

TECHNICAL DATA SHEET
HVCRC® 680 - 71
 Epsilon Advanced Conductors

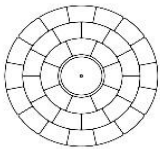
EPSILON
CABLE

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



Governing Units: Metric

STRANDING CONFIGURATION

	No. & Diameter of HVCRC core	1 x 9.53	mm
	Aluminium Layers Construction / height	36 TW x	3.66 mm
	1st layer composition and ϕ_{eq}	8 x	4.81 mm
	2nd layer composition and ϕ_{eq}	12 x	4.87 mm
	3st layer composition and ϕ_{eq}	16 x	4.90 mm
	Lay Direction of outer layer	Right Hand (Z)	

CONDUCTOR PROPERTIES

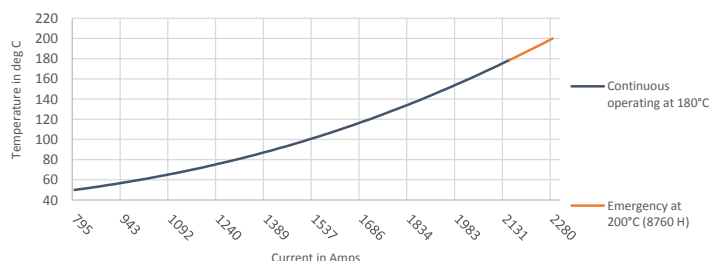
Cross Sectional Area - Annealed Aluminium	670.2	mm ²
Cross Sectional Area - HVCRC Core	71.3	mm ²
Total Area of Conductor Cross Section	741.6	mm ²
Nominal equivalent Aluminium Area (1350-H19 at 61%IACS)	692.2	mm ²
Overall Diameter of Conductor	31.49	mm
Mass per unit length - Annealed Aluminium	1,856.0	kg/km
Mass per unit length - Core	132.0	kg/km
Mass per unit length - Conductor	1,988.0	kg/km
Ultimate Tensile Strength of Conductor	200.3	kN
Core Rated Tensile Strength	160.1	kN
Coefficient of Linear Expansion Above Thermal Kneepoint	1.3	10 ⁻⁶ K ⁻¹
Coefficient of Linear Expansion Below Thermal Kneepoint	18.83	10 ⁻⁶ K ⁻¹
Final Modulus of Elasticity Above Thermal Kneepoint	123	GPa
Final Modulus of Elasticity Below Thermal Kneepoint	62	GPa

THERMAL SPECIFICATIONS

Maximum Continuous Operating Temperature ⁽²⁾ (surface temperature)	180	°C
Maximum Emergency Temperature / 8760 Hours ⁽²⁾ (surface temperature)	200	°C
Thermal Heat Capacity for Annealed Aluminium Layers	1,772.5	W.s/m. °C
Thermal Heat Capacity for Composite Core	105.6	W.s/m. °C

ELECTRICAL SPECIFICATIONS

Maximum DC Electrical Resistance at 20°C (1370-O at 63%IACS)	0.0418	Ω.km ⁻¹
Temperature Coefficient of Resistance	4.03	10 ⁻³ K ⁻¹
AC Nominal Resistance at 25°C (surface temperature)	0.0445	Ω.km ⁻¹
AC Nominal Resistance at 75°C (surface temperature)	0.0526	Ω.km ⁻¹
AC Nominal Resistance at 160°C (surface temperature)	0.0666	Ω.km ⁻¹
AC Nominal Resistance at 180°C (surface temperature)	0.0699	Ω.km ⁻¹
AC Nominal Resistance at 200°C (surface temperature)	0.0732	Ω.km ⁻¹
AC Current Rating at 160°C (surface temperature) ⁽¹⁾	2,020	A
AC Current Rating at 180°C (surface temperature) ⁽¹⁾	2,154	A
AC Current Rating at 200°C (surface temperature) ⁽¹⁾	2,280	A



(1) Ampacity calculations based on IEEE Standard 738-2012, according to the following data:

25 °C ambient temperature,	0.61 m/s wind velocity with an angle of 90 °,
1000 W/m ² solar radiation,	0.5 solar absorption coefficient,
0.6 emissivity coefficient,	Resistance AC at 50 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.

Depending on conductor manufacturer rated specifications may slightly change.

Geometric Mean Radius (GMR)	12.72	mm
Inductive Reactance Ø0.3m radius	0.2	Ω.km ⁻¹
Capacitive Reactance Ø0.3m radius	0.17	MΩ.km

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