



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

Single Conductor, 220 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

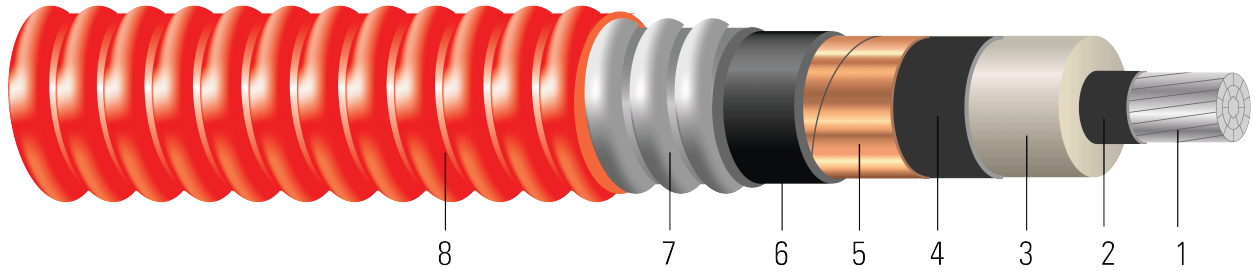


Image not to scale. See Table 1 for dimensions.

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:** 220 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. **Inner Jacket:** PVC inner jacket
7. **Armour:** Aluminum Interlocked Armour (AIA)
8. **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 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 | Inner Jacket Thickness | Dia. Over Armour | Overall Jacket Thickness | Approx. OD | Approx. Weight |
|------------|--------|-------------------------|--------------------------|------------------|---------------------------------|------------------------|------------------|--------------------------|------------|----------------|
| AWG/ Kcmil | No. | inch | inch | mil | inch | mil | inch | mil | inch | lb/1000ft |
| 2 | 7 | 0.268 | 0.746 | 220 | 0.806 | 80 | 1.208 | 50 | 1.308 | 743 |
| 1 | 19 | 0.298 | 0.776 | 220 | 0.836 | 80 | 1.348 | 50 | 1.448 | 797 |
| 1/0 | 19 | 0.336 | 0.814 | 220 | 0.874 | 80 | 1.386 | 50 | 1.486 | 852 |
| 2/0 | 19 | 0.376 | 0.854 | 220 | 0.914 | 80 | 1.426 | 50 | 1.526 | 913 |
| 3/0 | 19 | 0.422 | 0.900 | 220 | 0.960 | 80 | 1.472 | 50 | 1.572 | 987 |
| 4/0 | 19 | 0.474 | 0.952 | 220 | 1.012 | 80 | 1.524 | 60 | 1.644 | 1105 |
| 250 | 37 | 0.520 | 1.006 | 220 | 1.066 | 80 | 1.578 | 60 | 1.698 | 1193 |
| 350 | 37 | 0.615 | 1.101 | 220 | 1.161 | 80 | 1.697 | 60 | 1.817 | 1406 |
| 500 | 37 | 0.735 | 1.221 | 220 | 1.281 | 80 | 1.817 | 60 | 1.937 | 1659 |
| 750 | 61 | 0.908 | 1.404 | 220 | 1.464 | 80 | 2.000 | 60 | 2.120 | 2170 |
| 1000 | 61 | 1.060 | 1.556 | 220 | 1.616 | 110 | 2.212 | 60 | 2.332 | 2685 |

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 | 15.7 | 398 | 0.267 | 0.336 | 0.049 | 0.058 | 0.700 + j0.424 | 0.337 + j0.058 | 2528 | 169 | 176 |
| 1 | 17.4 | 502 | 0.211 | 0.266 | 0.046 | 0.058 | 0.628 + j0.409 | 0.267 + j0.056 | 2621 | 194 | 198 |
| 1/0 | 17.8 | 633 | 0.168 | 0.211 | 0.043 | 0.056 | 0.572 + j0.392 | 0.212 + j0.054 | 2738 | 222 | 223 |
| 2/0 | 18.3 | 798 | 0.133 | 0.167 | 0.040 | 0.054 | 0.527 + j0.376 | 0.168 + j0.052 | 2862 | 255 | 250 |
| 3/0 | 18.9 | 1006 | 0.105 | 0.133 | 0.037 | 0.052 | 0.491 + j0.358 | 0.134 + j0.050 | 3005 | 290 | 278 |
| 4/0 | 19.7 | 1269 | 0.084 | 0.105 | 0.034 | 0.050 | 0.460 + j0.339 | 0.106 + j0.049 | 3166 | 329 | 309 |
| 250 | 20.4 | 1500 | 0.071 | 0.090 | 0.032 | 0.049 | 0.442 + j0.321 | 0.091 + j0.047 | 3333 | 370 | 347 |
| 350 | 21.8 | 2100 | 0.050 | 0.065 | 0.028 | 0.047 | 0.409 + j0.292 | 0.066 + j0.045 | 3628 | 446 | 402 |
| 500 | 23.2 | 3000 | 0.035 | 0.046 | 0.024 | 0.044 | 0.380 + j0.261 | 0.047 + j0.042 | 3999 | 533 | 451 |
| 750 | 25.4 | 4500 | 0.024 | 0.033 | 0.021 | 0.041 | 0.350 + j0.221 | 0.034 + j0.040 | 4566 | 631 | 500 |
| 1000 | 28.0 | 6000 | 0.018 | 0.026 | 0.018 | 0.040 | 0.328 + j0.195 | 0.027 + j0.039 | 5037 | 707 | 539 |

