HVTECK AL 1/C 90NLEPR CB PVC AIA PVC 5kV 100% CSA

Single Conductor, 90 Mils No Lead Ethylene Propylene Rubber (NL-EPR), 100% Insulation Level, Concentric Bond, Polyvinyl Chloride (PVC) Inner Jacket, Aluminum Interlocked Armour (AIA), Polyvinyl Chloride (PVC) Jacket

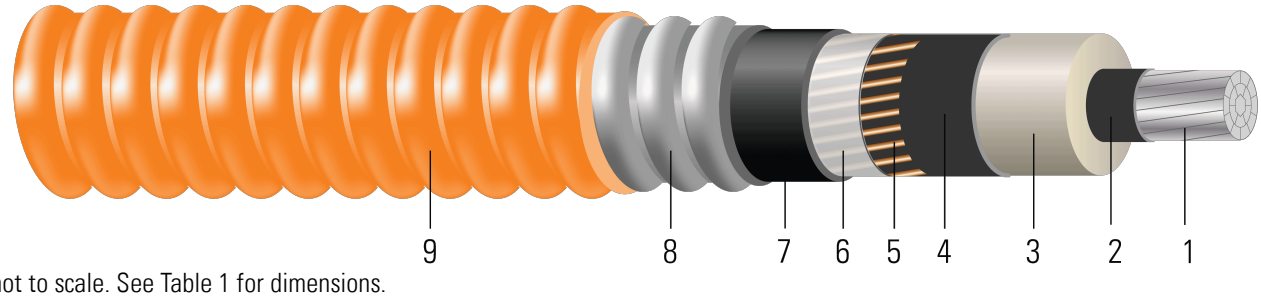

Image not to scale. See Table 1 for dimensions.

CONSTRUCTION:

1. **Conductor:** Class B compact stranded 8000 Series aluminum per ASTM B800 and ASTM B836
2. **Conductor Shield:** Semi-conducting cross-linked copolymer; A conductor separator is used for cable size larger than or equal to 500 Kcmil
3. **Insulation:** 90 Mils No Lead Ethylene Propylene Rubber (NL-EPR) 100% insulation level
4. **Insulation Shield:** Strippable semi-conducting cross-linked copolymer
5. **Concentric Shield:** Concentrically applied copper bond / shield wires. Complies with greater than the minimum requirement as per Table 44, CSA Standard C68.10 and Table 16A, Canadian Electrical Code Part 1
6. **Neutral Separator:** Mylar tape
7. **Inner Jacket:** PVC inner jacket
8. **Armour:** Aluminum Interlocked Armour (AIA)
9. **Overall Jacket:** Orange Polyvinyl Chloride (PVC) Jacket

APPLICATIONS AND FEATURES:

Southwire's 5kV HVTECK is a CSA armoured cable for industrial and commercial medium voltage applications. Rated FT4, -40°C, Hazardous Locations (HL). These cables are capable of operating continuously at the conductor temperature not in excess of 105°C for normal operation, 140°C for emergency overload, and 250°C for short circuit conditions. Rated for 1000 lbs /FT maximum sidewall pressure. These cables feature sunlight and moisture resistance, exceptional corona resistance, resistance to most chemical soils and acids and are flame retardant.

SPECIFICATIONS:

- ASTM B801 Concentric-Lay-Stranded Conductors of 8000 Series Aluminum Alloy
- ASTM B836 Compact Rounded Stranded Aluminum Conductors
- CSA C22.2 No. 174 Cables in Hazardous Locations
- CSA C22.2 No. 2556 & No. 0.3 Wire and Cable Test Methods
- CSA C68.10 Shielded Power Cables for Commercial and Industrial Applications - 5 to 46 KV
- CSA C68.3 Shielded & Concentric Neutral Power Cable - 5 to 46 kV
- CSA LTGG [-40°C] - as per C68.10 - for Cold Bend and Impact rating
- CSA HL - for Hazardous Locations rating
- CSA SUN RES - for Sunlight Resistant rating
- ICEA S-93-639 (NEMA WC 74) 5-46 KV Shielded Power Cable
- ICEA T-29-520 Flame Test (210,000 BTU/Hr)

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- IEEE 383 Flame Test (70,000 btu)
- IEEE 1202 FT4 Flame Test (70,000) BTU/hr Vertical Tray Test (1/0 and Larger)
- FT1 Flame Test (1,706 BTU/Hr nominal - Vertical Wire Flame Test)
- AEIC CS-8 Specification for extruded dielectric shielded power cables rated for 5 through 46KV (Qualification Test Requirements)

