# HVTECK AL 1/C 90TRXLPE CB PVC AIA PVC 5kV 100% CSA

Single Conductor, 90 Mils Tree Retardant Cross Linked Polyethylene, 100% Insulation Level, Concentric Bond, Polyvinyl Chloride (PVC) Inner Jacket, Aluminum Interlocked Armour (AIA), Polyvinyl Chloride (PVC) Jacket

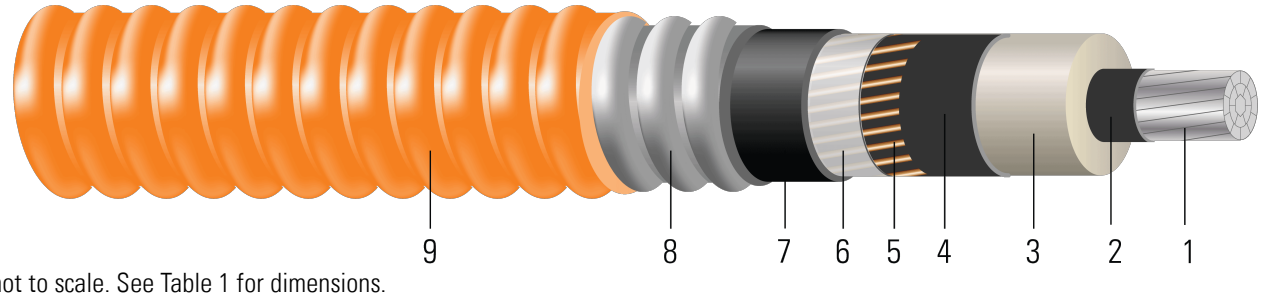



Image not to scale. See Table 1 for dimensions.

## 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:** 90 Mils Tree Retardant Cross Linked Polyethylene 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:** 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)



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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 90 TRXLPE AIA 5kV 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 | Copper Weight | Approx. Weight | Conduit Size* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AWG/ Kcmil | No. | inch | inch | mil | inch | No. x AWG | mil | inch | mil | inch | lb/ 1000ft | lb/ 1000ft | inch |
| 2 | 7 | 0.268 | 0.486 | 90 | 0.546 | 5x12 | 80 | 1.206 | 50 | 1.306 | 126 | 904 | 3.5 |
| 1 | 19 | 0.299 | 0.517 | 90 | 0.577 | 5x12 | 80 | 1.237 | 50 | 1.337 | 129 | 950 | 3.5 |
| 1/0 | 19 | 0.336 | 0.554 | 90 | 0.614 | 5x12 | 80 | 1.274 | 50 | 1.374 | 132 | 1006 | 3.5 |
| 2/0 | 19 | 0.376 | 0.594 | 90 | 0.654 | 7x12 | 80 | 1.314 | 50 | 1.414 | 183 | 1121 | 3.5 |
| 3/0 | 19 | 0.423 | 0.641 | 90 | 0.701 | 7x12 | 80 | 1.361 | 50 | 1.461 | 187 | 1200 | 4 |
| 4/0 | 19 | 0.475 | 0.693 | 90 | 0.753 | 7x12 | 80 | 1.413 | 50 | 1.513 | 191 | 1292 | 4 |
| 250 | 37 | 0.52 | 0.746 | 90 | 0.806 | 9x12 | 80 | 1.566 | 60 | 1.686 | 233 | 1596 | 4.5 |
| 350 | 37 | 0.616 | 0.842 | 90 | 0.902 | 11x12 | 80 | 1.662 | 60 | 1.782 | 279 | 1834 | 4.5 |
| 500 | 37 | 0.736 | 0.962 | 90 | 1.022 | 13x12 | 80 | 1.782 | 60 | 1.902 | 343 | 2163 | 5 |
| 750 | 61 | 0.908 | 1.144 | 90 | 1.204 | 17x12 | 80 | 1.964 | 60 | 2.084 | 425 | 2676 | 5.5 |
| 1000 | 61 | 1.117 | 1.353 | 90 | 1.413 | 17x12 | 110 | 2.233 | 60 | 2.353 | 442 | 3267 | 6 |

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.


