

TECHNICAL DATA SHEET

Epsilon Advanced Conductor 280 - 40

High Temperature Low Sag Conductors


EPSILON
CABLE

International size **CASABLANCA**
ASTM Size **LAREDO**



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 | 3.35 | mm | 0.132 | in. |
| | 1st layer composition and Øeq | 6 x | 4.72 | mm | 0.186 | in. |
| | 2nd layer composition and Øeq | 10 x | 4.66 | mm | 0.183 | in. |
| | | | | | | |
| | | | | | | |
| | Lay Direction of outer layer | Right Hand (Z) | | | | |

CONDUCTOR PROPERTIES

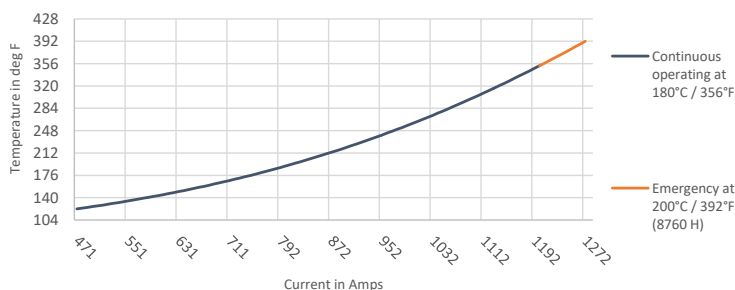
| | | | | |
|--|-------|----------------------------------|--------|----------------------------------|
| Cross Sectional Area - Annealed Aluminum (1350-O at 63%IACS) | 275.5 | mm ² | 543.7 | kcmil |
| Cross Sectional Area - Composite Core | 39.7 | mm ² | 0.0615 | in. ² |
| Total Area of Conductor Cross Section | 315.2 | mm ² | 0.4886 | in. ² |
| Nominal equivalent Aluminum Area (1350-H19 at 61%IACS) | 284.5 | mm ² | 561.5 | kcmil |
| Overall Diameter of Conductor | 20.51 | mm | 0.807 | in. |
| Mass per unit length - Annealed Aluminum | 762.0 | kg/km | 512.0 | lb/kft |
| Mass per unit length - Core | 73.5 | kg/km | 49.4 | lb/kft |
| Mass per unit length - Conductor | 835.5 | kg/km | 561.4 | lb/kft |
| Ultimate Tensile Strength of Conductor | 105.6 | kN | 23.7 | 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 | 17.71 | 10 ⁻⁶ K ⁻¹ | 9.84 | 10 ⁻⁶ F ⁻¹ |
| Final Modulus of Elasticity Above Thermal Kneepoint | 123 | GPa | 17.84 | Msi |
| Final Modulus of Elasticity Below Thermal Kneepoint | 64 | GPa | 9.22 | 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 | 727.7 | W-s/m-°C | 123.2 | 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) | 0.1016 | ohm/km | 0.1635 | 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) | 0.1048 | ohm/km | 0.1687 | ohm/mile |
| AC Nominal Resistance at 75°C / 167°F (surface temperature) | 0.1253 | ohm/km | 0.2016 | ohm/mile |
| AC Nominal Resistance at 180°C / 356°F (surface temperature) | 0.1685 | ohm/km | 0.2711 | ohm/mile |
| AC Nominal Resistance at 200°C / 392°F (surface temperature) | 0.1767 | ohm/km | 0.2844 | ohm/mile |
| AC Current Rating at 180°C / 356°F (surface temperature) ⁽¹⁾ | 1,207 A | | | |
| AC Current Rating at 200°C / 392°F (surface temperature) ⁽¹⁾ | 1,272 A | | | |



Geometric Mean Radius (GMR)

8.36 mm 0.0274 ft.

Inductive Reactance $\phi 0.3m$ ($\phi 0.98ft$) radius0.226 $\Omega.km^{-1}$ 0.3637 ohm/mileCapacitive Reactance $\phi 0.3m$ ($\phi 0.98ft$) radius0.194 M $\Omega.km$ 0.1205 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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