



## HVTECK AL 3/C 90TRXLPE TS PVC AIA PVC 5kV 100% CSA

3 Conductor, 90 Mils Tree Retardant Cross Linked Polyethylene, 100% Insulation Level, Tape Shield, Polyvinyl Chloride (PVC) Inner Jacket, Aluminum Interlocked Armour (AIA), Polyvinyl Chloride (PVC) Jacket.

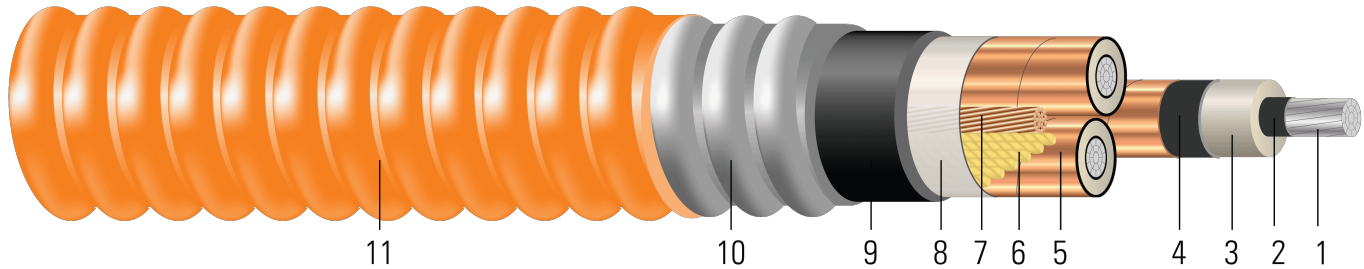


Image not to scale. See Table 1 for dimensions.

### 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:** 90 Mils Tree Retardant Cross Linked Polyethylene 100% 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-hydroscoping/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:** Orange Polyvinyl Chloride (PVC) Jacket

### APPLICATIONS AND FEATURES:

Southwire's 5kV 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
- 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 90 TRXLPE AIA 5kV 100% INS LEVEL 25% TS 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 | 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      |
| 2             | 7      | 0.268                   | 0.486                    | 90               | 0.546                           | 8           | 80                     | 1.739            | 60                       | 1.859      | 1271           |
| 1             | 19     | 0.298                   | 0.516                    | 90               | 0.576                           | 6           | 80                     | 1.803            | 60                       | 1.923      | 1389           |
| 1/0           | 19     | 0.336                   | 0.554                    | 90               | 0.614                           | 6           | 80                     | 1.885            | 60                       | 2.005      | 1622           |
| 2/0           | 19     | 0.376                   | 0.594                    | 90               | 0.654                           | 6           | 80                     | 1.972            | 60                       | 2.092      | 1788           |
| 3/0           | 19     | 0.422                   | 0.640                    | 90               | 0.700                           | 6           | 110                    | 2.131            | 60                       | 2.251      | 2110           |
| 4/0           | 19     | 0.474                   | 0.692                    | 90               | 0.752                           | 6           | 110                    | 2.244            | 60                       | 2.364      | 2358           |
| 250           | 37     | 0.520                   | 0.746                    | 90               | 0.806                           | 4           | 110                    | 2.360            | 75                       | 2.510      | 2693           |
| 350           | 37     | 0.615                   | 0.841                    | 90               | 0.901                           | 4           | 110                    | 2.565            | 75                       | 2.715      | 3213           |
| 500           | 37     | 0.735                   | 0.961                    | 90               | 1.021                           | 3           | 110                    | 2.825            | 75                       | 2.975      | 3962           |
| 750           | 61     | 0.908                   | 1.144                    | 90               | 1.204                           | 2           | 125                    | 3.250            | 85                       | 3.420      | 5352           |
| 1000          | 61     | 1.060                   | 1.296                    | 90               | 1.356                           | 2           | 125                    | 3.578            | 85                       | 3.748      | 6493           |

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

TBA stock codes are estimations only and actual product may vary. Please wait until a stock code is assigned to purchase connectors and/or fittings.




**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          | 13.0               | 1194             | 0.267                | 0.336                | 0.035                       | 0.039                      | 0.699 + j0.550          | 0.336 + j0.039              | 1722                                   | 135                            | 157                                     |
| 1          | 13.5               | 1506             | 0.211                | 0.266                | 0.030                       | 0.038                      | 0.633 + j0.530          | 0.266 + j0.036              | 1815                                   | 154                            | 178                                     |
| 1/0        | 14.0               | 1900             | 0.168                | 0.211                | 0.030                       | 0.036                      | 0.581 + j0.508          | 0.211 + j0.035              | 1933                                   | 176                            | 202                                     |
| 2/0        | 14.6               | 2395             | 0.133                | 0.167                | 0.030                       | 0.035                      | 0.540 + j0.485          | 0.167 + j0.034              | 2057                                   | 204                            | 229                                     |
| 3/0        | 15.8               | 3020             | 0.105                | 0.133                | 0.030                       | 0.030                      | 0.508 + j0.461          | 0.133 + j0.032              | 2199                                   | 234                            | 260                                     |
| 4/0        | 16.5               | 3808             | 0.084                | 0.105                | 0.020                       | 0.030                      | 0.481 + j0.435          | 0.105 + j0.031              | 2360                                   | 268                            | 294                                     |
| 250        | 17.6               | 4500             | 0.071                | 0.090                | 0.020                       | 0.030                      | 0.465 + j0.410          | 0.090 + j0.031              | 2528                                   | 296                            | 323                                     |
| 350        | 19.0               | 6300             | 0.050                | 0.065                | 0.020                       | 0.030                      | 0.436 + j0.370          | 0.065 + j0.029              | 2822                                   | 363                            | 386                                     |
| 500        | 20.8               | 9000             | 0.035                | 0.046                | 0.020                       | 0.030                      | 0.410 + j0.326          | 0.046 + j0.028              | 3194                                   | 447                            | 465                                     |
| 750        | 23.9               | 13500            | 0.020                | 0.030                | 0.013                       | 0.030                      | 0.381 + j0.272          | 0.033 + j0.027              | 3761                                   | 566                            | 563                                     |
| 1000       | 26.2               | 18000            | 0.020                | 0.030                | 0.011                       | 0.030                      | 0.359 + j0.236          | 0.026 + j0.026              | 4232                                   | 661                            | 638                                     |