SAMPLE PRINT LEGEND:

(CSA) SOUTHWIRE (NESC) #P# 1/C [#AWG or #kcmil] CPT AL 90 NLEPR AIA 5kV 100% INS LEVEL CB [No. x SIZE] AWG SUN RES 105°C FT4 HL (-40°C) LTGG RoHS YEAR [SEQUENTIAL METER MARKS]

Table 1 – Weights and Measurements

Cond. Size	Strand	Diameter Over Conductor	Diameter Over Insulation	Insul. Thickness	Diameter Over Insulation Shield	Concentric Neutral	Inner Jacket Thickness	Dia. Over Armour	Overall Jacket Thickness	Approx. OD	Copper Weight	Approx. Weight	Conduit Size*
AWG/ Kcmil	No.	inch	inch	mil	inch	No. x AWG	mil	inch	mil	inch	lb/ 1000ft	lb/ 1000ft	inch
2	7	0.268	0.486	90	0.546	5x12	80	1.206	50	1.306	126	904	3.5
1	19	0.299	0.517	90	0.577	5x12	80	1.237	50	1.337	129	950	3.5
1/0	19	0.336	0.554	90	0.614	5x12	80	1.274	50	1.374	132	1006	3.5
2/0	19	0.376	0.594	90	0.654	7x12	80	1.314	50	1.414	183	1121	3.5
3/0	19	0.423	0.641	90	0.701	7x12	80	1.361	50	1.461	187	1200	4
4/0	19	0.475	0.693	90	0.753	7x12	80	1.413	50	1.513	191	1292	4
250	37	0.52	0.746	90	0.806	9x12	80	1.566	60	1.686	233	1596	4.5
350	37	0.616	0.842	90	0.902	11x12	80	1.662	60	1.782	279	1834	4.5
500	37	0.736	0.962	90	1.022	13x12	80	1.782	60	1.902	343	2163	5
750	61	0.908	1.144	90	1.204	17x12	80	1.964	60	2.084	425	2676	5.5
1000	61	1.117	1.353	90	1.413	17x12	110	2.233	60	2.353	442	3267	6

All dimensions are nominal and subject to normal manufacturing tolerances
◊ Cable marked with this symbol is a standard stock item
* Strand count meets minimum number per ASTM
TBA stock codes are estimations only and actual product may vary. Please wait until a stock code is assigned to purchase connectors and/or fittings.

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Table 2 – Electrical and Engineering Data

Cond. Size	Min Bending Radius	Max Pull Tension	DC Resistance @ 25°C	AC Resistance @ 90°C	Capacitive Reactance @ 60Hz	Inductive Reactance @ 60Hz	Zero Sequence Impedance	Positive Sequence Impedance	Phase Short Circuit Current @ 6 Cycles	Allowable Ampacity In Air 90°C	Allowable Ampacity Directly Buried 90°C
AWG/ Kcmil	inch	lb	Ω/1000ft	Ω/1000ft	MΩ*1000ft	Ω/1000ft	Ω/1000ft	Ω/1000ft	Amp	Amp	Amp
2	9.1	398	0.266	0.365	0.024	0.058	0.667+j0.191	0.369+j0.063	2770	169	176
1	9.4	502	0.211	0.289	0.022	0.056	0.591+j0.188	0.292+j0.060	2770	194	198
1/0	9.6	633	0.167	0.229	0.02	0.054	0.530+j0.187	0.232+j0.058	2770	222	223
2/0	9.9	798	0.133	0.182	0.019	0.052	0.427+j0.118	0.186+j0.055	3879	255	250
3/0	10.2	1006	0.105	0.144	0.017	0.05	0.388+j0.117	0.148+j0.054	3879	290	278
4/0	10.6	1269	0.084	0.115	0.016	0.048	0.359+j0.116	0.119+j0.052	3879	329	309
250	11.8	1500	0.07	0.096	0.014	0.049	0.298+j0.081	0.102+j0.052	4987	370	347
350	12.5	2100	0.051	0.07	0.013	0.046	0.241+j0.060	0.076+j0.049	6095	446	402
500	13.3	3000	0.036	0.05	0.011	0.044	0.197+j0.047	0.057+j0.046	7203	533	451
750	14.6	4500	0.023	0.033	0.009	0.041	0.148+j0.032	0.041+j0.042	9420	631	500
1000	16.5	6000	0.017	0.025	0.007	0.039	0.140+j0.033	0.033+j0.042	9420	707	539

* Inductive impedance is based on non-ferrous conduit with one diameter spacing center-to-center.
***** CEC ampacities are based on:
3-1/C in air copper and aluminum: D17M
3-1/C direct buried copper and aluminum: D17A

