

TECHNICAL DATA SHEET

Epsilon Advanced Conductor 640 - 60

High Temperature Low Sag Conductors

EPSILON
CABLE

International size

VIENNA

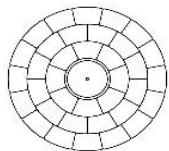
ASTM Size

CARDINAL



Governing Units: Metric to US Customary (Unit conversion)

STRANDING CONFIGURATION



	Metric			US Customary	
No. & Diameter of composite core	1 x 8.76	mm		1 x 0.345	in.
Aluminum layers construction / Height	36 TW x	3.61	mm	0.142	in.
1st layer composition and Øeq	8 x	4.62	mm	0.182	in.
2nd layer composition and Øeq	12 x	4.73	mm	0.186	in.
3rd layer composition and Øeq	16 x	4.77	mm	0.188	in.
Lay Direction of outer layer	Right Hand (Z)				

CONDUCTOR PROPERTIES

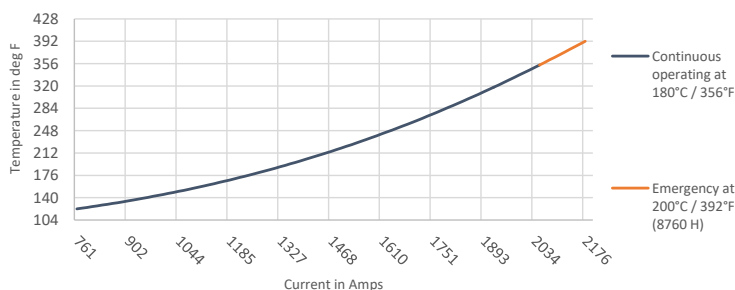
Cross Sectional Area - Annealed Aluminum (1350-O at 63%IACS)	630.5	mm ²	1244.2	kcmil
Cross Sectional Area - Composite Core	60.3	mm ²	0.0934	in. ²
Total Area of Conductor Cross Section	690.7	mm ²	1.0706	in. ²
Nominal equivalent Aluminum Area (1350-H19 at 61%IACS)	651.1	mm ²	1285.0	kcmil
Overall Diameter of Conductor	30.42	mm	1.198	in.
Mass per unit length - Annealed Aluminum	1,746.0	kg/km	1,173.3	lb/kft
Mass per unit length - Core	111.5	kg/km	74.9	lb/kft
Mass per unit length - Conductor	1,857.5	kg/km	1,248.2	lb/kft
Ultimate Tensile Strength of Conductor	173.1	kN	38.9	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	19.18	10 ⁻⁶ K ⁻¹	10.65	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	8.84	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	1,667.4	W-s/m-°C	282.2	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)	0.0445	ohm/km	0.0716	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)	0.0479	ohm/km	0.0771	ohm/mile
AC Nominal Resistance at 75°C / 167°F (surface temperature)	0.0566	ohm/km	0.0910	ohm/mile
AC Nominal Resistance at 180°C / 356°F (surface temperature)	0.0751	ohm/km	0.1208	ohm/mile
AC Nominal Resistance at 200°C / 392°F (surface temperature)	0.0786	ohm/km	0.1265	ohm/mile

AC Current Rating at 180°C / 356°F (surface temperature)⁽¹⁾ 2,057 AAC Current Rating at 200°C / 392°F (surface temperature)⁽¹⁾ 2,176 A

Geometric Mean Radius (GMR)

12.25 mm 0.0402 ft.

Inductive Reactance Ø0.3m (Ø0.98ft) radius

0.202 Ω.km-1 0.3251 ohm/mile

Capacitive Reactance Ø0.3m (Ø0.98ft) radius

0.172 MΩ.km 0.1069 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

Ref. Document ST21-00100

Date 12-Sep-2023

This document is the property of EPSILON COMPOSITE

contact@epsilon-cable.com
www.epsilon-cable.com