

# HVTECK AL 3/C 220NLEPR TS PVC AIA PVC 15kV 133% CSA

3 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

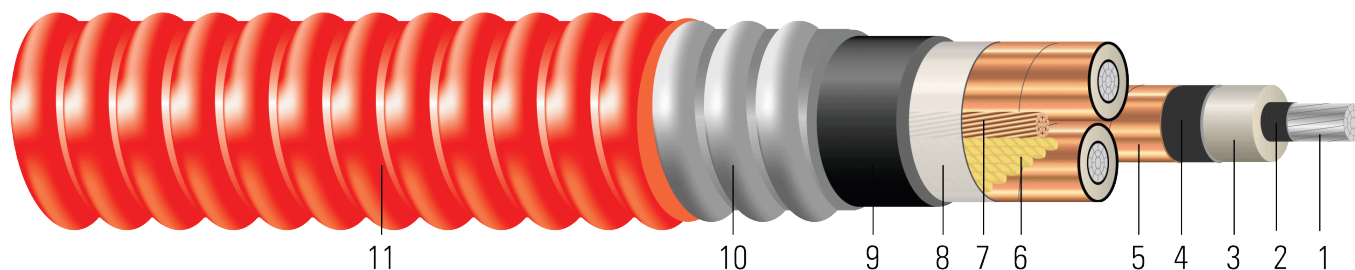


Image not to scale. See Table 1 for dimensions.

## 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. **Filler:** Interstices filled with non-hydroscooping/non-wicking fillers
7. **Grounding Conductor:** Class B compressed stranded bare copper ground per ASTM B3 and ASTM B8
8. **Binder:** Polypropylene tape
9. **Inner Jacket:** PVC inner jacket
10. **Armour:** Aluminum Interlocked Armour (AIA)
11. **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



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- 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
- 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# 3/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**

| Stock Number | Cond. Size    | Strand | Diameter Over Conductor | Diameter Over Insulation | Insul. Thickness | Diameter Over Insulation Shield | Ground Size | Inner Jacket Thickness | Dia. Over Armour | Overall Jacket Thickness | Approx. OD | Approx. Weight |
|--------------|---------------|--------|-------------------------|--------------------------|------------------|---------------------------------|-------------|------------------------|------------------|--------------------------|------------|----------------|
|              | AWG/<br>Kcmil | No.    | inch                    | inch                     | mil              | inch                            | AWG         | mil                    | inch             | mil                      | inch       | lb/1000ft      |
| TBA          | 2             | 7      | 0.268                   | 0.746                    | 220              | 0.806                           | 8           | 110                    | 2.360            | 75                       | 2.510      | 2392           |
| TBA          | 1             | 19     | 0.298                   | 0.776                    | 220              | 0.836                           | 6           | 110                    | 2.425            | 75                       | 2.575      | 2546           |
| TBA          | 1/0           | 19     | 0.336                   | 0.814                    | 220              | 0.874                           | 6           | 110                    | 2.507            | 75                       | 2.657      | 2726           |
| TBA          | 2/0           | 19     | 0.376                   | 0.854                    | 220              | 0.914                           | 6           | 110                    | 2.593            | 75                       | 2.743      | 2929           |
| TBA          | 3/0           | 19     | 0.422                   | 0.900                    | 220              | 0.960                           | 6           | 110                    | 2.693            | 75                       | 2.843      | 3176           |
| TBA          | 4/0           | 19     | 0.474                   | 0.952                    | 220              | 1.012                           | 6           | 110                    | 2.805            | 75                       | 2.955      | 3463           |
| TBA          | 250           | 37     | 0.520                   | 1.006                    | 220              | 1.066                           | 4           | 110                    | 2.922            | 75                       | 3.072      | 3772           |
| TBA          | 350           | 37     | 0.615                   | 1.101                    | 220              | 1.161                           | 4           | 125                    | 3.157            | 85                       | 3.327      | 4522           |
| TBA          | 500           | 37     | 0.735                   | 1.221                    | 220              | 1.281                           | 3           | 125                    | 3.416            | 85                       | 3.586      | 5371           |
| 669887       | 750           | 58     | 0.908                   | 1.416                    | 220              | 1.476                           | 2           | 125                    | 3.860            | 85                       | 4.030      | 7182           |

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          | 17.6               | 1194             | 0.267                | 0.336                | 0.049                       | 0.048                      | 0.711 + j0.427          | 0.336 + j0.047              | 2528                                   | 135                            | 157                                     |
| 1          | 18.0               | 1506             | 0.211                | 0.266                | 0.046                       | 0.046                      | 0.640 + j0.411          | 0.266 + j0.044              | 2621                                   | 154                            | 178                                     |
| 1/0        | 18.6               | 1900             | 0.168                | 0.211                | 0.043                       | 0.044                      | 0.584 + j0.394          | 0.211 + j0.043              | 2738                                   | 176                            | 202                                     |
| 2/0        | 19.2               | 2395             | 0.133                | 0.167                | 0.040                       | 0.043                      | 0.538 + j0.377          | 0.167 + j0.041              | 2862                                   | 204                            | 229                                     |
| 3/0        | 19.9               | 3020             | 0.105                | 0.133                | 0.037                       | 0.041                      | 0.501 + j0.358          | 0.133 + j0.040              | 3005                                   | 234                            | 260                                     |
| 4/0        | 20.7               | 3808             | 0.084                | 0.105                | 0.030                       | 0.040                      | 0.469 + j0.339          | 0.105 + j0.038              | 3166                                   | 268                            | 294                                     |
| 250        | 21.5               | 4500             | 0.071                | 0.090                | 0.030                       | 0.039                      | 0.450 + j0.321          | 0.090 + j0.037              | 3333                                   | 296                            | 323                                     |
| 350        | 23.3               | 6300             | 0.050                | 0.065                | 0.030                       | 0.037                      | 0.417 + j0.291          | 0.065 + j0.035              | 3628                                   | 363                            | 386                                     |
| 500        | 25.1               | 9000             | 0.035                | 0.046                | 0.020                       | 0.030                      | 0.386 + j0.260          | 0.046 + j0.033              | 3999                                   | 447                            | 465                                     |
| 750        | 28.2               | 13500            | 0.024                | 0.033                | 0.021                       | 0.033                      | 0.355 + j0.220          | 0.034 + j0.031              | 4566                                   | 566                            | 563                                     |

