

## DATA SHEET:

## 438 KCMIL\_Forelien\_AECC\_TW\_M3\_TS



Governing Units: Metric

Mechanical Specifications	Metric		Imperial	
Fully Annealed Al Cross-sectional Area*	221.96	mm <sup>2</sup>	438.03	kcmil
Encapsulated Aluminum Cross-Sectional Area	56.67	mm <sup>2</sup>	0.08785	in <sup>2</sup>
Diameter of Composite Core (Exclude Encapsulation)	6.0	mm	0.23600	in
Cross-sectional Area of Core (Exclude Encapsulation)	28.30	mm <sup>2</sup>	0.04383	in <sup>2</sup>
Overall Diameter of Conductor	18.288	mm	0.720	in
Cross-sectional Area of the Conductor (Exclude Covering)	250.20	mm <sup>2</sup>	0.38786	in <sup>2</sup>
Ultimate Tensile Strength of Conductor 1) ,2)	91.37	kN	20.54	kip
Rated Strength of Core - 399 ksi (2750 MPa)	77.80	kN	17.49	kip
Core Mass per unit length (Exclude Encapsulation)	49.00	kg/km	32.93	lb/kft
Conductor Mass per unit length	657.55	kg/km	441.93	lb/kft
Fully Annealed Al Mass per unit length (Include Encapsulation)**	608.55	kg/km	409.00	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)	17.316	x10 <sup>-6</sup> /°C	9.620	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)	66.7	GPa	9.7	Msi
Aluminum Heat Capacity	569.0	Watt-s/m-°C	96.3	Watt-s/ft-°F
Core Heat Capacity	41.8	Watt-s/m-°C	7.1	Watt-s/ft-°F
Encapsulation Thickness	2.20	mm	0.08661	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)	0.1251	ohm/km	0.2014	ohm/mile
DC Resistance at 25°C	0.1277	ohm/km	0.2055	ohm/mile
DC Resistance at 75°C	0.1532	ohm/km	0.2466	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	0.1282	ohm/km	0.2064	ohm/mile
AC Resistance at 75°C	0.1537	ohm/km	0.2473	ohm/mile
AC Resistance at 180°C	0.2071	ohm/km	0.3333	ohm/mile
Ampacity 4)		1023	@180°C, & A	
		1076	@200°C, & A	
GMR (estimated)	7.43	mm	0.0244	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.2801	ohm/km	0.451	ohm/mile
Capacitive Reactance	0.1674	Mohm-km	0.104	Mohm-mile

\*438 KCMIL\_Forelien\_AECC\_TW\_M3\_TS conductor is produced with Fully Annealed Al aluminum. The nominal Aluminum equivalent area is 222 sq. mm (438 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 438 KCMIL\_Forelien\_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

contact: info@tsconductor.com

ID:26213

Date Produced:

6/3/2025

## DATA SHEET:

## TS Forelien M3 6 (18.288) IEC 438



Governing Units: Metric

Mechanical Specifications	Metric		Imperial	
Fully Annealed Al Cross-sectional Area*	221.96	mm <sup>2</sup>	438.03	kcmil
Encapsulated Aluminum Cross-Sectional Area	56.67	mm <sup>2</sup>	0.08785	in <sup>2</sup>
Diameter of Composite Core (Exclude Encapsulation)	6.0	mm	0.23600	in
Cross-sectional Area of Core (Exclude Encapsulation)	28.30	mm <sup>2</sup>	0.04383	in <sup>2</sup>
Overall Diameter of Conductor	18.288	mm	0.720	in
Cross-sectional Area of the Conductor (Exclude Covering)	250.20	mm <sup>2</sup>	0.38786	in <sup>2</sup>
Ultimate Tensile Strength of Conductor 1) ,2)	91.37	kN	20.54	kip
Rated Strength of Core - 399 ksi (2750 MPa)	77.80	kN	17.49	kip
Core Mass per unit length (Exclude Encapsulation)	49.00	kg/km	32.93	lb/kft
Conductor Mass per unit length	657.55	kg/km	441.93	lb/kft
Fully Annealed Al Mass per unit length (Include Encapsulation)**	608.55	kg/km	409.00	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)	17.316	x10 <sup>-6</sup> /°C	9.620	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)	66.7	GPa	9.7	Msi
Aluminum Heat Capacity	569.0	Watt-s/m-°C	96.3	Watt-s/ft-°F
Core Heat Capacity	41.8	Watt-s/m-°C	7.1	Watt-s/ft-°F
Encapsulation Thickness	2.20	mm	0.08661	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)	0.1251	ohm/km	0.2014	ohm/mile
DC Resistance at 25°C	0.1277	ohm/km	0.2055	ohm/mile
DC Resistance at 75°C	0.1532	ohm/km	0.2466	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	0.1281	ohm/km	0.2061	ohm/mile
AC Resistance at 75°C	0.1535	ohm/km	0.2471	ohm/mile
AC Resistance at 180°C	0.2070	ohm/km	0.3331	ohm/mile
Ampacity 4)		1019	@180°C, & A	
		1072	@200°C, & A	
GMR (estimated)	7.43	mm	0.0244	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.2334	ohm/km	0.376	ohm/mile
Capacitive Reactance	0.2009	Mohm-km	0.125	Mohm-mile

