



HVTECK CU 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

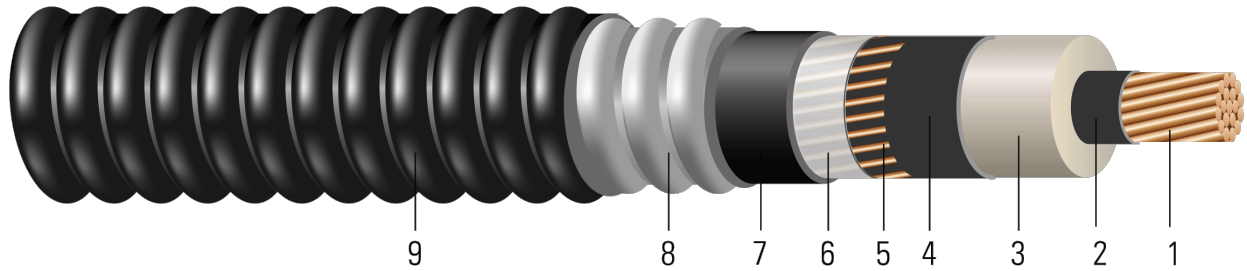


Image not to scale. See Table 1 for dimensions.

CONSTRUCTION:

1. **Conductor:** Class B compressed stranded bare copper per ASTM B3 and ASTM B8
2. **Conductor Shield:** Semi-conducting cross-linked copolymer
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 B3 Soft or Annealed Copper Wire
- ASTM B8 Concentric-Lay-Stranded Copper 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] CU 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 | Copper Weight | Approx. Weight |
|------------|--------|-------------------------|--------------------------|------------------|---------------------------------|--------------------|------------------------|------------------|--------------------------|------------|---------------|----------------|
| AWG/ Kcmil | No. | inch | inch | mil | inch | No. x AWG | mil | inch | mil | inch | lb/ 1000ft | lb/1000ft |
| 1/0 | 19 | 0.361 | 1.239 | 420 | 1.299 | 11x14 | 80 | 1.943 | 60 | 2.063 | 474 | 1979 |
| 2/0 | 19 | 0.405 | 1.283 | 420 | 1.343 | 11x14 | 80 | 1.987 | 60 | 2.107 | 559 | 2120 |
| 3/0 | 19 | 0.456 | 1.334 | 420 | 1.394 | 13x14 | 110 | 2.098 | 60 | 2.218 | 694 | 2442 |
| 4/0 | 19 | 0.512 | 1.390 | 420 | 1.450 | 13x14 | 110 | 2.154 | 60 | 2.274 | 829 | 2653 |
| 250 | 37 | 0.558 | 1.444 | 420 | 1.504 | 17x14 | 110 | 2.208 | 60 | 2.328 | 1001 | 2900 |
| 350 | 37 | 0.661 | 1.547 | 420 | 1.607 | 21x14 | 110 | 2.345 | 75 | 2.495 | 1365 | 3497 |
| 500 | 37 | 0.789 | 1.675 | 420 | 1.735 | 26x14 | 110 | 2.473 | 75 | 2.623 | 1896 | 4204 |
| 750 | 61 | 0.968 | 1.864 | 420 | 1.924 | 21x12 | 110 | 2.662 | 75 | 2.812 | 2753 | 5330 |

All dimensions are nominal and subject to normal manufacturing tolerances
 ◇ Cable marked with this symbol is a standard stock item
 1 Comply with ICEA S-93-639 Appendix C for jacket thickness determination





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 | 24.8 | 844 | 0.102 | 0.128 | 0.061 | 0.062 | 0.459 + j0.277 | 0.129 + j0.062 | 8577 | 278 | 272 |
| 2/0 | 25.3 | 1064 | 0.081 | 0.102 | 0.057 | 0.060 | 0.429 + j0.265 | 0.103 + j0.060 | 8577 | 316 | 303 |
| 3/0 | 26.6 | 1342 | 0.064 | 0.081 | 0.053 | 0.058 | 0.403 + j0.253 | 0.082 + j0.058 | 10137 | 356 | 333 |
| 4/0 | 27.3 | 1692 | 0.051 | 0.065 | 0.050 | 0.056 | 0.382 + j0.240 | 0.066 + j0.056 | 10137 | 403 | 367 |
| 250 | 27.9 | 2000 | 0.043 | 0.056 | 0.047 | 0.055 | 0.368 + j0.229 | 0.057 + j0.055 | 13256 | 455 | 411 |
| 350 | 29.9 | 2800 | 0.031 | 0.041 | 0.042 | 0.052 | 0.343 + j0.210 | 0.042 + j0.052 | 16376 | 537 | 459 |
| 500 | 31.5 | 4000 | 0.022 | 0.030 | 0.037 | 0.049 | 0.320 + j0.190 | 0.031 + j0.049 | 20275 | 616 | 499 |
| 750 | 33.7 | 6000 | 0.014 | 0.023 | 0.032 | 0.046 | 0.297 + j0.164 | 0.024 + j0.046 | 26018 | 716 | 557 |

