



HVTECK AL 3/C 90NLEPR TS PVC AIA PVC 5kV 100% CSA

3 Conductor, 90 Mils No Lead Ethylene Propylene Rubber (NL-EPR), 100% Insulation Level, Tape Shield, 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. **Copper Tape Shield:** Helically wrapped 5 mil copper tape with 25% overlap
6. **Filler:** Interstices filled with non-hydroscoping/non-wicking fillers
7. **Grounding Conductor:** Class B compressed stranded bare copper ground per ASTM B3 and ASTM B8
8. **Binder:** Polypropylene tape
9. **Inner Jacket:** PVC inner jacket
10. **Armour:** Aluminum Interlocked Armour (AIA)
11. **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)
- IEEE 383 Flame Test (70,000 btu)
- IEEE 1202 FT4 Flame Test (70,000) BTU/hr Vertical Tray Test
- 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# 3/C [#AWG or #kcmil] CPT AL 90 NLEPR AIA 5kv 100% INS LEVEL 25% TS SUN RES 105°C FT4 HL (-40°C) LTGG RoHS YEAR [SEQUENTIAL METER MARKS]

Table 1 – Weights and Measurements

Stock Number	Cond. Size	Strand	Diameter Over Conductor	Diameter Over Insulation	Insul. Thickness	Diameter Over Insulation Shield	Ground Size	Inner Jacket Thickness	Dia. Over Armour	Overall Jacket Thickness	Approx. OD	Approx. Weight
	AWG/ Kcmil	No.	inch	inch	mil	inch	AWG	mil	inch	mil	inch	lb/1000ft
TBA	2	7	0.268	0.486	90	0.546	8	80	1.739	60	1.859	1271
TBA	1	19	0.298	0.516	90	0.576	6	80	1.803	60	1.923	1389
TBA	1/0	19	0.336	0.554	90	0.614	6	80	1.885	60	2.005	1622
TBA	2/0	19	0.376	0.594	90	0.654	6	80	1.972	60	2.092	1788
585170 [^]	3/0	15	0.422	0.641	90	0.701	6	110	2.127	60	2.247	2323
TBA	4/0	19	0.474	0.692	90	0.752	6	110	2.244	60	2.364	2358
TBA	250	37	0.520	0.746	90	0.806	4	110	2.360	75	2.510	2693
TBA	350	37	0.615	0.841	90	0.901	4	110	2.565	75	2.715	3213
585171 [^]	500	34	0.735	0.984	90	1.044	3	110	2.868	75	3.018	4437
TBA	750	61	0.908	1.144	90	1.204	2	125	3.250	85	3.420	5352
TBA	1000	61	1.060	1.296	90	1.356	2	125	3.578	85	3.748	6493

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





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	13.0	1194	0.267	0.336	0.030	0.039	0.699 + j0.550	0.336 + j0.039	1722	135	157
1	13.5	1506	0.211	0.266	0.030	0.038	0.633 + j0.530	0.266 + j0.036	1815	154	178
1/0	14.0	1900	0.168	0.211	0.020	0.036	0.581 + j0.508	0.211 + j0.035	1933	176	202
2/0	14.6	2395	0.133	0.167	0.020	0.035	0.540 + j0.485	0.167 + j0.034	2057	204	229
3/0	15.7	3020	0.105	0.133	0.019	0.034	0.508 + j0.461	0.133 + j0.032	2199	234	260
4/0	16.5	3808	0.084	0.105	0.020	0.030	0.481 + j0.435	0.105 + j0.031	2360	268	294
250	17.6	4500	0.071	0.090	0.020	0.030	0.465 + j0.410	0.090 + j0.031	2528	296	323
350	19.0	6300	0.050	0.065	0.014	0.030	0.436 + j0.370	0.065 + j0.029	2822	363	386
500	21.1	9000	0.035	0.046	0.013	0.030	0.410 + j0.326	0.046 + j0.028	3194	447	465
750	23.9	13500	0.020	0.030	0.010	0.030	0.381 + j0.272	0.033 + j0.027	3761	566	563
1000	26.2	18000	0.020	0.030	0.009	0.030	0.359 + j0.236	0.026 + j0.026	4232	661	638

* Inductive impedance is based on non-ferrous conduit with one diameter spacing center-to-center.

