



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

Single 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

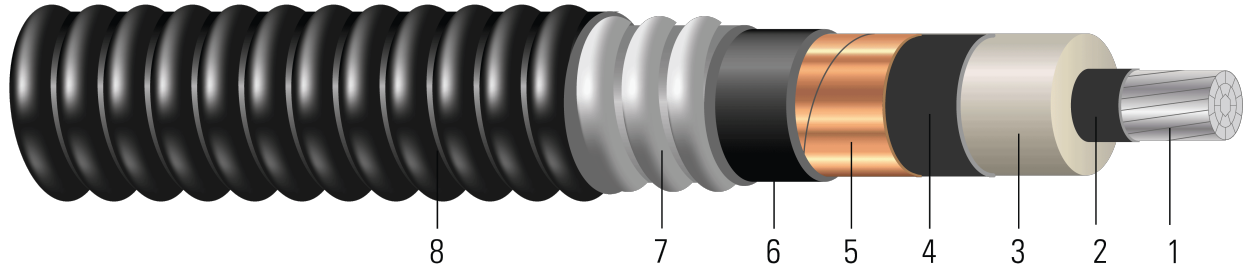


Image not to scale. See Table 1 for dimensions.

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. **Inner Jacket:** PVC inner jacket
7. **Armour:** Aluminum Interlocked Armour (AIA)
8. **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)
- AIEC 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 25% TS SUN RES 105°C FT4 HL (-40°C) LTGG RoHS YEAR [SEQUENTIAL METER MARKS]

Table 1 – Weights and Measurements

| Stock Number | 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 |
| TBA | 1/0 | 19 | 0.336 | 1.214 | 420 | 1.274 | 80 | 1.810 | 60 | 1.930 | 1454 |
| 679345 | 2/0 | 12 | 0.376 | 1.254 | 420 | 1.334 | 80 | 1.846 | 60 | 1.966 | 1621 |
| TBA | 3/0 | 19 | 0.422 | 1.300 | 420 | 1.360 | 80 | 1.896 | 60 | 2.016 | 1712 |
| TBA | 4/0 | 19 | 0.474 | 1.352 | 420 | 1.412 | 80 | 1.948 | 60 | 2.068 | 1822 |
| TBA | 250 | 37 | 0.520 | 1.406 | 420 | 1.466 | 80 | 2.002 | 60 | 2.122 | 1932 |
| TBA | 350 | 37 | 0.615 | 1.501 | 420 | 1.561 | 110 | 2.157 | 60 | 2.277 | 2274 |
| TBA | 500 | 37 | 0.735 | 1.621 | 420 | 1.681 | 110 | 2.277 | 75 | 2.427 | 2653 |
| TBA | 750 | 61 | 0.908 | 1.804 | 420 | 1.864 | 110 | 2.460 | 75 | 2.610 | 3151 |

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 | 23.2 | 633 | 0.168 | 0.211 | 0.064 | 0.062 | 0.546 + j0.280 | 0.212 + j0.060 | 3978 | 221 | 219 |
| 2/0 | 23.6 | 798 | 0.133 | 0.167 | 0.060 | 0.060 | 0.498 + j0.269 | 0.168 + j0.058 | 4102 | 253 | 246 |
| 3/0 | 24.2 | 1006 | 0.105 | 0.133 | 0.056 | 0.058 | 0.460 + j0.257 | 0.134 + j0.056 | 4244 | 288 | 275 |
| 4/0 | 24.8 | 1269 | 0.084 | 0.105 | 0.052 | 0.056 | 0.427 + j0.245 | 0.106 + j0.054 | 4405 | 327 | 305 |
| 250 | 25.5 | 1500 | 0.071 | 0.090 | 0.049 | 0.054 | 0.407 + j0.234 | 0.091 + j0.052 | 4573 | 367 | 343 |
| 350 | 27.3 | 2100 | 0.050 | 0.065 | 0.044 | 0.052 | 0.373 + j0.215 | 0.066 + j0.050 | 4867 | 443 | 399 |
| 500 | 29.1 | 3000 | 0.035 | 0.046 | 0.039 | 0.049 | 0.342 + j0.194 | 0.047 + j0.048 | 5239 | 529 | 451 |
| 750 | 31.3 | 4500 | 0.024 | 0.033 | 0.034 | 0.046 | 0.313 + j0.168 | 0.034 + j0.044 | 5806 | 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)

| Stock Number | 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 |
| TBA | 1/0 | 19 | 8.53 | 30.84 | 10.67 | 32.36 | 2.03 | 45.97 | 1.52 | 49.02 | 2164 |
| 679345 | 2/0 | 12 | 9.55 | 31.85 | 10.67 | 33.88 | 2.03 | 46.89 | 1.52 | 49.94 | 2412 |
| TBA | 3/0 | 19 | 10.72 | 33.02 | 10.67 | 34.54 | 2.03 | 48.16 | 1.52 | 51.21 | 2548 |
| TBA | 4/0 | 19 | 12.04 | 34.34 | 10.67 | 35.86 | 2.03 | 49.48 | 1.52 | 52.53 | 2711 |
| TBA | 250 | 37 | 13.21 | 35.71 | 10.67 | 37.24 | 2.03 | 50.85 | 1.52 | 53.90 | 2875 |
| TBA | 350 | 37 | 15.62 | 38.13 | 10.67 | 39.65 | 2.79 | 54.79 | 1.52 | 57.84 | 3384 |
| TBA | 500 | 37 | 18.67 | 41.17 | 10.67 | 42.70 | 2.79 | 57.84 | 1.91 | 61.65 | 3948 |
| TBA | 750 | 61 | 23.06 | 45.82 | 10.67 | 47.35 | 2.79 | 62.48 | 1.91 | 66.29 | 4689 |

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 | 589.28 | 2817 | 0.5512 | 0.69 | 0.0195 | 0.2034 | 0.546 + j0.280 | 0.212 + j0.060 | 3978 | 221 | 219 |
| 2/0 | 599.44 | 3551 | 0.4364 | 0.55 | 0.0183 | 0.1969 | 0.498 + j0.269 | 0.168 + j0.058 | 4102 | 253 | 246 |
| 3/0 | 614.68 | 4477 | 0.3445 | 0.44 | 0.0171 | 0.1903 | 0.460 + j0.257 | 0.134 + j0.056 | 4244 | 288 | 275 |
| 4/0 | 629.92 | 5647 | 0.2756 | 0.34 | 0.0158 | 0.1837 | 0.427 + j0.245 | 0.106 + j0.054 | 4405 | 327 | 305 |
| 250 | 647.70 | 6675 | 0.2329 | 0.30 | 0.0149 | 0.1772 | 0.407 + j0.234 | 0.091 + j0.052 | 4573 | 367 | 343 |
| 350 | 693.42 | 9345 | 0.1640 | 0.21 | 0.0134 | 0.1706 | 0.373 + j0.215 | 0.066 + j0.050 | 4867 | 443 | 399 |
| 500 | 739.14 | 13350 | 0.1148 | 0.15 | 0.0119 | 0.1608 | 0.342 + j0.194 | 0.047 + j0.048 | 5239 | 529 | 451 |
| 750 | 795.02 | 20025 | 0.0787 | 0.11 | 0.0104 | 0.1509 | 0.313 + j0.168 | 0.034 + j0.044 | 5806 | 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

