

DATA SHEET:

1706 KCMIL_BlackElk_AECC_TW_M3_TS



Governing Units: Metric

Mechanical Specifications	Metric		Imperial	
Fully Annealed Al Cross-sectional Area*	864.56	mm ²	1706.18	kcmil
Encapsulated Aluminum Cross-Sectional Area	86.58	mm ²	0.13420	in ²
Diameter of Composite Core (Exclude Encapsulation)	8.0	mm	0.31500	in
Cross-sectional Area of Core (Exclude Encapsulation)	50.30	mm ²	0.07791	in ²
Overall Diameter of Conductor	35.204	mm	1.386	in
Cross-sectional Area of the Conductor (Exclude Covering)	914.80	mm ²	1.41798	in ²
Ultimate Tensile Strength of Conductor 1) ,2)	188.47	kN	42.37	kip
Rated Strength of Core - 399 ksi (2750 MPa)	138.21	kN	31.07	kip
Core Mass per unit length (Exclude Encapsulation)	87.00	kg/km	58.47	lb/kft
Conductor Mass per unit length	2475.09	kg/km	1663.47	lb/kft
Fully Annealed Al Mass per unit length (Include Encapsulation)**	2388.09	kg/km	1605.00	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)	19.954	x10 ⁻⁶ /°C	11.085	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)	60.2	GPa	8.7	Msi
Aluminum Heat Capacity	2216.2	Watt-s/m-°C	375.3	Watt-s/ft-°F
Core Heat Capacity	74.3	Watt-s/m-°C	12.6	Watt-s/ft-°F
Encapsulation Thickness	2.60	mm	0.10236	in
Stranding Ratio	1.0260			
Covered Thickness	0.000	mm	0.000	in
Electrical Specifications	Metric		Imperial	
DC Resistance at 20°C (Fully Annealed Al 63% IACS)	0.0324	ohm/km	0.0521	ohm/mile
DC Resistance at 25°C	0.0331	ohm/km	0.0532	ohm/mile
DC Resistance at 75°C	0.0397	ohm/km	0.0638	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	0.0357	ohm/km	0.0574	ohm/mile
AC Resistance at 75°C	0.0419	ohm/km	0.0674	ohm/mile
AC Resistance at 180°C	0.0549	ohm/km	0.0884	ohm/mile
Ampacity 4)		2438	@180°C, & A	
		2579	@200°C, & A	
GMR (estimated)	14.00	mm	0.0459	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.2323	ohm/km	0.374	ohm/mile
Capacitive Reactance	0.1361	Mohm-km	0.085	Mohm-mile

*1706 KCMIL_BlackElk_AECC_TW_M3_TS conductor is produced with Fully Annealed Al aluminum. The nominal Aluminum equivalent area is 864.6 sq. mm (1706.2 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 1706 KCMIL_BlackElk_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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Date Produced:

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