



# HVTECK AL 3/C 420TRXLPE TS PVC AIA PVC 35kV 133% CSA

3 Conductor, 420 Mils Tree Retardant Cross Linked Polyethylene, 133% Insulation Level, Tape Shield, Polyvinyl Chloride (PVC) Inner Jacket, Aluminum Interlocked Armour (AIA), Polyvinyl Chloride (PVC) Jacket

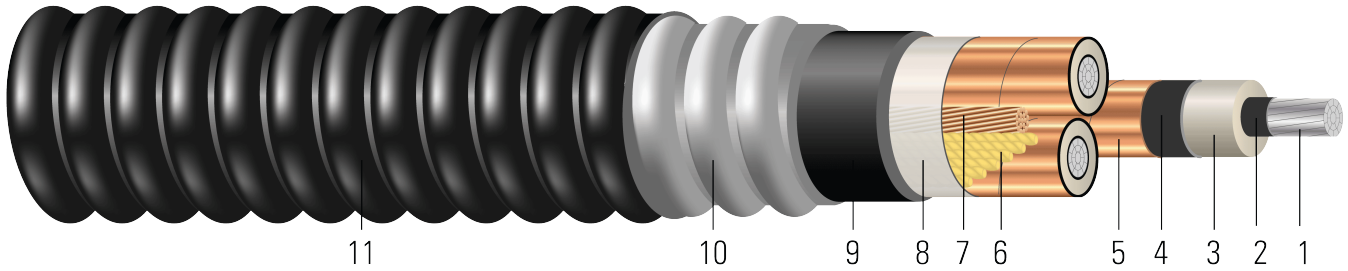


Image not to scale. See Table 1 for dimensions.

## 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:** 420 Mils Tree Retardant Cross Linked Polyethylene 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-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:** 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 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 420 TRXLPE AIA 35kV 133% 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      |
| 1/0           | 19     | 0.336                   | 1.214                    | 420              | 1.274                           | 6           | 125                    | 3.401            | 85                       | 3.571      | 4715           |
| 2/0           | 19     | 0.376                   | 1.254                    | 420              | 1.314                           | 6           | 125                    | 3.487            | 85                       | 3.657      | 4968           |
| 3/0           | 19     | 0.422                   | 1.300                    | 420              | 1.360                           | 6           | 125                    | 3.587            | 85                       | 3.757      | 5274           |
| 4/0           | 19     | 0.474                   | 1.352                    | 420              | 1.412                           | 6           | 125                    | 3.699            | 85                       | 3.869      | 5629           |
| 250           | 37     | 0.520                   | 1.406                    | 420              | 1.466                           | 4           | 125                    | 3.816            | 85                       | 3.986      | 6007           |
| 350           | 37     | 0.615                   | 1.501                    | 420              | 1.561                           | 4           | 125                    | 4.021            | 85                       | 4.191      | 6721           |

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/<br>Kcmil | inch               | lb               | Ω/1000ft             | Ω/1000ft             | MΩ*1000ft                   | Ω/1000ft                   | Ω/1000ft                | Ω/1000ft                    | Amp                                    | Amp                            | Amp                                     |
| 1/0           | 25.0               | 1900             | 0.168                | 0.211                | 0.083                       | 0.053                      | 0.552 + j0.279          | 0.211 + j0.051              | 3978                                   | 181                            | 200                                     |
| 2/0           | 25.6               | 2395             | 0.133                | 0.167                | 0.078                       | 0.051                      | 0.504 + j0.268          | 0.167 + j0.049              | 4102                                   | 208                            | 228                                     |
| 3/0           | 26.3               | 3020             | 0.105                | 0.133                | 0.073                       | 0.049                      | 0.465 + j0.256          | 0.133 + j0.047              | 4244                                   | 239                            | 258                                     |
| 4/0           | 27.1               | 3808             | 0.084                | 0.105                | 0.068                       | 0.047                      | 0.432 + j0.244          | 0.106 + j0.046              | 4405                                   | 273                            | 292                                     |
| 250           | 27.9               | 4500             | 0.071                | 0.090                | 0.064                       | 0.046                      | 0.411 + j0.232          | 0.091 + j0.044              | 4573                                   | 302                            | 321                                     |
| 350           | 29.3               | 6300             | 0.050                | 0.065                | 0.058                       | 0.043                      | 0.377 + j0.213          | 0.066 + j0.042              | 4867                                   | 368                            | 385                                     |

\* 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          |
| 1/0        | 19     | 8.53                    | 30.84                    | 10.67            | 32.36                           | 6           | 3.18                   | 86.39            | 2.16                     | 90.70      | 7017           |
| 2/0        | 19     | 9.55                    | 31.85                    | 10.67            | 33.38                           | 6           | 3.18                   | 88.57            | 2.16                     | 92.89      | 7393           |
| 3/0        | 19     | 10.72                   | 33.02                    | 10.67            | 34.54                           | 6           | 3.18                   | 91.11            | 2.16                     | 95.43      | 7849           |
| 4/0        | 19     | 12.04                   | 34.34                    | 10.67            | 35.86                           | 6           | 3.18                   | 93.95            | 2.16                     | 98.27      | 8377           |
| 250        | 37     | 13.21                   | 35.71                    | 10.67            | 37.24                           | 4           | 3.18                   | 96.93            | 2.16                     | 101.24     | 8939           |
| 350        | 37     | 15.62                   | 38.13                    | 10.67            | 39.65                           | 4           | 3.18                   | 102.13           | 2.16                     | 106.45     | 10002          |

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                                     |
| 1/0        | 635.00             | 8455             | 0.5512               | 0.69                 | 0.0253                      | 0.1739                     | 0.552 + j0.279          | 0.211 + j0.051              | 3978                                   | 181                            | 200                                     |
| 2/0        | 650.24             | 10658            | 0.4364               | 0.55                 | 0.0238                      | 0.1673                     | 0.504 + j0.268          | 0.167 + j0.049              | 4102                                   | 208                            | 228                                     |
| 3/0        | 668.02             | 13439            | 0.3445               | 0.44                 | 0.0223                      | 0.1608                     | 0.465 + j0.256          | 0.133 + j0.047              | 4244                                   | 239                            | 258                                     |
| 4/0        | 688.34             | 16946            | 0.2756               | 0.34                 | 0.0207                      | 0.1542                     | 0.432 + j0.244          | 0.106 + j0.046              | 4405                                   | 273                            | 292                                     |
| 250        | 708.66             | 20025            | 0.2329               | 0.30                 | 0.0195                      | 0.1509                     | 0.411 + j0.232          | 0.091 + j0.044              | 4573                                   | 302                            | 321                                     |
| 350        | 744.22             | 28035            | 0.1640               | 0.21                 | 0.0177                      | 0.1411                     | 0.377 + j0.213          | 0.066 + j0.042              | 4867                                   | 368                            | 385                                     |

\* 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

