

TECHNICAL DATA SHEET

Epsilon Advanced Conductor 320 - 40

High Temperature Low Sag Conductors

EPSILON
CABLE

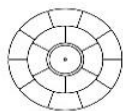
International size LISBON

ASTM Size HAWK



Governing Units: Metric to US Customary (Unit conversion)

STRANDING CONFIGURATION



		Metric		US Customary	
No. & Diameter of composite core		1 x 7.11	mm	1 x 0.280	in.
Aluminum layers construction / Height	16 TW x	3.67	mm	0.144	in.
1st layer composition and ϕ_{eq}	6 x	5.03	mm	0.198	in.
2nd layer composition and ϕ_{eq}	10 x	5.02	mm	0.198	in.
Lay Direction of outer layer		Right Hand (Z)			

CONDUCTOR PROPERTIES

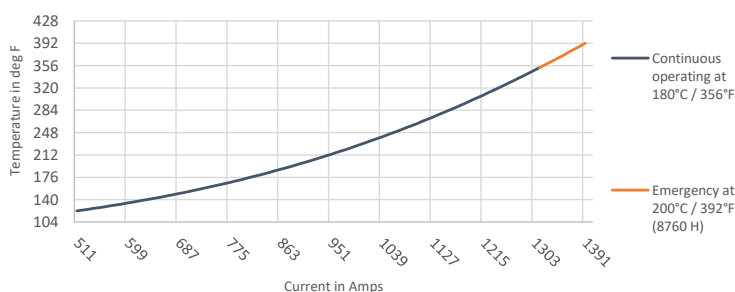
Cross Sectional Area - Annealed Aluminum (1350-O at 63%IACS)	316.7	mm ²	624.9	kcmil
Cross Sectional Area - Composite Core	39.7	mm ²	0.0615	in. ²
Total Area of Conductor Cross Section	356.4	mm ²	0.5523	in. ²
Nominal equivalent Aluminum Area (1350-H19 at 61%IACS)	327.0	mm ²	645.4	kcmil
Overall Diameter of Conductor	21.79	mm	0.858	in.
Mass per unit length - Annealed Aluminum	876.0	kg/km	588.6	lb/kft
Mass per unit length - Core	73.5	kg/km	49.4	lb/kft
Mass per unit length - Conductor	949.5	kg/km	638.0	lb/kft
Ultimate Tensile Strength of Conductor	108.1	kN	24.3	kips
Core Rated Tensile Strength	89.1	kN	20.0	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	18.25	10 ⁻⁶ K ⁻¹	10.13	10 ⁻⁶ F ⁻¹
Final Modulus of Elasticity Above Thermal Kneepoint	123	GPa	17.84	Msi
Final Modulus of Elasticity Below Thermal Kneepoint	63	GPa	9.08	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	836.6	W-s/m-°C	141.6	W-s/ft-°F
Thermal Heat Capacity for Composite Core	58.8	W-s/m-°C	9.9	W-s/ft-°F

ELECTRICAL SPECIFICATIONS

Maximum DC Electrical Resistance at 20°C / 68°F (1370-O at 63%IACS)	0.0884	ohm/km	0.1423	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)	0.0915	ohm/km	0.1472	ohm/mile
AC Nominal Resistance at 75°C / 167°F (surface temperature)	0.1093	ohm/km	0.1759	ohm/mile
AC Nominal Resistance at 180°C / 356°F (surface temperature)	0.1468	ohm/km	0.2362	ohm/mile
AC Nominal Resistance at 200°C / 392°F (surface temperature)	0.1539	ohm/km	0.2477	ohm/mile
AC Current Rating at 180°C / 356°F (surface temperature) ⁽¹⁾	1,318 A			
AC Current Rating at 200°C / 392°F (surface temperature) ⁽¹⁾	1,391 A			



Geometric Mean Radius (GMR)

8.85 mm 0.0290 ft.

Inductive Reactance $\phi 0.3m$ ($\phi 0.98ft$) radius0.222 $\Omega.km-1$ 0.3573 ohm/mileCapacitive Reactance $\phi 0.3m$ ($\phi 0.98ft$) radius0.191 M $\Omega.km$ 0.1187 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.

Revision 01

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