



# HVTECK AL 3/C 420NLEPR TS PVC AIA PVC 35kV 133% CSA

3 Conductor, 420 Mils No Lead Ethylene Propylene Rubber (NL-EPR), 133% 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:** 420 Mils No Lead Ethylene Propylene Rubber (NL-EPR) 133% 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:** Black Polyvinyl Chloride (PVC) Jacket

## APPLICATIONS AND FEATURES:

Southwire's 35kV 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 420 NLEPR AIA 35kV 133% INS LEVEL 25% TS 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	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
1/0	19	0.336	1.214	420	1.274	6	125	3.401	85	3.571	4715
2/0	19	0.376	1.254	420	1.314	6	125	3.487	85	3.657	4968
3/0	19	0.422	1.300	420	1.360	6	125	3.587	85	3.757	5274
4/0	19	0.474	1.352	420	1.412	6	125	3.699	85	3.869	5629
250	37	0.520	1.406	420	1.466	4	125	3.816	85	3.986	6007
350	37	0.615	1.501	420	1.561	4	125	4.021	85	4.191	6721

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
1/0	25.0	1900	0.168	0.211	0.064	0.053	0.552 + j0.279	0.211 + j0.051	3978	181	200
2/0	25.6	2395	0.133	0.167	0.060	0.051	0.504 + j0.268	0.167 + j0.049	4102	208	228
3/0	26.3	3020	0.105	0.133	0.056	0.049	0.465 + j0.256	0.133 + j0.047	4244	239	258
4/0	27.1	3808	0.084	0.105	0.052	0.047	0.432 + j0.244	0.106 + j0.046	4405	273	292
250	27.9	4500	0.071	0.090	0.049	0.046	0.411 + j0.232	0.091 + j0.044	4573	302	321
350	29.3	6300	0.050	0.065	0.044	0.043	0.377 + j0.213	0.066 + j0.042	4867	368	385

\* 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)**

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
1/0	19	8.53	30.84	10.67	32.36	6	3.18	86.39	2.16	90.70	7017
2/0	19	9.55	31.85	10.67	33.38	6	3.18	88.57	2.16	92.89	7393
3/0	19	10.72	33.02	10.67	34.54	6	3.18	91.11	2.16	95.43	7849
4/0	19	12.04	34.34	10.67	35.86	6	3.18	93.95	2.16	98.27	8377
250	37	13.21	35.71	10.67	37.24	4	3.18	96.93	2.16	101.24	8939
350	37	15.62	38.13	10.67	39.65	4	3.18	102.13	2.16	106.45	10002

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 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
1/0	635.00	8455	0.5512	0.69	0.0195	0.1739	0.552 + j0.279	0.211 + j0.051	3978	181	200
2/0	650.24	10658	0.4364	0.55	0.0183	0.1673	0.504 + j0.268	0.167 + j0.049	4102	208	228
3/0	668.02	13439	0.3445	0.44	0.0171	0.1608	0.465 + j0.256	0.133 + j0.047	4244	239	258
4/0	688.34	16946	0.2756	0.34	0.0158	0.1542	0.432 + j0.244	0.106 + j0.046	4405	273	292
250	708.66	20025	0.2329	0.30	0.0149	0.1509	0.411 + j0.232	0.091 + j0.044	4573	302	321
350	744.22	28035	0.1640	0.21	0.0134	0.1411	0.377 + j0.213	0.066 + j0.042	4867	368	385

\* 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