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

Table 3 – Weights and Measurements (Metric)

| Stock Number | Cond. Size | Strand | Diameter Over Conductor | Diameter Over Insulation | Insul. Thickness | Diameter Over Insulation Shield | Ground Size | Inner Jacket Thickness | Dia. Over Armour | Overall Jacket Thickness | Approx. OD | Approx. Weight |
|--------------|------------|--------|-------------------------|--------------------------|------------------|---------------------------------|-------------|------------------------|------------------|--------------------------|------------|----------------|
|              | AWG/Kcmil  | No.    | mm                      | mm                       | mm               | mm                              | AWG         | mm                     | mm               | mm                       | mm         | kg/km          |
| TBA          | 2          | 7      | 6.81                    | 18.95                    | 5.59             | 20.47                           | 8           | 2.79                   | 59.94            | 1.91                     | 63.75      | 3560           |
| TBA          | 1          | 19     | 7.57                    | 19.71                    | 5.59             | 21.23                           | 6           | 2.79                   | 61.59            | 1.91                     | 65.41      | 3789           |
| TBA          | 1/0        | 19     | 8.53                    | 20.68                    | 5.59             | 22.20                           | 6           | 2.79                   | 63.68            | 1.91                     | 67.49      | 4057           |
| TBA          | 2/0        | 19     | 9.55                    | 21.69                    | 5.59             | 23.22                           | 6           | 2.79                   | 65.86            | 1.91                     | 69.67      | 4359           |
| TBA          | 3/0        | 19     | 10.72                   | 22.86                    | 5.59             | 24.38                           | 6           | 2.79                   | 68.40            | 1.91                     | 72.21      | 4726           |
| TBA          | 4/0        | 19     | 12.04                   | 24.18                    | 5.59             | 25.70                           | 6           | 2.79                   | 71.25            | 1.91                     | 75.06      | 5154           |
| TBA          | 250        | 37     | 13.21                   | 25.55                    | 5.59             | 27.08                           | 4           | 2.79                   | 74.22            | 1.91                     | 78.03      | 5613           |
| TBA          | 350        | 37     | 15.62                   | 27.97                    | 5.59             | 29.49                           | 4           | 3.18                   | 80.19            | 2.16                     | 84.51      | 6729           |
| TBA          | 500        | 37     | 18.67                   | 31.01                    | 5.59             | 32.54                           | 3           | 3.18                   | 86.77            | 2.16                     | 91.08      | 7993           |
| 669887       | 750        | 58     | 23.06                   | 35.97                    | 5.59             | 37.49                           | 2           | 3.18                   | 98.04            | 2.16                     | 102.36     | 10688          |

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          | 447.04             | 5313             | 0.8760               | 1.10                 | 0.0149                      | 0.1575                     | 0.711 + j0.427          | 0.336 + j0.047              | 2528                                   | 135                            | 157                                     |
| 1          | 457.20             | 6702             | 0.6923               | 0.87                 | 0.0140                      | 0.1509                     | 0.640 + j0.411          | 0.266 + j0.044              | 2621                                   | 154                            | 178                                     |
| 1/0        | 472.44             | 8455             | 0.5512               | 0.69                 | 0.0131                      | 0.1444                     | 0.584 + j0.394          | 0.211 + j0.043              | 2738                                   | 176                            | 202                                     |
| 2/0        | 487.68             | 10658            | 0.4364               | 0.55                 | 0.0122                      | 0.1411                     | 0.538 + j0.377          | 0.167 + j0.041              | 2862                                   | 204                            | 229                                     |
| 3/0        | 505.46             | 13439            | 0.3445               | 0.44                 | 0.0113                      | 0.1345                     | 0.501 + j0.358          | 0.133 + j0.040              | 3005                                   | 234                            | 260                                     |
| 4/0        | 525.78             | 16946            | 0.2756               | 0.34                 | 0.0091                      | 0.1312                     | 0.469 + j0.339          | 0.105 + j0.038              | 3166                                   | 268                            | 294                                     |
| 250        | 546.10             | 20025            | 0.2329               | 0.30                 | 0.0091                      | 0.1280                     | 0.450 + j0.321          | 0.090 + j0.037              | 3333                                   | 296                            | 323                                     |
| 350        | 591.82             | 28035            | 0.1640               | 0.21                 | 0.0091                      | 0.1214                     | 0.417 + j0.291          | 0.065 + j0.035              | 3628                                   | 363                            | 386                                     |
| 500        | 637.54             | 40050            | 0.1148               | 0.15                 | 0.0061                      | 0.0984                     | 0.386 + j0.260          | 0.046 + j0.033              | 3999                                   | 447                            | 465                                     |
| 750        | 716.28             | 60075            | 0.0787               | 0.11                 | 0.0064                      | 0.1083                     | 0.355 + j0.220          | 0.034 + j0.031              | 4566                                   | 566                            | 563                                     |

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

