



HVTECK AL 1/C 420NLEPR CB PVC AIA PVC 35kV 133% CSA

Single Conductor, 420 Mils No Lead Ethylene Propylene Rubber (NL-EPR), 133% Insulation Level, Concentric Bond, Polyvinyl Chloride (PVC) Inner Jacket, Aluminum Interlocked Armour (AIA), Polyvinyl Chloride (PVC) Jacket

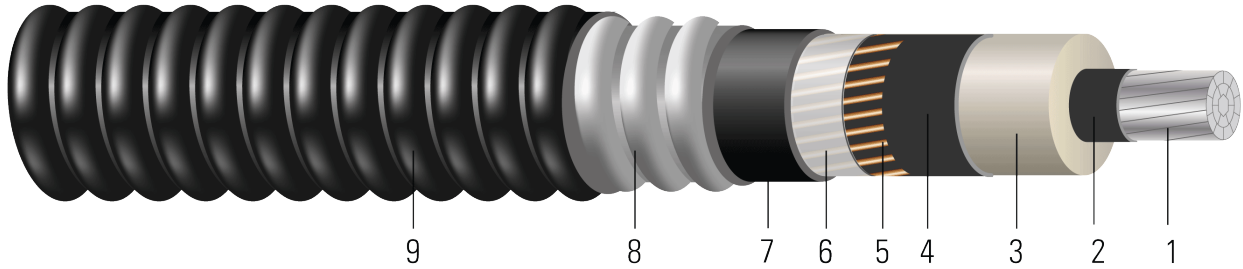


Image not to scale. See Table 1 for dimensions.

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:** 420 Mils No Lead Ethylene Propylene Rubber (NL-EPR) 133% 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:** 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 (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 420 NLEPR AIA 35kV 133% 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 | Approx. Weight |
|---------------|--------|-------------------------|--------------------------|------------------|---------------------------------|--------------------|------------------------|------------------|--------------------------|------------|----------------|
| AWG/ Kcmil | No. | inch | inch | mil | inch | No. x AWG | mil | inch | mil | inch | lb/1000ft |
| 1/0 | 19 | 0.336 | 1.214 | 420 | 1.274 | 7x14 | 80 | 1.918 | 60 | 2.038 | 1667 |
| 2/0 | 19 | 0.376 | 1.254 | 420 | 1.314 | 11x14 | 80 | 1.958 | 60 | 2.078 | 1798 |
| 3/0 | 19 | 0.422 | 1.300 | 420 | 1.360 | 11x14 | 80 | 2.004 | 60 | 2.124 | 1890 |
| 4/0 | 19 | 0.474 | 1.352 | 420 | 1.412 | 11x14 | 110 | 2.116 | 60 | 2.236 | 2120 |
| 250 | 37 | 0.520 | 1.406 | 420 | 1.466 | 13x14 | 110 | 2.170 | 60 | 2.290 | 2259 |
| 350 | 37 | 0.615 | 1.501 | 420 | 1.561 | 17x14 | 110 | 2.299 | 75 | 2.449 | 2627 |
| 500 | 37 | 0.735 | 1.621 | 420 | 1.681 | 21x14 | 110 | 2.419 | 75 | 2.569 | 2989 |
| 750 | 61 | 0.908 | 1.804 | 420 | 1.864 | 17x12 | 110 | 2.602 | 75 | 2.752 | 3554 |

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 | 24.5 | 633 | 0.168 | 0.211 | 0.064 | 0.063 | 0.544 + j0.282 | 0.212 + j0.062 | 5458 | 221 | 219 |
| 2/0 | 24.9 | 798 | 0.133 | 0.167 | 0.060 | 0.061 | 0.497 + j0.271 | 0.168 + j0.059 | 8577 | 253 | 246 |
| 3/0 | 25.5 | 1006 | 0.105 | 0.133 | 0.056 | 0.059 | 0.458 + j0.259 | 0.134 + j0.057 | 8577 | 288 | 275 |
| 4/0 | 26.8 | 1269 | 0.084 | 0.105 | 0.052 | 0.057 | 0.425 + j0.247 | 0.106 + j0.056 | 8577 | 327 | 305 |
| 250 | 27.5 | 1500 | 0.071 | 0.090 | 0.049 | 0.056 | 0.405 + j0.236 | 0.091 + j0.054 | 10137 | 367 | 343 |
| 350 | 29.4 | 2100 | 0.050 | 0.065 | 0.044 | 0.053 | 0.371 + j0.217 | 0.066 + j0.052 | 13256 | 443 | 399 |
| 500 | 30.8 | 3000 | 0.035 | 0.046 | 0.039 | 0.050 | 0.341 + j0.196 | 0.047 + j0.049 | 16376 | 529 | 451 |
| 750 | 33.0 | 4500 | 0.024 | 0.033 | 0.034 | 0.047 | 0.312 + j0.170 | 0.034 + j0.046 | 21062 | 633 | 505 |

