

DATA SHEET:

TS Marshall M3 6.5 (0.783) 518



Governing Units: Metric

Mechanical Specifications	Metric		Imperial	
Fully Annealed Al Cross-sectional Area*	262.50	mm ²	518.04	kcmil
Encapsulated Aluminum Cross-Sectional Area	63.59	mm ²	0.09856	in ²
Diameter of Composite Core (Exclude Encapsulation)	6.5	mm	0.25600	in
Cross-sectional Area of Core (Exclude Encapsulation)	33.20	mm ²	0.05143	in ²
Overall Diameter of Conductor	19.888	mm	0.783	in
Cross-sectional Area of the Conductor (Exclude Covering)	295.70	mm ²	0.45831	in ²
Ultimate Tensile Strength of Conductor 1) ,2)	107.29	kN	24.12	kip
Rated Strength of Core - 399 ksi (2750 MPa)	91.32	kN	20.53	kip
Core Mass per unit length (Exclude Encapsulation)	58.00	kg/km	38.98	lb/kft
Conductor Mass per unit length	776.66	kg/km	521.98	lb/kft
Fully Annealed Al Mass per unit length (Include Encapsulation)**	718.66	kg/km	483.00	lb/kft
Maximum Emergency Temperature at Surface 3)	200	°C	392	°F
Coefficient of Linear Expansion Above Thermal Kneepoint (core)	0.500	x10 ⁻⁶ /°C	0.278	x10 ⁻⁶ /°F
Coefficient of Linear Expansion Below Thermal Kneepoint (conductor)	17.341	x10 ⁻⁶ /°C	9.634	x10 ⁻⁶ /°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)	66.6	GPa	9.7	Msi
Aluminum Heat Capacity	672.9	Watt-s/m-°C	113.9	Watt-s/ft.°F
Core Heat Capacity	49.1	Watt-s/m-°C	8.3	Watt-s/ft.°F
Encapsulation Thickness	2.30	mm	0.09055	in
Stranding Ratio	1.0200			
Covered Thickness	0.000	mm	0.000	in
Electrical Specifications	Metric		Imperial	
DC Resistance at 20°C (Fully Annealed Al 63% IACS)	0.1058	ohm/km	0.1703	ohm/mile
DC Resistance at 25°C	0.1080	ohm/km	0.1738	ohm/mile
DC Resistance at 75°C	0.1296	ohm/km	0.2085	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	0.1087	ohm/km	0.1749	ohm/mile
AC Resistance at 75°C	0.1301	ohm/km	0.2094	ohm/mile
AC Resistance at 180°C	0.1752	ohm/km	0.2820	ohm/mile
Ampacity 4)		1141	@180°C, & A	
		1201	@200°C, & A	
GMR (estimated)	8.08	mm	0.0265	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.2738	ohm/km	0.441	ohm/mile
Capacitive Reactance	0.1634	Mohm-km	0.102	Mohm-mile

*TS Marshall M3 6.5 (0.783) 518 conductor is produced with Fully Annealed Al aluminum. The nominal Aluminum equivalent area is 262.5 sq. mm (518 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 Marshall M3 6.5 (0.783) 518 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

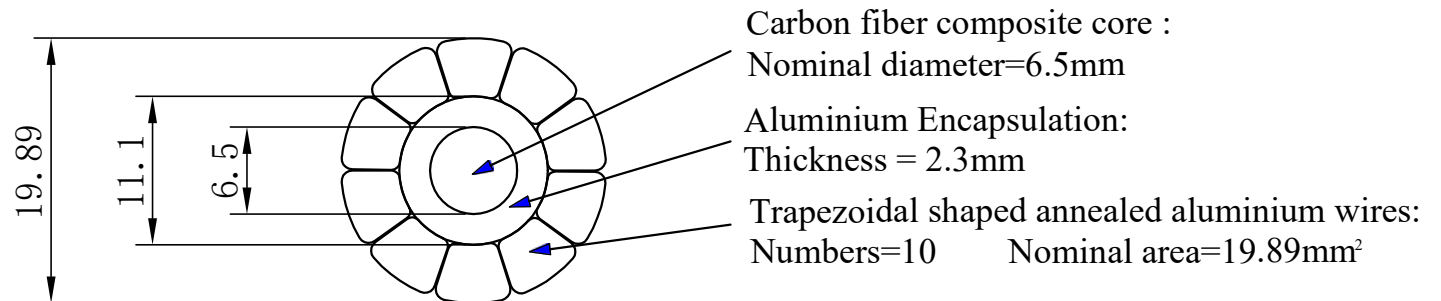
contact: info@tsconductor.com

ID:35708

Date Produced: 12/8/2023

TS[®] Conductor Cross sectional drawing for Customers

Expected value at production time



Carbon fiber composite core :

Nominal diameter=6.5mm

Aluminium Encapsulation:

Thickness = 2.3mm

Trapezoidal shaped annealed aluminium wires:

Numbers=10 Nominal area=19.89mm²

TS Conductor Corp.

TS Marshall M3 6.5(0.783) ID:35708

Design		Date	6. 12. 2023
Check		Date	6. 12. 2023
Ratify		Date	6. 12. 2023

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AC Resistance at 180°C	0.1751	ohm/km	0.2819	ohm/mile
Ampacity 4)		1141	@180°C, & A	
		1201	@200°C, & A	
GMR (estimated)	8.08	mm	0.0265	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.2281	ohm/km	0.367	ohm/mile
Capacitive Reactance	0.1961	Mohm-km	0.122	Mohm-mile

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