* 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 | Copper Weight | Approx. Weight |
|------------|--------|-------------------------|--------------------------|------------------|---------------------------------|--------------------|------------------------|------------------|--------------------------|------------|---------------|----------------|
| AWG/Kcmil | No. | mm | mm | mm | mm | No. x AWG | mm | mm | mm | mm | kg/km | kg/km |
| 1/0 | 19 | 9.17 | 31.47 | 10.67 | 32.99 | 11x14 | 2.03 | 49.35 | 1.52 | 52.40 | 705 | 2945 |
| 2/0 | 19 | 10.29 | 32.59 | 10.67 | 34.11 | 11x14 | 2.03 | 50.47 | 1.52 | 53.52 | 832 | 3155 |
| 3/0 | 19 | 11.58 | 33.88 | 10.67 | 35.41 | 13x14 | 2.79 | 53.29 | 1.52 | 56.34 | 1033 | 3634 |
| 4/0 | 19 | 13.00 | 35.31 | 10.67 | 36.83 | 13x14 | 2.79 | 54.71 | 1.52 | 57.76 | 1234 | 3948 |
| 250 | 37 | 14.17 | 36.68 | 10.67 | 38.20 | 17x14 | 2.79 | 56.08 | 1.52 | 59.13 | 1490 | 4316 |
| 350 | 37 | 16.79 | 39.29 | 10.67 | 40.82 | 21x14 | 2.79 | 59.56 | 1.91 | 63.37 | 2031 | 5204 |
| 500 | 37 | 20.04 | 42.55 | 10.67 | 44.07 | 26x14 | 2.79 | 62.81 | 1.91 | 66.62 | 2822 | 6256 |
| 750 | 61 | 24.59 | 47.35 | 10.67 | 48.87 | 21x12 | 2.79 | 67.61 | 1.91 | 71.42 | 4097 | 7932 |

All dimensions are nominal and subject to normal manufacturing tolerances

◊ Cable marked with this symbol is a standard stock item

1 Comply with ICEA S-93-639 Appendix C for jacket thickness determination





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 | 629.92 | 3756 | 0.3346 | 0.42 | 0.0186 | 0.2034 | 0.459 + j0.277 | 0.129 + j0.062 | 8577 | 278 | 272 |
| 2/0 | 642.62 | 4735 | 0.2657 | 0.33 | 0.0174 | 0.1969 | 0.429 + j0.265 | 0.103 + j0.060 | 8577 | 316 | 303 |
| 3/0 | 675.64 | 5972 | 0.2100 | 0.27 | 0.0162 | 0.1903 | 0.403 + j0.253 | 0.082 + j0.058 | 10137 | 356 | 333 |
| 4/0 | 693.42 | 7529 | 0.1673 | 0.21 | 0.0152 | 0.1837 | 0.382 + j0.240 | 0.066 + j0.056 | 10137 | 403 | 367 |
| 250 | 708.66 | 8900 | 0.1411 | 0.18 | 0.0143 | 0.1804 | 0.368 + j0.229 | 0.057 + j0.055 | 13256 | 455 | 411 |
| 350 | 759.46 | 12460 | 0.1017 | 0.13 | 0.0128 | 0.1706 | 0.343 + j0.210 | 0.042 + j0.052 | 16376 | 537 | 459 |
| 500 | 800.10 | 17800 | 0.0722 | 0.10 | 0.0113 | 0.1608 | 0.320 + j0.190 | 0.031 + j0.049 | 20275 | 616 | 499 |
| 750 | 855.98 | 26700 | 0.0459 | 0.08 | 0.0098 | 0.1509 | 0.297 + j0.164 | 0.024 + j0.046 | 26018 | 716 | 557 |

* 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

