



HVTECK AL 1/C 115NLEPR CB PVC AIA PVC 5kV 133% CSA

Single Conductor, 115 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:** 115 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:** 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 (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 115 NLEPR AIA 5kV 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 | 0.536 | 115 | 0.596 | 7x14 | 80 | 1.106 | 50 | 1.206 | 659 |
| 1 | 19 | 0.298 | 0.566 | 115 | 0.626 | 7x14 | 80 | 1.136 | 50 | 1.236 | 696 |
| 1/0 | 19 | 0.336 | 0.604 | 115 | 0.664 | 7x14 | 80 | 1.174 | 50 | 1.274 | 744 |
| 2/0 | 19 | 0.376 | 0.644 | 115 | 0.704 | 11x14 | 80 | 1.324 | 50 | 1.424 | 863 |
| 3/0 | 19 | 0.422 | 0.690 | 115 | 0.750 | 11x14 | 80 | 1.370 | 50 | 1.470 | 926 |
| 4/0 | 19 | 0.474 | 0.742 | 115 | 0.802 | 11x14 | 80 | 1.422 | 50 | 1.522 | 1003 |
| 250 | 37 | 0.520 | 0.796 | 115 | 0.856 | 13x14 | 80 | 1.476 | 50 | 1.576 | 1106 |
| 350 | 37 | 0.615 | 0.891 | 115 | 0.951 | 17x14 | 80 | 1.605 | 60 | 1.725 | 1368 |
| 500 | 37 | 0.735 | 1.011 | 115 | 1.071 | 21x14 | 80 | 1.749 | 60 | 1.869 | 1685 |
| 750 | 61 | 0.908 | 1.194 | 115 | 1.254 | 17x12 | 80 | 1.932 | 60 | 2.052 | 2226 |
| 1000 | 61 | 1.060 | 1.346 | 115 | 1.406 | 17x12 | 110 | 2.144 | 60 | 2.264 | 2707 |

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 | 14.5 | 398 | 0.267 | 0.336 | 0.032 | 0.056 | 0.684 + j0.517 | 0.337 + j0.056 | 5458 | 169 | 176 |
| 1 | 14.8 | 502 | 0.211 | 0.266 | 0.030 | 0.054 | 0.618 + j0.499 | 0.267 + j0.053 | 5458 | 194 | 198 |
| 1/0 | 15.3 | 633 | 0.168 | 0.211 | 0.027 | 0.052 | 0.566 + j0.479 | 0.212 + j0.051 | 5458 | 222 | 223 |
| 2/0 | 17.1 | 798 | 0.133 | 0.167 | 0.025 | 0.052 | 0.523 + j0.458 | 0.168 + j0.051 | 8577 | 255 | 250 |
| 3/0 | 17.6 | 1006 | 0.105 | 0.133 | 0.023 | 0.050 | 0.491 + j0.436 | 0.134 + j0.049 | 8577 | 290 | 278 |
| 4/0 | 18.3 | 1269 | 0.084 | 0.105 | 0.021 | 0.048 | 0.464 + j0.413 | 0.106 + j0.047 | 8577 | 329 | 309 |
| 250 | 18.9 | 1500 | 0.071 | 0.090 | 0.019 | 0.047 | 0.449 + j0.391 | 0.091 + j0.046 | 10137 | 370 | 347 |
| 350 | 20.7 | 2100 | 0.050 | 0.065 | 0.017 | 0.045 | 0.420 + j0.355 | 0.066 + j0.044 | 13256 | 446 | 402 |
| 500 | 22.4 | 3000 | 0.035 | 0.046 | 0.014 | 0.043 | 0.394 + j0.315 | 0.047 + j0.042 | 16376 | 533 | 451 |
| 750 | 24.6 | 4500 | 0.024 | 0.033 | 0.012 | 0.040 | 0.367 + j0.264 | 0.034 + j0.039 | 21062 | 631 | 500 |
| 1000 | 27.2 | 6000 | 0.018 | 0.026 | 0.011 | 0.039 | 0.347 + j0.231 | 0.027 + j0.038 | 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 | 13.61 | 2.92 | 15.14 | 7x14 | 2.03 | 28.09 | 1.27 | 30.63 | 981 |
| 1 | 19 | 7.57 | 14.38 | 2.92 | 15.90 | 7x14 | 2.03 | 28.85 | 1.27 | 31.39 | 1036 |
| 1/0 | 19 | 8.53 | 15.34 | 2.92 | 16.87 | 7x14 | 2.03 | 29.82 | 1.27 | 32.36 | 1107 |
| 2/0 | 19 | 9.55 | 16.36 | 2.92 | 17.88 | 11x14 | 2.03 | 33.63 | 1.27 | 36.17 | 1284 |
| 3/0 | 19 | 10.72 | 17.53 | 2.92 | 19.05 | 11x14 | 2.03 | 34.80 | 1.27 | 37.34 | 1378 |
| 4/0 | 19 | 12.04 | 18.85 | 2.92 | 20.37 | 11x14 | 2.03 | 36.12 | 1.27 | 38.66 | 1493 |
| 250 | 37 | 13.21 | 20.22 | 2.92 | 21.74 | 13x14 | 2.03 | 37.49 | 1.27 | 40.03 | 1646 |
| 350 | 37 | 15.62 | 22.63 | 2.92 | 24.16 | 17x14 | 2.03 | 40.77 | 1.52 | 43.82 | 2036 |
| 500 | 37 | 18.67 | 25.68 | 2.92 | 27.20 | 21x14 | 2.03 | 44.42 | 1.52 | 47.47 | 2508 |
| 750 | 61 | 23.06 | 30.33 | 2.92 | 31.85 | 17x12 | 2.03 | 49.07 | 1.52 | 52.12 | 3313 |
| 1000 | 61 | 26.92 | 34.19 | 2.92 | 35.71 | 17x12 | 2.79 | 54.46 | 1.52 | 57.51 | 4028 |





