



## HVTECK AL 1/C 345NLEPR CB PVC AIA PVC 28kV 133% CSA

Single Conductor, 345 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

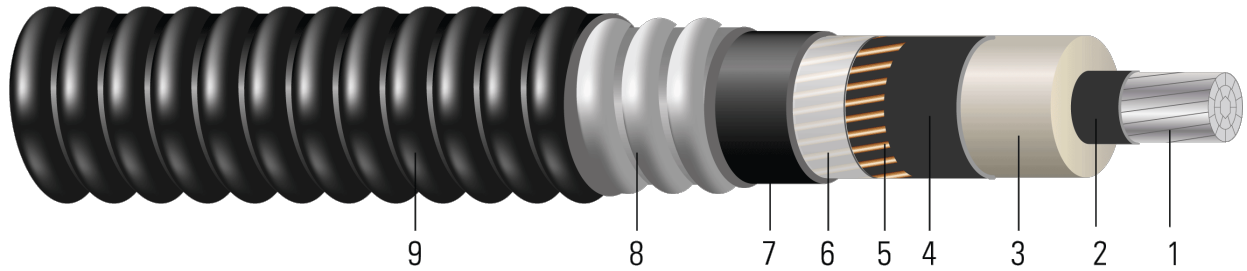


Image not to scale. See Table 1 for dimensions.

### 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:** 345 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 28kV 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 345 NLEPR AIA 28kV 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      |
| 1          | 19     | 0.298                   | 1.026                    | 345              | 1.086                           | 7x14               | 80                     | 1.730            | 60                       | 1.850      | 1293           |
| 1/0        | 19     | 0.336                   | 1.064                    | 345              | 1.124                           | 7x14               | 80                     | 1.768            | 60                       | 1.888      | 1356           |
| 2/0        | 19     | 0.376                   | 1.104                    | 345              | 1.164                           | 11x14              | 80                     | 1.808            | 60                       | 1.928      | 1481           |
| 3/0        | 19     | 0.422                   | 1.150                    | 345              | 1.210                           | 11x14              | 80                     | 1.854            | 60                       | 1.974      | 1655           |
| 4/0        | 19     | 0.474                   | 1.202                    | 345              | 1.262                           | 11x14              | 80                     | 1.906            | 60                       | 2.026      | 1755           |
| 250        | 37     | 0.520                   | 1.256                    | 345              | 1.316                           | 13x14              | 80                     | 1.960            | 60                       | 2.080      | 1885           |
| 350        | 37     | 0.615                   | 1.351                    | 345              | 1.411                           | 17x14              | 110                    | 2.149            | 60                       | 2.269      | 2286           |
| 500        | 37     | 0.735                   | 1.471                    | 345              | 1.531                           | 21x14              | 110                    | 2.269            | 75                       | 2.419      | 2700           |
| 750        | 61     | 0.908                   | 1.654                    | 345              | 1.714                           | 17x12              | 110                    | 2.452            | 75                       | 2.602      | 3243           |

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          | 22.2               | 502              | 0.211                | 0.266                | 0.061                       | 0.064                      | 0.614 + j0.331          | 0.267 + j0.062              | 5458                                   | 193                            | 194                                     |
| 1/0        | 22.7               | 633              | 0.168                | 0.211                | 0.057                       | 0.061                      | 0.556 + j0.318          | 0.212 + j0.060              | 5458                                   | 221                            | 219                                     |
| 2/0        | 23.1               | 798              | 0.133                | 0.167                | 0.053                       | 0.059                      | 0.509 + j0.305          | 0.168 + j0.058              | 8577                                   | 253                            | 246                                     |
| 3/0        | 23.7               | 1006             | 0.105                | 0.133                | 0.049                       | 0.057                      | 0.471 + j0.291          | 0.134 + j0.056              | 8577                                   | 288                            | 275                                     |
| 4/0        | 24.3               | 1269             | 0.084                | 0.105                | 0.046                       | 0.055                      | 0.439 + j0.277          | 0.106 + j0.053              | 8577                                   | 327                            | 305                                     |
| 250        | 25.0               | 1500             | 0.071                | 0.090                | 0.043                       | 0.054                      | 0.419 + j0.263          | 0.091 + j0.052              | 10137                                  | 367                            | 343                                     |
| 350        | 27.2               | 2100             | 0.050                | 0.065                | 0.039                       | 0.052                      | 0.385 + j0.242          | 0.066 + j0.050              | 13256                                  | 443                            | 399                                     |
| 500        | 29.0               | 3000             | 0.035                | 0.046                | 0.034                       | 0.049                      | 0.355 + j0.218          | 0.047 + j0.048              | 16376                                  | 529                            | 451                                     |
| 750        | 31.2               | 4500             | 0.024                | 0.033                | 0.029                       | 0.046                      | 0.325 + j0.187          | 0.034 + j0.044              | 21062                                  | 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)**

