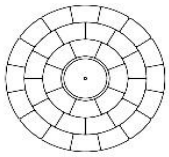
TECHNICAL DATA SHEET	ECRC® 680 - 71 Epsilon Advanced Conductors	EPSILON CABLE

International size	**BUDAPEST**
ASTM Size	**FORT WORTH**
Technical designation	ECRC® 680-AL0/71-S1



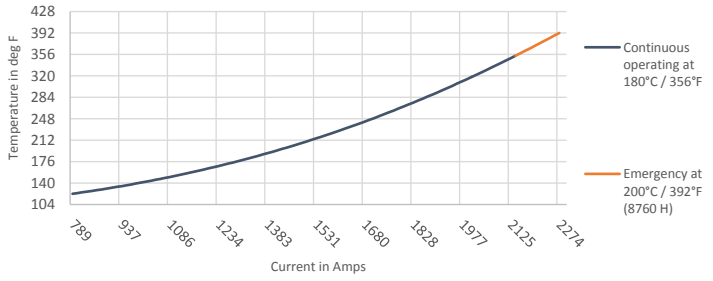
Governing Units: Metric to US Customary (Unit conversion)

STRANDING CONFIGURATION		Metric		US Customary	
	*No. & Diameter of composite core*		1 x 9.53	mm	1 x 0.375	in.
	Aluminum layers construction / Height	36 TW x	3.66	mm	0.144	in.
	1st layer composition and Øeq	8 x	4.81	mm	0.189	in.
	2nd layer composition and Øeq	12 x	4.87	mm	0.192	in.
	3st layer composition and Øeq	16 x	4.90	mm	0.193	in.
	Lay Direction of outer layer	Right Hand (Z)				

CONDUCTOR PROPERTIES				
Cross Sectional Area - Annealed Aluminum (1350-O at 63%IACS)	670.2	mm^2	1322.7	kcmil
Cross Sectional Area - Composite Core	71.3	mm^2	0.1106	$in.^2$
Total Area of Conductor Cross Section	741.6	mm^2	1.1494	$in.^2$
Nominal equivalent Aluminum Area (1350-H19 at 61%IACS)	692.2	mm^2	1366.1	kcmil
Overall Diameter of Conductor	31.49	mm	1.240	in.
Mass per unit length - Annealed Aluminum	1,856.0	kg/km	1,247.2	lb/kft
Mass per unit length - Core	132.0	kg/km	88.7	lb/kft
Mass per unit length - Conductor	1,988.0	kg/km	1,335.8	lb/kft
Ultimate Tensile Strength of Conductor	200.3	kN	45.0	kips
Core Rated Tensile Strength	160.1	kN	36.0	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	18.83	10^{-6} K^{-1}	10.46	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	8.93	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	1,772.5	W-s/m-°C	300.0	W-s/ft-°F
Thermal Heat Capacity for Composite Core	105.6	W-s/m-°C	17.9	W-s/ft-°F

ELECTRICAL SPECIFICATIONS				
Maximum DC Electrical Resistance at 20°C / 68°F *(1370-O at 63%IACS)*	0.0418	ohm/km	0.0673	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)	0.0453	ohm/km	0.0729	ohm/mile
AC Nominal Resistance at 75°C / 167°F (surface temperature)	0.0533	ohm/km	0.0858	ohm/mile
AC Nominal Resistance at 180°C / 356°F (surface temperature)	0.0704	ohm/km	0.1134	ohm/mile
AC Nominal Resistance at 200°C / 392°F (surface temperature)	0.0737	ohm/km	0.1187	ohm/mile
AC Current Rating at 180°C / 356°F (surface temperature) [1]	2,148 A			
AC Current Rating at 200°C / 392°F (surface temperature) [1]	2,274 A			



Geometric Mean Radius (GMR)			
12.72	mm	0.0417	ft.
Inductive Reactance Ø0.3m (Ø0.98ft) radius			
0.2	Ω.km-1	0.3219	ohm/mile
Capacitive Reactance Ø0.3m (Ø0.98ft) radius			
0.17	MΩ.km	0.1056	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 ST21-00091

Date 12-Sep-2023

This document is the property of EPSILON COMPOSITE

contact@epsilon-cable.com

www.epsilon-cable.com