

## TECHNICAL DATA SHEET

## Epsilon Advanced Conductor 1020 - 75

High Temperature Low Sag Conductors


EPSILON  
CABLE

International size **MADRID**  
ASTM Size **LAPWING**



Governing Units: Metric to US Customary (Unit conversion)

## STRANDING CONFIGURATION

	No. & Diameter of composite core	Metric			US Customary	
	Aluminum layers construction / Height	1 x 9.78	mm		1 x 0.385	in.
	1st layer composition and $\phi_{eq}$	56 TW x	3.55	mm	0.140	in.
	2nd layer composition and $\phi_{eq}$	8 x	4.76	mm	0.187	in.
	3rd layer composition and $\phi_{eq}$	12 x	4.80	mm	0.189	in.
	4th layer composition and $\phi_{eq}$	16 x	4.81	mm	0.189	in.
		20 x	4.81	mm	0.189	in.
	Lay Direction of outer layer	Right Hand (Z)				

## CONDUCTOR PROPERTIES

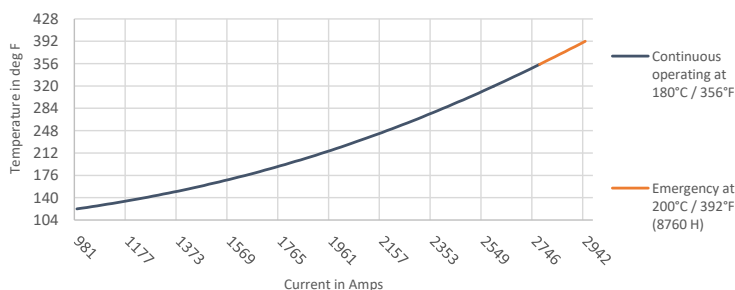
Cross Sectional Area - Annealed Aluminum (1350-O at 63%IACS)	1,012.7	mm <sup>2</sup>	1998.5	kcmil
Cross Sectional Area - Composite Core	75.1	mm <sup>2</sup>	0.1164	in. <sup>2</sup>
Total Area of Conductor Cross Section	1,087.8	mm <sup>2</sup>	1.6861	in. <sup>2</sup>
Nominal equivalent Aluminum Area (1350-H19 at 61%IACS)	1,045.9	mm <sup>2</sup>	2064.1	kcmil
Overall Diameter of Conductor	38.18	mm	1.503	in.
Mass per unit length - Annealed Aluminum	2,805.0	kg/km	1,884.9	lb/kft
Mass per unit length - Core	139.0	kg/km	93.4	lb/kft
Mass per unit length - Conductor	2,944.0	kg/km	1,978.3	lb/kft
Ultimate Tensile Strength of Conductor	229.3	kN	51.6	kips
Core Rated Tensile Strength	168.6	kN	37.9	kips
Coefficient of Linear Expansion Above Thermal Kneepoint	1.3	10 <sup>-6</sup> K <sup>-1</sup>	0.722	10 <sup>-6</sup> F <sup>-1</sup>
Coefficient of Linear Expansion Below Thermal Kneepoint	19.91	10 <sup>-6</sup> K <sup>-1</sup>	11.06	10 <sup>-6</sup> F <sup>-1</sup>
Final Modulus of Elasticity Above Thermal Kneepoint	123	GPa	17.84	Msi
Final Modulus of Elasticity Below Thermal Kneepoint	60	GPa	8.66	Msi

## THERMAL SPECIFICATIONS

Maximum Continuous Operating Temperature <sup>(2)</sup> (surface temperature)	180	°C	356	°F
Maximum Emergency Temperature / 8760 Hours <sup>(2)</sup> (surface temperature)	200	°C	392	°F
Thermal Heat Capacity for Annealed Aluminum Layers	2,678.8	W-s/m-°C	453.4	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)	0.0277	ohm/km	0.0446	ohm/mile
Temperature Coefficient of Resistance	4.07	10 <sup>-3</sup> K <sup>-1</sup>	2.109	10 <sup>-3</sup> F <sup>-1</sup>
AC Nominal Resistance at 25°C / 77°F (surface temperature)	0.0320	ohm/km	0.0515	ohm/mile
AC Nominal Resistance at 75°C / 167°F (surface temperature)	0.0371	ohm/km	0.0598	ohm/mile
AC Nominal Resistance at 180°C / 356°F (surface temperature)	0.0482	ohm/km	0.0776	ohm/mile
AC Nominal Resistance at 200°C / 392°F (surface temperature)	0.0504	ohm/km	0.0811	ohm/mile
AC Current Rating at 180°C / 356°F (surface temperature) <sup>(1)</sup>	2,772 A			
AC Current Rating at 200°C / 392°F (surface temperature) <sup>(1)</sup>	2,942 A			



## Geometric Mean Radius (GMR)

15.27 mm 0.0501 ft.

Inductive Reactance  $\phi 0.3m$  ( $\phi 0.98ft$ ) radius0.188  $\Omega \cdot km^{-1}$  0.3026 ohm/mileCapacitive Reactance  $\phi 0.3m$  ( $\phi 0.98ft$ ) radius0.159 M $\Omega \cdot km$  0.0988 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/m<sup>2</sup> (92.9 W/ft<sup>2</sup>) 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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