

DATA SHEET:

214 KCMIL_Royal_AECC_TW_M3_TS



Governing Units: Metric

Mechanical Specifications	Metric		Imperial	
Fully Annealed Al Cross-sectional Area*	108.35	mm ²	213.82	kcmil
Encapsulated Aluminum Cross-Sectional Area	43.98	mm ²	0.06817	in ²
Diameter of Composite Core (Exclude Encapsulation)	5.0	mm	0.19700	in
Cross-sectional Area of Core (Exclude Encapsulation)	19.60	mm ²	0.03043	in ²
Overall Diameter of Conductor	13.005	mm	0.512	in
Cross-sectional Area of the Conductor (Exclude Covering)	128.00	mm ²	0.19838	in ²
Ultimate Tensile Strength of Conductor 1) ,2)	60.94	kN	13.70	kip
Rated Strength of Core - 399 ksi (2750 MPa)	54.00	kN	12.14	kip
Core Mass per unit length (Exclude Encapsulation)	34.00	kg/km	22.85	lb/kft
Conductor Mass per unit length	330.09	kg/km	221.85	lb/kft
Fully Annealed Al Mass per unit length (Include Encapsulation)**	296.09	kg/km	199.00	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)	15.784	x10 ⁻⁶ /°C	8.769	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)	71.5	GPa	10.4	Msi
Aluminum Heat Capacity	277.7	Watt-s/m-°C	47.0	Watt-s/ft-°F
Core Heat Capacity	29.0	Watt-s/m-°C	4.9	Watt-s/ft-°F
Encapsulation Thickness	2.00	mm	0.07874	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)	0.2556	ohm/km	0.4113	ohm/mile
DC Resistance at 25°C	0.2608	ohm/km	0.4197	ohm/mile
DC Resistance at 75°C	0.3129	ohm/km	0.5036	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	0.2610	ohm/km	0.4201	ohm/mile
AC Resistance at 75°C	0.3131	ohm/km	0.5039	ohm/mile
AC Resistance at 180°C	0.4225	ohm/km	0.6800	ohm/mile
Ampacity 4)		646	@180°C, & A	
		678	@200°C, & A	
GMR (estimated)	5.36	mm	0.0176	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.3047	ohm/km	0.490	ohm/mile
Capacitive Reactance	0.1837	Mohm-km	0.114	Mohm-mile

*214 KCMIL_Royal_AECC_TW_M3_TS conductor is produced with Fully Annealed Al aluminum. The nominal Aluminum equivalent area is 108.3 sq. mm (213.8 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 214 KCMIL_Royal_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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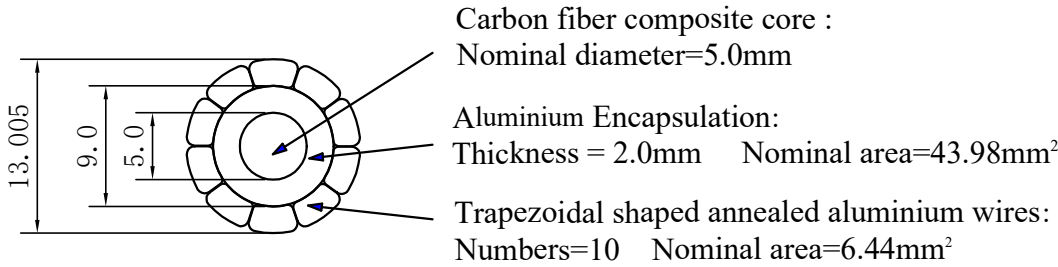
ID:48116

Date Produced:

6/3/2025

TS Conductor Cross sectional drawing

Expected value at production time



TS Conductor Corp.

TS Conductor Royal M3 5 (0.512) ID:48116

Design

Date

Check

Date

Ratify

Date

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TS Royal M3 5 (13) IEC 214



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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	0.2609	ohm/km	0.4199	ohm/mile
AC Resistance at 75°C	0.3130	ohm/km	0.5038	ohm/mile
AC Resistance at 180°C	0.4225	ohm/km	0.6799	ohm/mile
Ampacity 4)		646	@180°C, & A	
		678	@200°C, & A	
GMR (estimated)	5.36	mm	0.0176	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.2539	ohm/km	0.409	ohm/mile
Capacitive Reactance	0.2204	Mohm-km	0.137	Mohm-mile

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Date Produced:

3/4/2024