperial	
DC Resistance at 20°C (Fully Annealed Al 63% IACS)	0.0264	ohm/km	0.0425	ohm/mile
DC Resistance at 25°C	0.0270	ohm/km	0.0434	ohm/mile
DC Resistance at 75°C	0.0324	ohm/km	0.0521	ohm/mile
Temperature Coefficient of Resistance at 20°C	0.00408	1/°C	0.00227	1/°F
Frequency	60	Hz	60	Hz
AC Resistance at 25°C	0.0299	ohm/km	0.0482	ohm/mile
AC Resistance at 75°C	0.0349	ohm/km	0.0562	ohm/mile
AC Resistance at 180°C	0.0453	ohm/km	0.0730	ohm/mile
Ampacity 4)		2780	@180°C, & A	
		2945	@200°C, & A	
GMR (estimated)	15.68	mm	0.0515	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.2237	ohm/km	0.360	ohm/mile
Capacitive Reactance	0.1309	Mohm-km	0.081	Mohm-mile

\*TS Williamson M3 10 (1.545) 2093 conductor is produced with Fully Annealed Al aluminum. The nominal Aluminum equivalent area is 1060.4 sq. mm (2092.6 kcmil)

\*\*TS® Conductors are required to exhibit lay lengths (ratios) that conform to established ACSR and ACSS standards.

- 1) Fully Annealed Al rated tensile strength based on applicable standard. Core tensile strength based on 100% of its strength.
- 2) Strength at ambient temperature, Strength may be reduced to Rated Core Strength when temperature is above knee point
- 3) Maximum continuous operating temperature of TS Williamson M3 10 (1.545) 2093 is 180°C and a maximum emergency temperature of 200°C
- 4). Ampacity based on: 25°C ambient temperature, 2ft/s (0.6 m/s) perpendicular wind, 0.5 Emis 0.5 Absorb.60 Hz, sea level (0) elevation, 30°N line Azimuth, noon on June 10th (96W/sq.ft, 1033W/sq.m), clear atmosphere

The information contained herein is offered in good faith. All values are nominal unless specifically indicated as maximum or minimum. The actual configuration of a given size may vary between conductor manufacturers and may result in slight variations in some of the indicated values. Data herein is to be considered confidential and proprietary to TS Conductor