Table 3 – Weights and Measurements (Metric)

Cond. Size	Strand	Diameter Over Conductor	Diameter Over Insulation	Insul. Thickness	Diameter Over Insulation Shield	Concentric Neutral	Inner Jacket Thickness	Dia. Over Armour	Overall Jacket Thickness	Approx. OD	Copper Weight	Approx. Weight	Conduit Size*
AWG/ Kcmil	No.	mm	mm	mm	mm	No. x AWG	mm	mm	mm	mm	kg/km	kg/km	inch
2	7	6.81	12.34	2.29	13.87	5x12	2.03	30.63	1.27	33.17	188	1345	3.5
1	19	7.59	13.13	2.29	14.66	5x12	2.03	31.42	1.27	33.96	192	1414	3.5
1/0	19	8.53	14.07	2.29	15.60	5x12	2.03	32.36	1.27	34.90	196	1497	3.5
2/0	19	9.55	15.09	2.29	16.61	7x12	2.03	33.38	1.27	35.92	272	1668	3.5
3/0	19	10.74	16.28	2.29	17.81	7x12	2.03	34.57	1.27	37.11	278	1786	4
4/0	19	12.07	17.60	2.29	19.13	7x12	2.03	35.89	1.27	38.43	284	1923	4
250	37	13.21	18.95	2.29	20.47	9x12	2.03	39.78	1.52	42.82	347	2375	4.5
350	37	15.65	21.39	2.29	22.91	11x12	2.03	42.21	1.52	45.26	415	2729	4.5
500	37	18.69	24.43	2.29	25.96	13x12	2.03	45.26	1.52	48.31	510	3219	5
750	61	23.06	29.06	2.29	30.58	17x12	2.03	49.89	1.52	52.93	632	3982	5.5
1000	61	28.37	34.37	2.29	35.89	17x12	2.79	56.72	1.52	59.77	658	4862	6

All dimensions are nominal and subject to normal manufacturing tolerances
◊ Cable marked with this symbol is a standard stock item
* Strand count meets minimum number per ASTM
TBA stock codes are estimations only and actual product may vary. Please wait until a stock code is assigned to purchase connectors and/or fittings.

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Table 4 – Electrical and Engineering Data (Metric)

Cond. Size	Min Bending Radius	Max Pull Tension	DC Resistance @ 25°C	AC Resistance @ 90°C	Capacitive Reactance @ 60Hz	Inductive Reactance @ 60Hz	Zero Sequence Impedance	Positive Sequence Impedance	Phase Short Circuit Current @ 6 Cycles	Allowable Ampacity In Air 90°C	Allowable Ampacity Directly Buried 90°C
AWG/ Kcmil	mm	newton	Ω/km	Ω/km	MΩ*km	Ω/km	Ω/1000ft	Ω/1000ft	Amp	Amp	Amp
2	231.14	1771	0.8727	1.20	0.0073	0.1903	0.667+j0.191	0.369+j0.063	2770	169	176
1	238.76	2234	0.6923	0.95	0.0067	0.1837	0.591+j0.188	0.292+j0.060	2770	194	198
1/0	243.84	2817	0.5479	0.75	0.0061	0.1772	0.530+j0.187	0.232+j0.058	2770	222	223
2/0	251.46	3551	0.4364	0.60	0.0058	0.1706	0.427+j0.118	0.186+j0.055	3879	255	250
3/0	259.08	4477	0.3445	0.47	0.0052	0.1640	0.388+j0.117	0.148+j0.054	3879	290	278
4/0	269.24	5647	0.2756	0.38	0.0049	0.1575	0.359+j0.116	0.119+j0.052	3879	329	309
250	299.72	6675	0.2297	0.31	0.0043	0.1608	0.298+j0.081	0.102+j0.052	4987	370	347
350	317.50	9345	0.1673	0.23	0.0040	0.1509	0.241+j0.060	0.076+j0.049	6095	446	402
500	337.82	13350	0.1181	0.16	0.0034	0.1444	0.197+j0.047	0.057+j0.046	7203	533	451
750	370.84	20025	0.0755	0.11	0.0027	0.1345	0.148+j0.032	0.041+j0.042	9420	631	500
1000	419.10	26700	0.0558	0.08	0.0021	0.1280	0.140+j0.033	0.033+j0.042	9420	707	539

* Inductive impedance is based on non-ferrous conduit with one diameter spacing center-to-center.
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3-1/C in air copper and aluminum: D17M
3-1/C direct buried copper and aluminum: D17A

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