* 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 | Approx. Weight |
|------------|--------|-------------------------|--------------------------|------------------|---------------------------------|--------------------|------------------------|------------------|--------------------------|------------|----------------|
| AWG/Kcmil | No. | mm | mm | mm | mm | No. x AWG | mm | mm | mm | mm | kg/km |
| 1/0 | 19 | 8.53 | 30.84 | 10.67 | 32.36 | 7x14 | 2.03 | 48.72 | 1.52 | 51.77 | 2481 |
| 2/0 | 19 | 9.55 | 31.85 | 10.67 | 33.38 | 11x14 | 2.03 | 49.73 | 1.52 | 52.78 | 2676 |
| 3/0 | 19 | 10.72 | 33.02 | 10.67 | 34.54 | 11x14 | 2.03 | 50.90 | 1.52 | 53.95 | 2813 |
| 4/0 | 19 | 12.04 | 34.34 | 10.67 | 35.86 | 11x14 | 2.79 | 53.75 | 1.52 | 56.79 | 3155 |
| 250 | 37 | 13.21 | 35.71 | 10.67 | 37.24 | 13x14 | 2.79 | 55.12 | 1.52 | 58.17 | 3362 |
| 350 | 37 | 15.62 | 38.13 | 10.67 | 39.65 | 17x14 | 2.79 | 58.39 | 1.91 | 62.20 | 3909 |
| 500 | 37 | 18.67 | 41.17 | 10.67 | 42.70 | 21x14 | 2.79 | 61.44 | 1.91 | 65.25 | 4448 |
| 750 | 61 | 23.06 | 45.82 | 10.67 | 47.35 | 17x12 | 2.79 | 66.09 | 1.91 | 69.90 | 5289 |

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 | 622.30 | 2817 | 0.5512 | 0.69 | 0.0195 | 0.2067 | 0.544 + j0.282 | 0.212 + j0.062 | 5458 | 221 | 219 |
| 2/0 | 632.46 | 3551 | 0.4364 | 0.55 | 0.0183 | 0.2001 | 0.497 + j0.271 | 0.168 + j0.059 | 8577 | 253 | 246 |
| 3/0 | 647.70 | 4477 | 0.3445 | 0.44 | 0.0171 | 0.1936 | 0.458 + j0.259 | 0.134 + j0.057 | 8577 | 288 | 275 |
| 4/0 | 680.72 | 5647 | 0.2756 | 0.34 | 0.0158 | 0.1870 | 0.425 + j0.247 | 0.106 + j0.056 | 8577 | 327 | 305 |
| 250 | 698.50 | 6675 | 0.2329 | 0.30 | 0.0149 | 0.1837 | 0.405 + j0.236 | 0.091 + j0.054 | 10137 | 367 | 343 |
| 350 | 746.76 | 9345 | 0.1640 | 0.21 | 0.0134 | 0.1739 | 0.371 + j0.217 | 0.066 + j0.052 | 13256 | 443 | 399 |
| 500 | 782.32 | 13350 | 0.1148 | 0.15 | 0.0119 | 0.1640 | 0.341 + j0.196 | 0.047 + j0.049 | 16376 | 529 | 451 |
| 750 | 838.20 | 20025 | 0.0787 | 0.11 | 0.0104 | 0.1542 | 0.312 + j0.170 | 0.034 + j0.046 | 21062 | 633 | 505 |

* 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

