

# HVTECK AL 1/C 175NLEPR CB PVC AIA PVC 15kV 100% CSA

Single Conductor, 175 Mils No Lead Ethylene Propylene Rubber (NL-EPR), 100% Insulation Level, Concentric Bond, Polyvinyl Chloride (PVC) Inner Jacket, Aluminum Interlocked Armour (AIA), Polyvinyl Chloride (PVC) Jacket

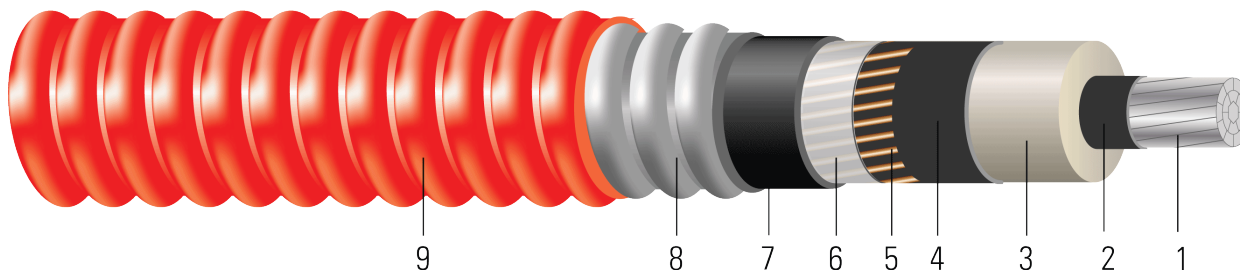


Image not to scale. See Table 1 for dimensions.

## 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:** 175 Mils No Lead Ethylene Propylene Rubber (NL-EPR) 100% 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:** 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)



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- 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 175 NLEPR AIA 15kV 100% 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/<br>Kcmil | No.    | inch                    | inch                     | mil              | inch                            | No. x AWG          | mil                    | inch             | mil                      | inch       | lb/1000ft      |
| 2             | 7      | 0.268                   | 0.656                    | 175              | 0.716                           | 7x14               | 80                     | 1.336            | 50                       | 1.436      | 785            |
| 1             | 19     | 0.298                   | 0.686                    | 175              | 0.746                           | 7x14               | 80                     | 1.366            | 50                       | 1.466      | 825            |
| 1/0           | 19     | 0.336                   | 0.724                    | 175              | 0.784                           | 7x14               | 80                     | 1.404            | 50                       | 1.504      | 875            |
| 2/0           | 19     | 0.376                   | 0.764                    | 175              | 0.824                           | 11x14              | 80                     | 1.444            | 50                       | 1.544      | 987            |
| 3/0           | 19     | 0.422                   | 0.810                    | 175              | 0.870                           | 11x14              | 80                     | 1.490            | 50                       | 1.590      | 1056           |
| 4/0           | 19     | 0.474                   | 0.862                    | 175              | 0.922                           | 11x14              | 80                     | 1.542            | 60                       | 1.662      | 1170           |
| 250           | 37     | 0.520                   | 0.916                    | 175              | 0.976                           | 13x14              | 80                     | 1.596            | 60                       | 1.716      | 1281           |
| 350           | 37     | 0.615                   | 1.011                    | 175              | 1.071                           | 17x14              | 80                     | 1.749            | 60                       | 1.869      | 1555           |
| 500           | 37     | 0.735                   | 1.131                    | 175              | 1.191                           | 21x14              | 80                     | 1.869            | 60                       | 1.989      | 1943           |
| 750           | 61     | 0.908                   | 1.314                    | 175              | 1.374                           | 17x12              | 110                    | 2.112            | 60                       | 2.232      | 2540           |
| 1000          | 61     | 1.060                   | 1.466                    | 175              | 1.526                           | 17x12              | 110                    | 2.264            | 75                       | 2.414      | 2991           |

