

DATA SHEET:

738 KCMIL_Martin_AECC_TW_M3_TS



Governing Units: Metric

Mechanical Specifications	Metric		Imperial	
Fully Annealed Al Cross-sectional Area*	374.12	mm ²	738.31	kcmil
Encapsulated Aluminum Cross-Sectional Area	70.87	mm ²	0.10986	in ²
Diameter of Composite Core (Exclude Encapsulation)	7.0	mm	0.27600	in
Cross-sectional Area of Core (Exclude Encapsulation)	38.50	mm ²	0.05965	in ²
Overall Diameter of Conductor	23.546	mm	0.927	in
Cross-sectional Area of the Conductor (Exclude Covering)	412.60	mm ²	0.63954	in ²
Ultimate Tensile Strength of Conductor 1) ,2)	128.15	kN	28.81	kip
Rated Strength of Core - 399 ksi (2750 MPa)	105.78	kN	23.78	kip
Core Mass per unit length (Exclude Encapsulation)	67.00	kg/km	45.03	lb/kft
Conductor Mass per unit length	1093.66	kg/km	735.03	lb/kft
Fully Annealed Al Mass per unit length (Include Encapsulation)**	1026.66	kg/km	690.00	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)	18.146	x10 ⁻⁶ /°C	10.081	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)	64.4	GPa	9.3	Msi
Aluminum Heat Capacity	959.0	Watt-s/m-°C	162.4	Watt-s/ft-°F
Core Heat Capacity	56.9	Watt-s/m-°C	9.6	Watt-s/ft-°F
Encapsulation Thickness	2.40	mm	0.09449	in
Stranding Ratio	1.0215			
Covered Thickness	0.000	mm	0.000	in
Electrical Specifications	Metric		Imperial	
DC Resistance at 20°C (Fully Annealed Al 63% IACS)	0.0744	ohm/km	0.1198	ohm/mile
DC Resistance at 25°C	0.0759	ohm/km	0.1222	ohm/mile
DC Resistance at 75°C	0.0911	ohm/km	0.1466	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	0.0770	ohm/km	0.1239	ohm/mile
AC Resistance at 75°C	0.0920	ohm/km	0.1480	ohm/mile
AC Resistance at 180°C	0.1235	ohm/km	0.1988	ohm/mile
Ampacity 4)		1432	@180°C, & A	
		1508	@200°C, & A	
GMR (estimated)	9.50	mm	0.0312	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.2615	ohm/km	0.421	ohm/mile
Capacitive Reactance	0.1553	Mohm-km	0.097	Mohm-mile

*738 KCMIL_Martin_AECC_TW_M3_TS conductor is produced with Fully Annealed Al aluminum. The nominal Aluminum equivalent area is 374.1 sq. mm (738.3 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 738 KCMIL_Martin_AECC_TW_M3_TS 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

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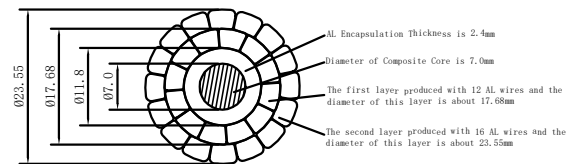
ID:26273

Date Produced:

6/4/2025

Conductor design drawing for Customers

Unit is mm



TS Martin M3 7 (0.927) ID:26273
TS Martin M3 7 (23.546) IEC ID:26280
TS Martin M3 7 (23.546) Al-Zr ID: 29549

TS Conductor Corp.

TS® Conductor Martin 7

Design

Check

Ratify

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TS Martin M3 7 (23.546) IEC 738



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DC Resistance at 75°C	0.0911	ohm/km	0.1466	ohm/mile
Temperature Coefficient of Resistance at 20°C	0.00408	1/°C	0.00227	1/°F
Frequency	50	Hz	50	Hz
AC Resistance at 25°C	0.0767	ohm/km	0.1234	ohm/mile
AC Resistance at 75°C	0.0917	ohm/km	0.1476	ohm/mile
AC Resistance at 180°C	0.1234	ohm/km	0.1985	ohm/mile
Ampacity 4)		1432	@180°C, & A	
		1509	@200°C, & A	
GMR (estimated)	9.50	mm	0.0312	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.2180	ohm/km	0.351	ohm/mile
Capacitive Reactance	0.1864	Mohm-km	0.116	Mohm-mile

*TS Martin M3 7 (23.546) IEC 738 conductor is produced with Fully Annealed Al aluminum. The nominal Aluminum equivalent area is 374.1 sq. mm (738.3 kcmil)

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