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 | 368.30 | 1771 | 0.8760 | 1.10 | 0.0098 | 0.1837 | 0.684 + j0.517 | 0.337 + j0.056 | 5458 | 169 | 176 |
| 1 | 375.92 | 2234 | 0.6923 | 0.87 | 0.0091 | 0.1772 | 0.618 + j0.499 | 0.267 + j0.053 | 5458 | 194 | 198 |
| 1/0 | 388.62 | 2817 | 0.5512 | 0.69 | 0.0082 | 0.1706 | 0.566 + j0.479 | 0.212 + j0.051 | 5458 | 222 | 223 |
| 2/0 | 434.34 | 3551 | 0.4364 | 0.55 | 0.0076 | 0.1706 | 0.523 + j0.458 | 0.168 + j0.051 | 8577 | 255 | 250 |
| 3/0 | 447.04 | 4477 | 0.3445 | 0.44 | 0.0070 | 0.1640 | 0.491 + j0.436 | 0.134 + j0.049 | 8577 | 290 | 278 |
| 4/0 | 464.82 | 5647 | 0.2756 | 0.34 | 0.0064 | 0.1575 | 0.464 + j0.413 | 0.106 + j0.047 | 8577 | 329 | 309 |
| 250 | 480.06 | 6675 | 0.2329 | 0.30 | 0.0058 | 0.1542 | 0.449 + j0.391 | 0.091 + j0.046 | 10137 | 370 | 347 |
| 350 | 525.78 | 9345 | 0.1640 | 0.21 | 0.0052 | 0.1476 | 0.420 + j0.355 | 0.066 + j0.044 | 13256 | 446 | 402 |
| 500 | 568.96 | 13350 | 0.1148 | 0.15 | 0.0043 | 0.1411 | 0.394 + j0.315 | 0.047 + j0.042 | 16376 | 533 | 451 |
| 750 | 624.84 | 20025 | 0.0787 | 0.11 | 0.0037 | 0.1312 | 0.367 + j0.264 | 0.034 + j0.039 | 21062 | 631 | 500 |
| 1000 | 690.88 | 26700 | 0.0591 | 0.09 | 0.0034 | 0.1280 | 0.347 + j0.231 | 0.027 + j0.038 | 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

