

TECHNICAL DATA SHEET

Epsilon Advanced Conductor 520 - 60

High Temperature Low Sag Conductors


EPSILON
CABLE

International size **WARSAW**
ASTM Size **CUCKOO**



Governing Units: Metric to US Customary (Unit conversion)

STRANDING CONFIGURATION

	No. & Diameter of composite core	Metric			US Customary	
	Aluminum layers construction / Height	33 TW x	3.16	mm	1 x 0.345	in.
	1st layer composition and ϕ_{eq}	7 x	4.54	mm	0.179	in.
	2nd layer composition and ϕ_{eq}	11 x	4.45	mm	0.175	in.
	3st layer composition and ϕ_{eq}	15 x	4.41	mm	0.174	in.
	Lay Direction of outer layer	Right Hand (Z)				

CONDUCTOR PROPERTIES

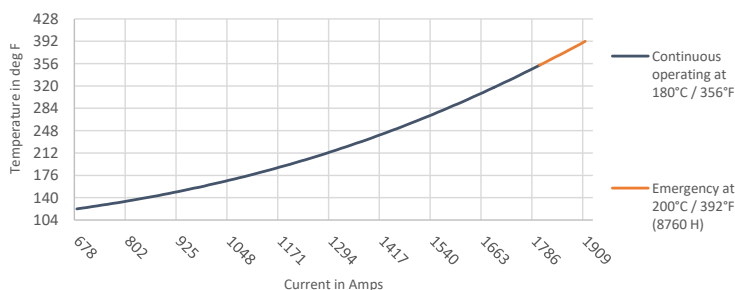
Cross Sectional Area - Annealed Aluminum (1350-O at 63%IACS)	513.1	mm ²	1012.7	kcmil
Cross Sectional Area - Composite Core	60.3	mm ²	0.0934	in. ²
Total Area of Conductor Cross Section	573.4	mm ²	0.8887	in. ²
Nominal equivalent Aluminum Area (1350-H19 at 61%IACS)	529.9	mm ²	1045.9	kcmil
Overall Diameter of Conductor	27.72	mm	1.091	in.
Mass per unit length - Annealed Aluminum	1,421.0	kg/km	954.9	lb/kft
Mass per unit length - Core	111.5	kg/km	74.9	lb/kft
Mass per unit length - Conductor	1,532.5	kg/km	1,029.8	lb/kft
Ultimate Tensile Strength of Conductor	166.0	kN	37.3	kips
Core Rated Tensile Strength	135.2	kN	30.4	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	18.49	10 ⁻⁶ K ⁻¹	10.27	10 ⁻⁶ F ⁻¹
Final Modulus of Elasticity Above Thermal Kneepoint	123	GPa	17.84	Msi
Final Modulus of Elasticity Below Thermal Kneepoint	62	GPa	9.01	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	1,357.1	W-s/m-°C	229.7	W-s/ft-°F
Thermal Heat Capacity for Composite Core	89.2	W-s/m-°C	15.1	W-s/ft-°F

ELECTRICAL SPECIFICATIONS

Maximum DC Electrical Resistance at 20°C / 68°F (1370-O at 63%IACS)	0.0546	ohm/km	0.0879	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)	0.0578	ohm/km	0.0930	ohm/mile
AC Nominal Resistance at 75°C / 167°F (surface temperature)	0.0686	ohm/km	0.1103	ohm/mile
AC Nominal Resistance at 180°C / 356°F (surface temperature)	0.0915	ohm/km	0.1472	ohm/mile
AC Nominal Resistance at 200°C / 392°F (surface temperature)	0.0958	ohm/km	0.1542	ohm/mile
AC Current Rating at 180°C / 356°F (surface temperature) ⁽¹⁾	1,806 A			
AC Current Rating at 200°C / 392°F (surface temperature) ⁽¹⁾	1,909 A			



Geometric Mean Radius (GMR)

11.22 mm 0.0368 ft.

Inductive Reactance $\phi 0.3m$ ($\phi 0.98ft$) radius0.207 $\Omega.km-1$ 0.3331 ohm/mileCapacitive Reactance $\phi 0.3m$ ($\phi 0.98ft$) radius0.177 M $\Omega.km$ 0.1100 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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