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

\* CEC ampacities are based on:

3/C in air copper and aluminum: D17N

3/C direct buried copper and aluminum: D17E

**Table 3 – Weights and Measurements (Metric)**

| 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          |
| 2          | 7      | 6.81                    | 12.34                    | 2.29             | 13.87                           | 8           | 2.03                   | 44.17            | 1.52                     | 47.22      | 1891           |
| 1          | 19     | 7.57                    | 13.11                    | 2.29             | 14.63                           | 6           | 2.03                   | 45.80            | 1.52                     | 48.84      | 2067           |
| 1/0        | 19     | 8.53                    | 14.07                    | 2.29             | 15.60                           | 6           | 2.03                   | 47.88            | 1.52                     | 50.93      | 2414           |
| 2/0        | 19     | 9.55                    | 15.09                    | 2.29             | 16.61                           | 6           | 2.03                   | 50.09            | 1.52                     | 53.14      | 2661           |
| 3/0        | 19     | 10.72                   | 16.26                    | 2.29             | 17.78                           | 6           | 2.79                   | 54.13            | 1.52                     | 57.18      | 3140           |
| 4/0        | 19     | 12.04                   | 17.58                    | 2.29             | 19.10                           | 6           | 2.79                   | 57.00            | 1.52                     | 60.05      | 3509           |
| 250        | 37     | 13.21                   | 18.95                    | 2.29             | 20.47                           | 4           | 2.79                   | 59.94            | 1.91                     | 63.75      | 4008           |
| 350        | 37     | 15.62                   | 21.36                    | 2.29             | 22.89                           | 4           | 2.79                   | 65.15            | 1.91                     | 68.96      | 4781           |
| 500        | 37     | 18.67                   | 24.41                    | 2.29             | 25.93                           | 3           | 2.79                   | 71.76            | 1.91                     | 75.57      | 5896           |
| 750        | 61     | 23.06                   | 29.06                    | 2.29             | 30.58                           | 2           | 3.18                   | 82.55            | 2.16                     | 86.87      | 7965           |
| 1000       | 61     | 26.92                   | 32.92                    | 2.29             | 34.44                           | 2           | 3.18                   | 90.88            | 2.16                     | 95.20      | 9663           |

All dimensions are nominal and subject to normal manufacturing tolerances





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**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          | 330.20             | 5313             | 0.8760               | 1.10                 | 0.0107                      | 0.1280                     | 0.699 + j0.550          | 0.336 + j0.039              | 1722                                   | 135                            | 157                                     |
| 1          | 342.90             | 6702             | 0.6923               | 0.87                 | 0.0091                      | 0.1247                     | 0.633 + j0.530          | 0.266 + j0.036              | 1815                                   | 154                            | 178                                     |
| 1/0        | 355.60             | 8455             | 0.5512               | 0.69                 | 0.0091                      | 0.1181                     | 0.581 + j0.508          | 0.211 + j0.035              | 1933                                   | 176                            | 202                                     |
| 2/0        | 370.84             | 10658            | 0.4364               | 0.55                 | 0.0091                      | 0.1148                     | 0.540 + j0.485          | 0.167 + j0.034              | 2057                                   | 204                            | 229                                     |
| 3/0        | 401.32             | 13439            | 0.3445               | 0.44                 | 0.0091                      | 0.0984                     | 0.508 + j0.461          | 0.133 + j0.032              | 2199                                   | 234                            | 260                                     |
| 4/0        | 419.10             | 16946            | 0.2756               | 0.34                 | 0.0061                      | 0.0984                     | 0.481 + j0.435          | 0.105 + j0.031              | 2360                                   | 268                            | 294                                     |
| 250        | 447.04             | 20025            | 0.2329               | 0.30                 | 0.0061                      | 0.0984                     | 0.465 + j0.410          | 0.090 + j0.031              | 2528                                   | 296                            | 323                                     |
| 350        | 482.60             | 28035            | 0.1640               | 0.21                 | 0.0061                      | 0.0984                     | 0.436 + j0.370          | 0.065 + j0.029              | 2822                                   | 363                            | 386                                     |
| 500        | 528.32             | 40050            | 0.1148               | 0.15                 | 0.0061                      | 0.0984                     | 0.410 + j0.326          | 0.046 + j0.028              | 3194                                   | 447                            | 465                                     |
| 750        | 607.06             | 60075            | 0.0656               | 0.10                 | 0.0040                      | 0.0984                     | 0.381 + j0.272          | 0.033 + j0.027              | 3761                                   | 566                            | 563                                     |
| 1000       | 665.48             | 80100            | 0.0656               | 0.10                 | 0.0034                      | 0.0984                     | 0.359 + j0.236          | 0.026 + j0.026              | 4232                                   | 661                            | 638                                     |

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

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