TECHNICAL DATA SHEET

ECRC® 820 - 60

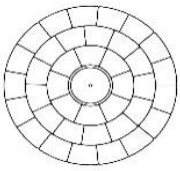
Epsilon Advanced Conductors

EPSILON CABLE

International size	**PARIS**
ASTM Size	**BITTERN**
Technical designation	ECRC® 820-AL0/60-S1



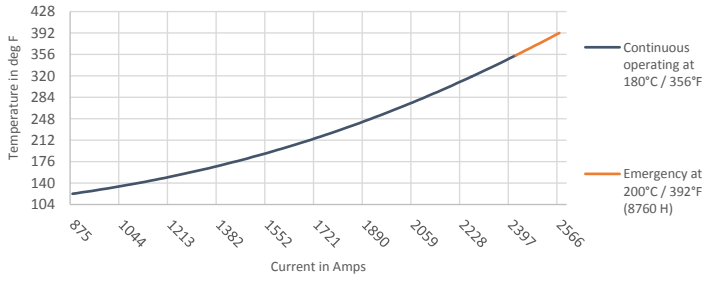
Governing Units: Metric to US Customary (Unit conversion)

STRANDING CONFIGURATION		Metric		US Customary	
	*No. & Diameter of composite core*	1 x 8.76	mm	1 x 0.345	in.
	Aluminum layers construction / Height	38 TW x 4.24	mm	0.167	in.
	1st layer composition and Øeq	8 x 5.14	mm	0.202	in.
	2nd layer composition and Øeq	13 x 5.16	mm	0.203	in.
	3st layer composition and Øeq	17 x 5.31	mm	0.209	in.
	Lay Direction of outer layer	Right Hand (Z)			

CONDUCTOR PROPERTIES				
Cross Sectional Area - Annealed Aluminum (1350-O at 63%IACS)	814.6	mm²	1607.6	kcmil
Cross Sectional Area - Composite Core	60.3	mm²	0.0934	in.²
Total Area of Conductor Cross Section	874.8	mm²	1.3560	in.²
Nominal equivalent Aluminum Area (1350-H19 at 61%IACS)	841.3	mm²	1660.3	kcmil
Overall Diameter of Conductor	34.2	mm	1.346	in.
Mass per unit length - Annealed Aluminum	2,255.0	kg/km	1,515.3	lb/kft
Mass per unit length - Core	111.5	kg/km	74.9	lb/kft
Mass per unit length - Conductor	2,366.5	kg/km	1,590.2	lb/kft
Ultimate Tensile Strength of Conductor	184.1	kN	41.4	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	19.92	10^{-6} K^{-1}	11.06	10^{-6} F^{-1}
Final Modulus of Elasticity Above Thermal Kneepoint	123	GPa	17.84	Msi
Final Modulus of Elasticity Below Thermal Kneepoint	60	GPa	8.66	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	2,153.5	W-s/m-°C	364.5	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)*	0.0344	ohm/km	0.0554	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)	0.0382	ohm/km	0.0615	ohm/mile
AC Nominal Resistance at 75°C / 167°F (surface temperature)	0.0447	ohm/km	0.0719	ohm/mile
AC Nominal Resistance at 180°C / 356°F (surface temperature)	0.0586	ohm/km	0.0943	ohm/mile
AC Nominal Resistance at 200°C / 392°F (surface temperature)	0.0613	ohm/km	0.0986	ohm/mile
AC Current Rating at 180°C / 356°F (surface temperature) [1]	2,421 A			
AC Current Rating at 200°C / 392°F (surface temperature) [1]	2,566 A			



Geometric Mean Radius (GMR)				
	13.66	mm	0.0448	ft.
Inductive Reactance Ø0.3m (Ø0.98ft) radius				
	0.195	Ω.km-1	0.3138	ohm/mile
Capacitive Reactance Ø0.3m (Ø0.98ft) radius				
	0.165	MΩ.km	0.1025	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

Ref. Document ST21-00052

Date 12-Sep-2023

This document is the property of EPSILON COMPOSITE

contact@epsilon-cable.com

www.epsilon-cable.com