| 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          |
| 1          | 19     | 7.57                    | 26.06                    | 8.76             | 27.58                           | 7x14               | 2.03                   | 43.94            | 1.52                     | 46.99      | 1924           |
| 1/0        | 19     | 8.53                    | 27.03                    | 8.76             | 28.55                           | 7x14               | 2.03                   | 44.91            | 1.52                     | 47.96      | 2018           |
| 2/0        | 19     | 9.55                    | 28.04                    | 8.76             | 29.57                           | 11x14              | 2.03                   | 45.92            | 1.52                     | 48.97      | 2204           |
| 3/0        | 19     | 10.72                   | 29.21                    | 8.76             | 30.73                           | 11x14              | 2.03                   | 47.09            | 1.52                     | 50.14      | 2463           |
| 4/0        | 19     | 12.04                   | 30.53                    | 8.76             | 32.05                           | 11x14              | 2.03                   | 48.41            | 1.52                     | 51.46      | 2612           |
| 250        | 37     | 13.21                   | 31.90                    | 8.76             | 33.43                           | 13x14              | 2.03                   | 49.78            | 1.52                     | 52.83      | 2805           |
| 350        | 37     | 15.62                   | 34.32                    | 8.76             | 35.84                           | 17x14              | 2.79                   | 54.58            | 1.52                     | 57.63      | 3402           |
| 500        | 37     | 18.67                   | 37.36                    | 8.76             | 38.89                           | 21x14              | 2.79                   | 57.63            | 1.91                     | 61.44      | 4018           |
| 750        | 61     | 23.06                   | 42.01                    | 8.76             | 43.54                           | 17x12              | 2.79                   | 62.28            | 1.91                     | 66.09      | 4826           |

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          | 563.88             | 2234             | 0.6923               | 0.87                 | 0.0186                      | 0.2100                     | 0.614 + j0.331          | 0.267 + j0.062              | 5458                                   | 193                            | 194                                     |
| 1/0        | 576.58             | 2817             | 0.5512               | 0.69                 | 0.0174                      | 0.2001                     | 0.556 + j0.318          | 0.212 + j0.060              | 5458                                   | 221                            | 219                                     |
| 2/0        | 586.74             | 3551             | 0.4364               | 0.55                 | 0.0162                      | 0.1936                     | 0.509 + j0.305          | 0.168 + j0.058              | 8577                                   | 253                            | 246                                     |
| 3/0        | 601.98             | 4477             | 0.3445               | 0.44                 | 0.0149                      | 0.1870                     | 0.471 + j0.291          | 0.134 + j0.056              | 8577                                   | 288                            | 275                                     |
| 4/0        | 617.22             | 5647             | 0.2756               | 0.34                 | 0.0140                      | 0.1804                     | 0.439 + j0.277          | 0.106 + j0.053              | 8577                                   | 327                            | 305                                     |
| 250        | 635.00             | 6675             | 0.2329               | 0.30                 | 0.0131                      | 0.1772                     | 0.419 + j0.263          | 0.091 + j0.052              | 10137                                  | 367                            | 343                                     |
| 350        | 690.88             | 9345             | 0.1640               | 0.21                 | 0.0119                      | 0.1706                     | 0.385 + j0.242          | 0.066 + j0.050              | 13256                                  | 443                            | 399                                     |
| 500        | 736.60             | 13350            | 0.1148               | 0.15                 | 0.0104                      | 0.1608                     | 0.355 + j0.218          | 0.047 + j0.048              | 16376                                  | 529                            | 451                                     |
| 750        | 792.48             | 20025            | 0.0787               | 0.11                 | 0.0088                      | 0.1509                     | 0.325 + j0.187          | 0.034 + j0.044              | 21062                                  | 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

