



HVTECK AL 1/C 220NLEPR CB PVC AIA PVC 15kV 133% CSA

Single Conductor, 220 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

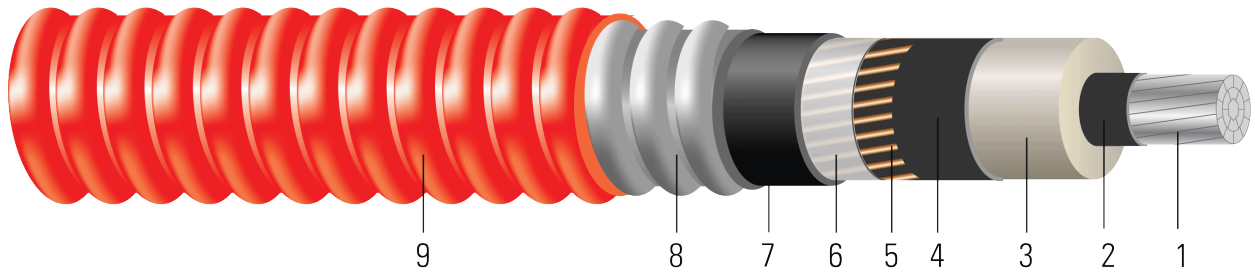


Image not to scale. See Table 1 for dimensions.

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:** 220 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:** Red Polyvinyl Chloride (PVC) Jacket

APPLICATIONS AND FEATURES:

Southwire's 15kV 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 220 NLEPR AIA 15kV 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 |
| 2 | 7 | 0.268 | 0.746 | 220 | 0.806 | 7x14 | 80 | 1.426 | 50 | 1.526 | 878 |
| 1 | 19 | 0.298 | 0.776 | 220 | 0.836 | 7x14 | 80 | 1.456 | 50 | 1.556 | 921 |
| 1/0 | 19 | 0.336 | 0.814 | 220 | 0.874 | 7x14 | 80 | 1.494 | 50 | 1.594 | 975 |
| 2/0 | 19 | 0.376 | 0.854 | 220 | 0.914 | 11x14 | 80 | 1.534 | 60 | 1.654 | 1121 |
| 3/0 | 19 | 0.422 | 0.900 | 220 | 0.960 | 11x14 | 80 | 1.580 | 60 | 1.700 | 1195 |
| 4/0 | 19 | 0.474 | 0.952 | 220 | 1.012 | 11x14 | 80 | 1.656 | 60 | 1.776 | 1314 |
| 250 | 37 | 0.520 | 1.006 | 220 | 1.066 | 13x14 | 80 | 1.710 | 60 | 1.830 | 1429 |
| 350 | 37 | 0.615 | 1.101 | 220 | 1.161 | 17x14 | 80 | 1.839 | 60 | 1.959 | 1679 |
| 500 | 37 | 0.735 | 1.221 | 220 | 1.281 | 21x14 | 80 | 1.959 | 60 | 2.079 | 2080 |
| 750 | 61 | 0.908 | 1.404 | 220 | 1.464 | 17x12 | 110 | 2.202 | 60 | 2.322 | 2695 |
| 1000 | 61 | 1.060 | 1.556 | 220 | 1.616 | 17x12 | 110 | 2.354 | 75 | 2.504 | 3162 |