* CEC ampacities are based on:

3/C in air copper and aluminum: D17N

3/C direct buried copper and aluminum: D17E

Table 3 – Weights and Measurements (Metric)

Stock Number	Cond. Size	Strand	Diameter Over Conductor	Diameter Over Insulation	Insul. Thickness	Diameter Over Insulation Shield	Ground Size	Inner Jacket Thickness	Dia. Over Armour	Overall Jacket Thickness	Approx. OD	Approx. Weight
	AWG/Kcmil	No.	mm	mm	mm	mm	AWG	mm	mm	mm	mm	kg/km
TBA	2	7	6.81	12.34	2.29	13.87	8	2.03	44.17	1.52	47.22	1891
TBA	1	19	7.57	13.11	2.29	14.63	6	2.03	45.80	1.52	48.84	2067
TBA	1/0	19	8.53	14.07	2.29	15.60	6	2.03	47.88	1.52	50.93	2414
TBA	2/0	19	9.55	15.09	2.29	16.61	6	2.03	50.09	1.52	53.14	2661
585170^	3/0	15	10.72	16.28	2.29	17.81	6	2.79	54.03	1.52	57.07	3457
TBA	4/0	19	12.04	17.58	2.29	19.10	6	2.79	57.00	1.52	60.05	3509
TBA	250	37	13.21	18.95	2.29	20.47	4	2.79	59.94	1.91	63.75	4008
TBA	350	37	15.62	21.36	2.29	22.89	4	2.79	65.15	1.91	68.96	4781
585171^	500	34	18.67	24.99	2.29	26.52	3	2.79	72.85	1.91	76.66	6603
TBA	750	61	23.06	29.06	2.29	30.58	2	3.18	82.55	2.16	86.87	7965
TBA	1000	61	26.92	32.92	2.29	34.44	2	3.18	90.88	2.16	95.20	9663





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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	330.20	5313	0.8760	1.10	0.0091	0.1280	0.699 + j0.550	0.336 + j0.039	1722	135	157
1	342.90	6702	0.6923	0.87	0.0091	0.1247	0.633 + j0.530	0.266 + j0.036	1815	154	178
1/0	355.60	8455	0.5512	0.69	0.0061	0.1181	0.581 + j0.508	0.211 + j0.035	1933	176	202
2/0	370.84	10658	0.4364	0.55	0.0061	0.1148	0.540 + j0.485	0.167 + j0.034	2057	204	229
3/0	398.78	13439	0.3445	0.44	0.0058	0.1115	0.508 + j0.461	0.133 + j0.032	2199	234	260
4/0	419.10	16946	0.2756	0.34	0.0061	0.0984	0.481 + j0.435	0.105 + j0.031	2360	268	294
250	447.04	20025	0.2329	0.30	0.0061	0.0984	0.465 + j0.410	0.090 + j0.031	2528	296	323
350	482.60	28035	0.1640	0.21	0.0043	0.0984	0.436 + j0.370	0.065 + j0.029	2822	363	386
500	535.94	40050	0.1148	0.15	0.0040	0.0984	0.410 + j0.326	0.046 + j0.028	3194	447	465
750	607.06	60075	0.0656	0.10	0.0030	0.0984	0.381 + j0.272	0.033 + j0.027	3761	566	563
1000	665.48	80100	0.0656	0.10	0.0027	0.0984	0.359 + j0.236	0.026 + j0.026	4232	661	638

* Inductive impedance is based on non-ferrous conduit with one diameter spacing center-to-center.

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3/C direct buried copper and aluminum: D17E