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          | 17.2               | 398              | 0.267                | 0.336                | 0.043                       | 0.060                      | 0.692 + j0.462          | 0.337 + j0.060              | 5458                                   | 169                            | 176                                     |
| 1          | 17.6               | 502              | 0.211                | 0.266                | 0.040                       | 0.058                      | 0.624 + j0.446          | 0.267 + j0.057              | 5458                                   | 194                            | 198                                     |
| 1/0        | 18.0               | 633              | 0.168                | 0.211                | 0.037                       | 0.056                      | 0.569 + j0.428          | 0.212 + j0.055              | 5458                                   | 222                            | 223                                     |
| 2/0        | 18.5               | 798              | 0.133                | 0.167                | 0.034                       | 0.054                      | 0.526 + j0.410          | 0.168 + j0.053              | 8577                                   | 255                            | 250                                     |
| 3/0        | 19.1               | 1006             | 0.105                | 0.133                | 0.031                       | 0.052                      | 0.491 + j0.390          | 0.134 + j0.051              | 8577                                   | 290                            | 278                                     |
| 4/0        | 19.9               | 1269             | 0.084                | 0.105                | 0.029                       | 0.050                      | 0.462 + j0.370          | 0.106 + j0.049              | 8577                                   | 329                            | 309                                     |
| 250        | 20.6               | 1500             | 0.071                | 0.090                | 0.027                       | 0.049                      | 0.444 + j0.350          | 0.091 + j0.048              | 10137                                  | 370                            | 347                                     |
| 350        | 22.4               | 2100             | 0.050                | 0.065                | 0.023                       | 0.047                      | 0.413 + j0.319          | 0.066 + j0.046              | 13256                                  | 446                            | 402                                     |
| 500        | 23.9               | 3000             | 0.035                | 0.046                | 0.020                       | 0.045                      | 0.385 + j0.284          | 0.047 + j0.043              | 16376                                  | 533                            | 451                                     |
| 750        | 26.8               | 4500             | 0.024                | 0.033                | 0.017                       | 0.042                      | 0.356 + j0.240          | 0.034 + j0.041              | 21062                                  | 631                            | 500                                     |
| 1000       | 29.0               | 6000             | 0.018                | 0.026                | 0.015                       | 0.041                      | 0.335 + j0.210          | 0.027 + j0.039              | 21062                                  | 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 | 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                    | 16.66                    | 4.44             | 18.19                           | 7x14               | 2.03                   | 33.93            | 1.27                     | 36.47      | 1168           |
| 1          | 19     | 7.57                    | 17.42                    | 4.44             | 18.95                           | 7x14               | 2.03                   | 34.70            | 1.27                     | 37.24      | 1228           |
| 1/0        | 19     | 8.53                    | 18.39                    | 4.44             | 19.91                           | 7x14               | 2.03                   | 35.66            | 1.27                     | 38.20      | 1302           |
| 2/0        | 19     | 9.55                    | 19.41                    | 4.44             | 20.93                           | 11x14              | 2.03                   | 36.68            | 1.27                     | 39.22      | 1469           |
| 3/0        | 19     | 10.72                   | 20.57                    | 4.44             | 22.10                           | 11x14              | 2.03                   | 37.85            | 1.27                     | 40.39      | 1572           |
| 4/0        | 19     | 12.04                   | 21.89                    | 4.44             | 23.42                           | 11x14              | 2.03                   | 39.17            | 1.52                     | 42.21      | 1741           |
| 250        | 37     | 13.21                   | 23.27                    | 4.44             | 24.79                           | 13x14              | 2.03                   | 40.54            | 1.52                     | 43.59      | 1906           |
| 350        | 37     | 15.62                   | 25.68                    | 4.44             | 27.20                           | 17x14              | 2.03                   | 44.42            | 1.52                     | 47.47      | 2314           |
| 500        | 37     | 18.67                   | 28.73                    | 4.44             | 30.25                           | 21x14              | 2.03                   | 47.47            | 1.52                     | 50.52      | 2892           |
| 750        | 61     | 23.06                   | 33.38                    | 4.44             | 34.90                           | 17x12              | 2.79                   | 53.64            | 1.52                     | 56.69      | 3780           |
| 1000       | 61     | 26.92                   | 37.24                    | 4.44             | 38.76                           | 17x12              | 2.79                   | 57.51            | 1.91                     | 61.32      | 4451           |

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          | 436.88             | 1771             | 0.8760               | 1.10                 | 0.0131                      | 0.1969                     | 0.692 + j0.462          | 0.337 + j0.060              | 5458                                   | 169                            | 176                                     |
| 1          | 447.04             | 2234             | 0.6923               | 0.87                 | 0.0122                      | 0.1903                     | 0.624 + j0.446          | 0.267 + j0.057              | 5458                                   | 194                            | 198                                     |
| 1/0        | 457.20             | 2817             | 0.5512               | 0.69                 | 0.0113                      | 0.1837                     | 0.569 + j0.428          | 0.212 + j0.055              | 5458                                   | 222                            | 223                                     |
| 2/0        | 469.90             | 3551             | 0.4364               | 0.55                 | 0.0104                      | 0.1772                     | 0.526 + j0.410          | 0.168 + j0.053              | 8577                                   | 255                            | 250                                     |
| 3/0        | 485.14             | 4477             | 0.3445               | 0.44                 | 0.0094                      | 0.1706                     | 0.491 + j0.390          | 0.134 + j0.051              | 8577                                   | 290                            | 278                                     |
| 4/0        | 505.46             | 5647             | 0.2756               | 0.34                 | 0.0088                      | 0.1640                     | 0.462 + j0.370          | 0.106 + j0.049              | 8577                                   | 329                            | 309                                     |
| 250        | 523.24             | 6675             | 0.2329               | 0.30                 | 0.0082                      | 0.1608                     | 0.444 + j0.350          | 0.091 + j0.048              | 10137                                  | 370                            | 347                                     |
| 350        | 568.96             | 9345             | 0.1640               | 0.21                 | 0.0070                      | 0.1542                     | 0.413 + j0.319          | 0.066 + j0.046              | 13256                                  | 446                            | 402                                     |
| 500        | 607.06             | 13350            | 0.1148               | 0.15                 | 0.0061                      | 0.1476                     | 0.385 + j0.284          | 0.047 + j0.043              | 16376                                  | 533                            | 451                                     |
| 750        | 680.72             | 20025            | 0.0787               | 0.11                 | 0.0052                      | 0.1378                     | 0.356 + j0.240          | 0.034 + j0.041              | 21062                                  | 631                            | 500                                     |
| 1000       | 736.60             | 26700            | 0.0591               | 0.09                 | 0.0046                      | 0.1345                     | 0.335 + j0.210          | 0.027 + j0.039              | 21062                                  | 707                            | 539                                     |

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