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 | 18.3 | 398 | 0.267 | 0.336 | 0.049 | 0.062 | 0.695 + j0.426 | 0.337 + j0.061 | 5458 | 169 | 176 |
| 1 | 18.7 | 502 | 0.211 | 0.266 | 0.046 | 0.060 | 0.625 + j0.411 | 0.267 + j0.058 | 5458 | 194 | 198 |
| 1/0 | 19.1 | 633 | 0.168 | 0.211 | 0.043 | 0.057 | 0.569 + j0.394 | 0.212 + j0.056 | 5458 | 222 | 223 |
| 2/0 | 19.8 | 798 | 0.133 | 0.167 | 0.040 | 0.056 | 0.524 + j0.378 | 0.168 + j0.054 | 8577 | 255 | 250 |
| 3/0 | 20.4 | 1006 | 0.105 | 0.133 | 0.037 | 0.054 | 0.488 + j0.360 | 0.134 + j0.052 | 8577 | 290 | 278 |
| 4/0 | 21.3 | 1269 | 0.084 | 0.105 | 0.034 | 0.052 | 0.457 + j0.341 | 0.106 + j0.050 | 8577 | 329 | 309 |
| 250 | 22.0 | 1500 | 0.071 | 0.090 | 0.032 | 0.051 | 0.439 + j0.323 | 0.091 + j0.049 | 10137 | 370 | 347 |
| 350 | 23.5 | 2100 | 0.050 | 0.065 | 0.028 | 0.048 | 0.407 + j0.295 | 0.066 + j0.047 | 13256 | 446 | 402 |
| 500 | 24.9 | 3000 | 0.035 | 0.046 | 0.024 | 0.046 | 0.378 + j0.263 | 0.047 + j0.044 | 16376 | 533 | 451 |
| 750 | 27.9 | 4500 | 0.024 | 0.033 | 0.021 | 0.043 | 0.348 + j0.224 | 0.034 + j0.042 | 21062 | 631 | 500 |
| 1000 | 30.0 | 6000 | 0.018 | 0.026 | 0.018 | 0.041 | 0.327 + j0.197 | 0.027 + j0.040 | 21062 | 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 | Approx. Weight |
|------------|--------|-------------------------|--------------------------|------------------|---------------------------------|--------------------|------------------------|------------------|--------------------------|------------|----------------|
| AWG/Kcmil | No. | mm | mm | mm | mm | No. x AWG | mm | mm | mm | mm | kg/km |
| 2 | 7 | 6.81 | 18.95 | 5.59 | 20.47 | 7x14 | 2.03 | 36.22 | 1.27 | 38.76 | 1307 |
| 1 | 19 | 7.57 | 19.71 | 5.59 | 21.23 | 7x14 | 2.03 | 36.98 | 1.27 | 39.52 | 1371 |
| 1/0 | 19 | 8.53 | 20.68 | 5.59 | 22.20 | 7x14 | 2.03 | 37.95 | 1.27 | 40.49 | 1451 |
| 2/0 | 19 | 9.55 | 21.69 | 5.59 | 23.22 | 11x14 | 2.03 | 38.96 | 1.52 | 42.01 | 1668 |
| 3/0 | 19 | 10.72 | 22.86 | 5.59 | 24.38 | 11x14 | 2.03 | 40.13 | 1.52 | 43.18 | 1778 |
| 4/0 | 19 | 12.04 | 24.18 | 5.59 | 25.70 | 11x14 | 2.03 | 42.06 | 1.52 | 45.11 | 1955 |
| 250 | 37 | 13.21 | 25.55 | 5.59 | 27.08 | 13x14 | 2.03 | 43.43 | 1.52 | 46.48 | 2127 |
| 350 | 37 | 15.62 | 27.97 | 5.59 | 29.49 | 17x14 | 2.03 | 46.71 | 1.52 | 49.76 | 2499 |
| 500 | 37 | 18.67 | 31.01 | 5.59 | 32.54 | 21x14 | 2.03 | 49.76 | 1.52 | 52.81 | 3095 |
| 750 | 61 | 23.06 | 35.66 | 5.59 | 37.19 | 17x12 | 2.79 | 55.93 | 1.52 | 58.98 | 4011 |
| 1000 | 61 | 26.92 | 39.52 | 5.59 | 41.05 | 17x12 | 2.79 | 59.79 | 1.91 | 63.60 | 4706 |





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 |
| 2 | 464.82 | 1771 | 0.8760 | 1.10 | 0.0149 | 0.2034 | 0.695 + j0.426 | 0.337 + j0.061 | 5458 | 169 | 176 |
| 1 | 474.98 | 2234 | 0.6923 | 0.87 | 0.0140 | 0.1969 | 0.625 + j0.411 | 0.267 + j0.058 | 5458 | 194 | 198 |
| 1/0 | 485.14 | 2817 | 0.5512 | 0.69 | 0.0131 | 0.1870 | 0.569 + j0.394 | 0.212 + j0.056 | 5458 | 222 | 223 |
| 2/0 | 502.92 | 3551 | 0.4364 | 0.55 | 0.0122 | 0.1837 | 0.524 + j0.378 | 0.168 + j0.054 | 8577 | 255 | 250 |
| 3/0 | 518.16 | 4477 | 0.3445 | 0.44 | 0.0113 | 0.1772 | 0.488 + j0.360 | 0.134 + j0.052 | 8577 | 290 | 278 |
| 4/0 | 541.02 | 5647 | 0.2756 | 0.34 | 0.0104 | 0.1706 | 0.457 + j0.341 | 0.106 + j0.050 | 8577 | 329 | 309 |
| 250 | 558.80 | 6675 | 0.2329 | 0.30 | 0.0098 | 0.1673 | 0.439 + j0.323 | 0.091 + j0.049 | 10137 | 370 | 347 |
| 350 | 596.90 | 9345 | 0.1640 | 0.21 | 0.0085 | 0.1575 | 0.407 + j0.295 | 0.066 + j0.047 | 13256 | 446 | 402 |
| 500 | 632.46 | 13350 | 0.1148 | 0.15 | 0.0073 | 0.1509 | 0.378 + j0.263 | 0.047 + j0.044 | 16376 | 533 | 451 |
| 750 | 708.66 | 20025 | 0.0787 | 0.11 | 0.0064 | 0.1411 | 0.348 + j0.224 | 0.034 + j0.042 | 21062 | 631 | 500 |
| 1000 | 762.00 | 26700 | 0.0591 | 0.09 | 0.0055 | 0.1345 | 0.327 + j0.197 | 0.027 + j0.040 | 21062 | 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

