

TECHNICAL DATA SHEET

Epsilon Advanced Conductor 770 - 75

High Temperature Low Sag Conductors

EPSILON
CABLE

International size LONDON

ASTM Size SAN ANTONIO



Governing Units: Metric to US Customary (Unit conversion)

STRANDING CONFIGURATION

		Metric			US Customary	
	No. & Diameter of composite core	1 x 9.78	mm		1 x 0.385	in.
	Aluminum layers construction / Height	36 TW x	3.94	mm	0.155	in.
	1st layer composition and ϕ_{eq}	8 x	5.09	mm	0.200	in.
	2nd layer composition and ϕ_{eq}	12 x	5.20	mm	0.205	in.
	3rd layer composition and ϕ_{eq}	16 x	5.24	mm	0.206	in.
	Lay Direction of outer layer	Right Hand (Z)				

CONDUCTOR PROPERTIES

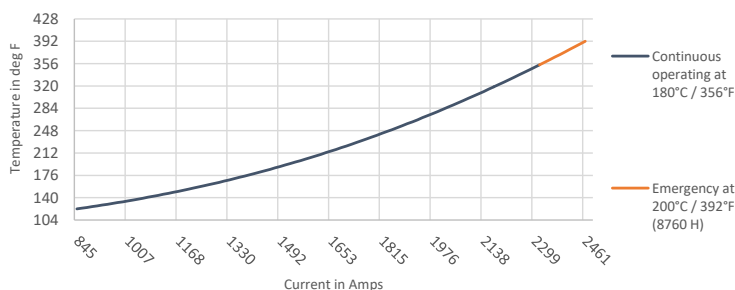
Cross Sectional Area - Annealed Aluminum (1350-O at 63%IACS)	761.6	mm ²	1503.1	kcmil
Cross Sectional Area - Composite Core	75.1	mm ²	0.1164	in. ²
Total Area of Conductor Cross Section	836.8	mm ²	1.2970	in. ²
Nominal equivalent Aluminum Area (1350-H19 at 61%IACS)	786.6	mm ²	1552.4	kcmil
Overall Diameter of Conductor	33.42	mm	1.316	in.
Mass per unit length - Annealed Aluminum	2,109.0	kg/km	1,417.2	lb/kft
Mass per unit length - Core	139.0	kg/km	93.4	lb/kft
Mass per unit length - Conductor	2,248.0	kg/km	1,510.6	lb/kft
Ultimate Tensile Strength of Conductor	214.3	kN	48.2	kips
Core Rated Tensile Strength	168.6	kN	37.9	kips
Coefficient of Linear Expansion Above Thermal Kneepoint	1.3	10 ⁻⁶ K ⁻¹	0.722	10 ⁻⁶ F ⁻¹
Coefficient of Linear Expansion Below Thermal Kneepoint	19.08	10 ⁻⁶ K ⁻¹	10.60	10 ⁻⁶ F ⁻¹
Final Modulus of Elasticity Above Thermal Kneepoint	123	GPa	17.84	Msi
Final Modulus of Elasticity Below Thermal Kneepoint	61	GPa	8.86	Msi

THERMAL SPECIFICATIONS

Maximum Continuous Operating Temperature ⁽²⁾ (surface temperature)	180	°C	356	°F
Maximum Emergency Temperature / 8760 Hours ⁽²⁾ (surface temperature)	200	°C	392	°F
Thermal Heat Capacity for Annealed Aluminum Layers	2,014.1	W-s/m-°C	340.9	W-s/ft-°F
Thermal Heat Capacity for Composite Core	111.2	W-s/m-°C	18.8	W-s/ft-°F

ELECTRICAL SPECIFICATIONS

Maximum DC Electrical Resistance at 20°C / 68°F (1370-O at 63%IACS)	0.0368	ohm/km	0.0592	ohm/mile
Temperature Coefficient of Resistance	4.07	10 ⁻³ K ⁻¹	2.109	10 ⁻³ F ⁻¹
AC Nominal Resistance at 25°C / 77°F (surface temperature)	0.0405	ohm/km	0.0652	ohm/mile
AC Nominal Resistance at 75°C / 167°F (surface temperature)	0.0476	ohm/km	0.0765	ohm/mile
AC Nominal Resistance at 180°C / 356°F (surface temperature)	0.0627	ohm/km	0.1008	ohm/mile
AC Nominal Resistance at 200°C / 392°F (surface temperature)	0.0656	ohm/km	0.1055	ohm/mile
AC Current Rating at 180°C / 356°F (surface temperature) ⁽¹⁾	2,323 A			
AC Current Rating at 200°C / 392°F (surface temperature) ⁽¹⁾	2,461 A			



Geometric Mean Radius (GMR)

13.46 mm 0.0442 ft.

Inductive Reactance $\phi 0.3m$ ($\phi 0.98ft$) radius0.196 $\Omega \cdot km^{-1}$ 0.3154 ohm/mileCapacitive Reactance $\phi 0.3m$ ($\phi 0.98ft$) radius0.166 M $\Omega \cdot km$ 0.1031 Mohm-mile

(1) Ampacity calculations based on IEEE Standard 738-2012, according to the following data:

25 °C / 77 °F ambient temperature, 0.61 m/s (2 ft/s) wind velocity with an angle of 90 °,
 1000 W/m² (92.9 W/ft²) solar radiation, 0.5 solar absorption coefficient,
 0.6 emissivity coefficient, Resistance AC at 60 Hz current frequency.

(2) Temperatures defined according to ASTM B987-20.

Reference standards for core properties: ASTM B987-20.

Reference standards for electrical specifications: IEC 62219.

Reference standards for stranding parameters: ASTM B857-14/IEC 62219.

Rated specifications may slightly change depending on conductor manufacturer.

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