\*TS Forelien M3 6 (18.288) IEC 438 conductor is produced with Fully Annealed Al aluminum. The nominal Aluminum equivalent area is 222 sq. mm (438 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 Forelien M3 6 (18.288) IEC 438 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. 50 Hz, sea level (0) elevation, 30°N line Azimuth, noon on June 10th (96W/sq.ft, 1033W/sq.m), clear atmosphere

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contact: info@tsconductor.com

ID:26219

Date Produced: 12/22/2023

## DATA SHEET:

## TS Forelien M1 6 (0.72) 438



Governing Units: Metric

Mechanical Specifications	Metric		Imperial	
Fully Annealed Al Cross-sectional Area*	221.96	mm <sup>2</sup>	438.03	kcmil
Encapsulated Aluminum Cross-Sectional Area	56.67	mm <sup>2</sup>	0.08785	in <sup>2</sup>
Diameter of Composite Core (Exclude Encapsulation)	6.0	mm	0.23600	in
Cross-sectional Area of Core (Exclude Encapsulation)	28.30	mm <sup>2</sup>	0.04383	in <sup>2</sup>
Overall Diameter of Conductor	18.288	mm	0.720	in
Cross-sectional Area of the Conductor (Exclude Covering)	250.20	mm <sup>2</sup>	0.38786	in <sup>2</sup>
Ultimate Tensile Strength of Conductor 1) ,2)	74.37	kN	16.72	kip
Rated Strength of Core - 312 ksi (2150 MPa)	60.81	kN	13.67	kip
Core Mass per unit length (Exclude Encapsulation)	57.00	kg/km	38.31	lb/kft
Conductor Mass per unit length	665.55	kg/km	447.31	lb/kft
Fully Annealed Al Mass per unit length (Include Encapsulation)**	608.55	kg/km	409.00	lb/kft
Maximum Emergency Temperature at Surface 3)	200	°C	392	°F
Coefficient of Linear Expansion Above Thermal Kneepoint (core)	1.440	x10 <sup>-6</sup> /°C	0.800	x10 <sup>-6</sup> /°F
Coefficient of Linear Expansion Below Thermal Kneepoint (conductor)	18.631	x10 <sup>-6</sup> /°C	10.351	x10 <sup>-6</sup> /°F
Final Modulus of Elasticity Above Thermal Kneepoint (based on core area)	113.0	GPa	16.4	Msi
Final Modulus of Elasticity Below Thermal Kneepoint (based on conductor area)	62.6	GPa	9.1	Msi
Aluminum Heat Capacity	569.0	Watt-s/m-°C	96.3	Watt-s/ft-°F
Core Heat Capacity	48.3	Watt-s/m-°C	8.2	Watt-s/ft-°F
Encapsulation Thickness	2.20	mm	0.08661	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)	0.1251	ohm/km	0.2014	ohm/mile
DC Resistance at 25°C	0.1277	ohm/km	0.2055	ohm/mile
DC Resistance at 75°C	0.1532	ohm/km	0.2466	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	0.1282	ohm/km	0.2064	ohm/mile
AC Resistance at 75°C	0.1537	ohm/km	0.2473	ohm/mile
AC Resistance at 180°C	0.2071	ohm/km	0.3333	ohm/mile
Ampacity 4)		1023	@180°C, & A	
		1076	@200°C, & A	
GMR (estimated)	7.43	mm	0.0244	ft
Inductive Reactance (Xa: internal flux+external flux radius 1 ft)	0.2801	ohm/km	0.451	ohm/mile
Capacitive Reactance	0.1674	Mohm-km	0.104	Mohm-mile

\*TS Forelien M1 6 (0.72) 438 conductor is produced with Fully Annealed Al aluminum. The nominal Aluminum equivalent area is 222 sq. mm (438 kcmil)

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- 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 Forelien M1 6 (0.72) 438 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

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contact: info@tsconductor.com

ID:26214

Date Produced:

1/5/2024

## DATA SHEET:

## TS Forelien M1 6 (18.288) IEC 438



Governing Units: Metric

Mechanical Specifications	Metric		Imperial	
Fully Annealed Al Cross-sectional Area*	221.96	mm <sup>2</sup>	438.03	kcmil
Encapsulated Aluminum Cross-Sectional Area	56.67	mm <sup>2</sup>	0.08785	in <sup>2</sup>
Diameter of Composite Core (Exclude Encapsulation)	6.0	mm	0.23600	in
Cross-sectional Area of Core (Exclude Encapsulation)	28.30	mm <sup>2</sup>	0.04383	in <sup>2</sup>
Overall Diameter of Conductor	18.288	mm	0.720	in
Cross-sectional Area of the Conductor (Exclude Covering)	250.20	mm <sup>2</sup>	0.38786	in <sup>2</sup>
Ultimate Tensile Strength of Conductor 1) ,2)	74.37	kN	16.72	kip
Rated Strength of Core - 312 ksi (2150 MPa)	60.81	kN	13.67	kip
Core Mass per unit length (Exclude Encapsulation)	57.00	kg/km	38.31	lb/kft
Conductor Mass per unit length	665.55	kg/km	447.31	lb/kft
Fully Annealed Al Mass per unit length (Include Encapsulation)**	608.55	kg/km	409.00	lb/kft
Maximum Emergency Temperature at Surface 3)	200	°C	392	°F
Coefficient of Linear Expansion Above Thermal Kneepoint (core)	1.440	x10 <sup>-6</sup> /°C	0.800	x10 <sup>-6</sup> /°F
Coefficient of Linear Expansion Below Thermal Kneepoint (conductor)	18.631	x10 <sup>-6</sup> /°C	10.351	x10 <sup>-6</sup> /°F
Final Modulus of Elasticity Above Thermal Kneepoint (based on core area)	113.0	GPa	16.4	Msi
Final Modulus of Elasticity Below Thermal Kneepoint (based on conductor area)	62.6	GPa	9.1	Msi
Aluminum Heat Capacity	569.0	Watt-s/m-°C	96.3	Watt-s/ft-°F
Core Heat Capacity	48.3	Watt-s/m-°C	8.2	Watt-s/ft-°F
Encapsulation Thickness	2.20	mm	0.08661	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)	0.1251	ohm/km	0.2014	ohm/mile
DC Resistance at 25°C	0.1277	ohm/km	0.2055	ohm/mile
DC Resistance at 75°C	0.1532	ohm/km	0.2466	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	0.1281	ohm/km	0.2061	ohm/mile
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Ampacity 4)		1023	@180°C, & A	
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GMR (estimated)	7.43	mm	0.0244	ft
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- 3) Maximum continuous operating temperature of TS Forelien M1 6 (18.288) IEC 438 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. 50 Hz, sea level (0) elevation, 30°N line Azimuth, noon on June 10th (96W/sq.ft, 1033W/sq.m), clear atmosphere

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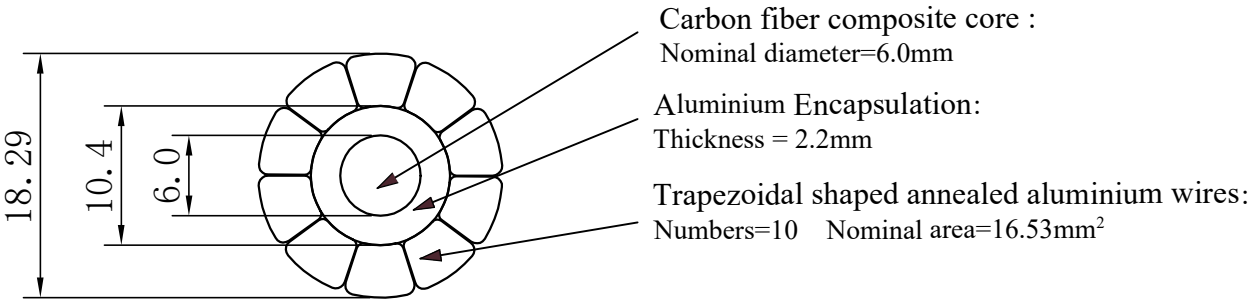
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Date Produced:

1/5/2024

Units: mm

# TS Conductor Forelien Cross sectional drawing



26213, 26214, 26219, 26220

## TS Conductor Corp.

TS Forelien M3 6 (0.72) ID:26213

Design		Date	5. 01. 2023
Check		Date	5. 01. 2023
Ratify		Date	5. 01. 2023