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

Table 3 – Weights and Measurements (Metric)

| Cond. Size | Strand | Diameter Over Conductor | Diameter Over Insulation | Insul. Thickness | Diameter Over Insulation Shield | Inner Jacket Thickness | Dia. Over Armour | Overall Jacket Thickness | Approx. OD | Approx. Weight |
|------------|--------|-------------------------|--------------------------|------------------|---------------------------------|------------------------|------------------|--------------------------|------------|----------------|
| AWG/Kcmil | No. | mm | mm | mm | mm | mm | mm | mm | mm | kg/km |
| 2 | 7 | 6.81 | 18.95 | 5.59 | 20.47 | 2.03 | 30.68 | 1.27 | 33.22 | 1106 |
| 1 | 19 | 7.57 | 19.71 | 5.59 | 21.23 | 2.03 | 34.24 | 1.27 | 36.78 | 1186 |
| 1/0 | 19 | 8.53 | 20.68 | 5.59 | 22.20 | 2.03 | 35.20 | 1.27 | 37.74 | 1268 |
| 2/0 | 19 | 9.55 | 21.69 | 5.59 | 23.22 | 2.03 | 36.22 | 1.27 | 38.76 | 1359 |
| 3/0 | 19 | 10.72 | 22.86 | 5.59 | 24.38 | 2.03 | 37.39 | 1.27 | 39.93 | 1469 |
| 4/0 | 19 | 12.04 | 24.18 | 5.59 | 25.70 | 2.03 | 38.71 | 1.52 | 41.76 | 1644 |
| 250 | 37 | 13.21 | 25.55 | 5.59 | 27.08 | 2.03 | 40.08 | 1.52 | 43.13 | 1775 |
| 350 | 37 | 15.62 | 27.97 | 5.59 | 29.49 | 2.03 | 43.10 | 1.52 | 46.15 | 2092 |
| 500 | 37 | 18.67 | 31.01 | 5.59 | 32.54 | 2.03 | 46.15 | 1.52 | 49.20 | 2469 |
| 750 | 61 | 23.06 | 35.66 | 5.59 | 37.19 | 2.03 | 50.80 | 1.52 | 53.85 | 3229 |
| 1000 | 61 | 26.92 | 39.52 | 5.59 | 41.05 | 2.79 | 56.18 | 1.52 | 59.23 | 3996 |

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 | 398.78 | 1771 | 0.8760 | 1.10 | 0.0149 | 0.1903 | 0.700 + j0.424 | 0.337 + j0.058 | 2528 | 169 | 176 |
| 1 | 441.96 | 2234 | 0.6923 | 0.87 | 0.0140 | 0.1903 | 0.628 + j0.409 | 0.267 + j0.056 | 2621 | 194 | 198 |
| 1/0 | 452.12 | 2817 | 0.5512 | 0.69 | 0.0131 | 0.1837 | 0.572 + j0.392 | 0.212 + j0.054 | 2738 | 222 | 223 |
| 2/0 | 464.82 | 3551 | 0.4364 | 0.55 | 0.0122 | 0.1772 | 0.527 + j0.376 | 0.168 + j0.052 | 2862 | 255 | 250 |
| 3/0 | 480.06 | 4477 | 0.3445 | 0.44 | 0.0113 | 0.1706 | 0.491 + j0.358 | 0.134 + j0.050 | 3005 | 290 | 278 |
| 4/0 | 500.38 | 5647 | 0.2756 | 0.34 | 0.0104 | 0.1640 | 0.460 + j0.339 | 0.106 + j0.049 | 3166 | 329 | 309 |
| 250 | 518.16 | 6675 | 0.2329 | 0.30 | 0.0098 | 0.1608 | 0.442 + j0.321 | 0.091 + j0.047 | 3333 | 370 | 347 |
| 350 | 553.72 | 9345 | 0.1640 | 0.21 | 0.0085 | 0.1542 | 0.409 + j0.292 | 0.066 + j0.045 | 3628 | 446 | 402 |
| 500 | 589.28 | 13350 | 0.1148 | 0.15 | 0.0073 | 0.1444 | 0.380 + j0.261 | 0.047 + j0.042 | 3999 | 533 | 451 |
| 750 | 645.16 | 20025 | 0.0787 | 0.11 | 0.0064 | 0.1345 | 0.350 + j0.221 | 0.034 + j0.040 | 4566 | 631 | 500 |
| 1000 | 711.20 | 26700 | 0.0591 | 0.09 | 0.0055 | 0.1312 | 0.328 + j0.195 | 0.027 + j0.039 | 5037 | 707 | 539 |

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

