**TECHNICAL DATA SHEET**

# ECRC® 640 - 60

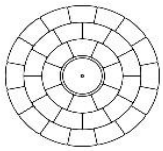
Epsilon Advanced Conductors

EPSILON CABLE

| | |
|---|---|
| International size | **VIENNA** |
| ASTM Size | **CARDINAL** |
| Technical designation | ECRC® 640-AL0/60-S1 |



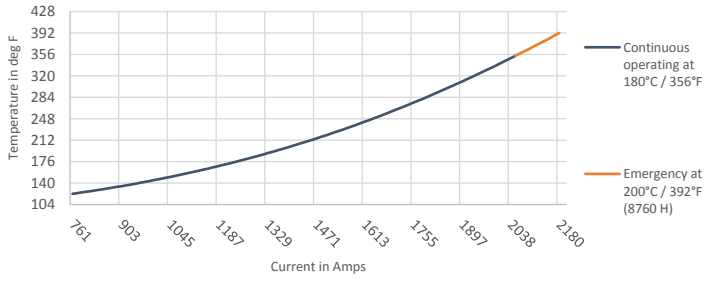
*Governing Units: Metric to US Customary (Unit conversion)*

| 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. |
| | *3st 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 | 4.03 | $10^{-3}$ $K^{-1}$ | 2.089 | $10^{-3}$ $F^{-1}$ |
| 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) | 0.0565 | ohm/km | 0.0909 | ohm/mile |
| AC Nominal Resistance at 180°C / 356°F (surface temperature) | 0.0748 | ohm/km | 0.1204 | ohm/mile |
| AC Nominal Resistance at 200°C / 392°F (surface temperature) | 0.0783 | ohm/km | 0.1260 | ohm/mile |
| AC Current Rating at 180°C / 356°F (surface temperature) [1] | 2,060 A | | | |
| AC Current Rating at 200°C / 392°F (surface temperature) [1] | 2,180 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 02*

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