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## 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 | 9.1 | 398 | 0.266 | 0.365 | 0.031 | 0.058 | 0.667+j0.191 | 0.369+j0.063 | 2770 | 169 | 176 |
| 1 | 9.4 | 502 | 0.211 | 0.289 | 0.029 | 0.056 | 0.591+j0.188 | 0.292+j0.060 | 2770 | 194 | 198 |
| 1/0 | 9.6 | 633 | 0.167 | 0.229 | 0.027 | 0.054 | 0.530+j0.187 | 0.232+j0.058 | 2770 | 222 | 223 |
| 2/0 | 9.9 | 798 | 0.133 | 0.182 | 0.025 | 0.052 | 0.427+j0.118 | 0.186+j0.055 | 3879 | 255 | 250 |
| 3/0 | 10.2 | 1006 | 0.105 | 0.144 | 0.022 | 0.05 | 0.388+j0.117 | 0.148+j0.054 | 3879 | 290 | 278 |
| 4/0 | 10.6 | 1269 | 0.084 | 0.115 | 0.02 | 0.048 | 0.359+j0.116 | 0.119+j0.052 | 3879 | 329 | 309 |
| 250 | 11.8 | 1500 | 0.07 | 0.096 | 0.019 | 0.049 | 0.298+j0.081 | 0.102+j0.052 | 4987 | 370 | 347 |
| 350 | 12.5 | 2100 | 0.051 | 0.07 | 0.016 | 0.046 | 0.241+j0.060 | 0.076+j0.049 | 6095 | 446 | 402 |
| 500 | 13.3 | 3000 | 0.036 | 0.05 | 0.014 | 0.044 | 0.197+j0.047 | 0.057+j0.046 | 7203 | 533 | 451 |
| 750 | 14.6 | 4500 | 0.023 | 0.033 | 0.012 | 0.041 | 0.148+j0.032 | 0.041+j0.042 | 9420 | 631 | 500 |
| 1000 | 16.5 | 6000 | 0.017 | 0.025 | 0.01 | 0.039 | 0.140+j0.033 | 0.033+j0.042 | 9420 | 707 | 539 |

* 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 | Copper Weight | Approx. Weight | Conduit Size* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AWG/ Kcmil | No. | mm | mm | mm | mm | No. x AWG | mm | mm | mm | mm | kg/km | kg/km | inch |
| 2 | 7 | 6.81 | 12.34 | 2.29 | 13.87 | 5x12 | 2.03 | 30.63 | 1.27 | 33.17 | 188 | 1345 | 3.5 |
| 1 | 19 | 7.59 | 13.13 | 2.29 | 14.66 | 5x12 | 2.03 | 31.42 | 1.27 | 33.96 | 192 | 1414 | 3.5 |
| 1/0 | 19 | 8.53 | 14.07 | 2.29 | 15.60 | 5x12 | 2.03 | 32.36 | 1.27 | 34.90 | 196 | 1497 | 3.5 |
| 2/0 | 19 | 9.55 | 15.09 | 2.29 | 16.61 | 7x12 | 2.03 | 33.38 | 1.27 | 35.92 | 272 | 1668 | 3.5 |
| 3/0 | 19 | 10.74 | 16.28 | 2.29 | 17.81 | 7x12 | 2.03 | 34.57 | 1.27 | 37.11 | 278 | 1786 | 4 |
| 4/0 | 19 | 12.07 | 17.60 | 2.29 | 19.13 | 7x12 | 2.03 | 35.89 | 1.27 | 38.43 | 284 | 1923 | 4 |
| 250 | 37 | 13.21 | 18.95 | 2.29 | 20.47 | 9x12 | 2.03 | 39.78 | 1.52 | 42.82 | 347 | 2375 | 4.5 |
| 350 | 37 | 15.65 | 21.39 | 2.29 | 22.91 | 11x12 | 2.03 | 42.21 | 1.52 | 45.26 | 415 | 2729 | 4.5 |
| 500 | 37 | 18.69 | 24.43 | 2.29 | 25.96 | 13x12 | 2.03 | 45.26 | 1.52 | 48.31 | 510 | 3219 | 5 |
| 750 | 61 | 23.06 | 29.06 | 2.29 | 30.58 | 17x12 | 2.03 | 49.89 | 1.52 | 52.93 | 632 | 3982 | 5.5 |
| 1000 | 61 | 28.37 | 34.37 | 2.29 | 35.89 | 17x12 | 2.79 | 56.72 | 1.52 | 59.77 | 658 | 4862 | 6 |

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.


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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 | 231.14 | 1771 | 0.8727 | 1.20 | 0.0094 | 0.1903 | 0.667+j0.191 | 0.369+j0.063 | 2770 | 169 | 176 |
| 1 | 238.76 | 2234 | 0.6923 | 0.95 | 0.0088 | 0.1837 | 0.591+j0.188 | 0.292+j0.060 | 2770 | 194 | 198 |
| 1/0 | 243.84 | 2817 | 0.5479 | 0.75 | 0.0082 | 0.1772 | 0.530+j0.187 | 0.232+j0.058 | 2770 | 222 | 223 |
| 2/0 | 251.46 | 3551 | 0.4364 | 0.60 | 0.0076 | 0.1706 | 0.427+j0.118 | 0.186+j0.055 | 3879 | 255 | 250 |
| 3/0 | 259.08 | 4477 | 0.3445 | 0.47 | 0.0067 | 0.1640 | 0.388+j0.117 | 0.148+j0.054 | 3879 | 290 | 278 |
| 4/0 | 269.24 | 5647 | 0.2756 | 0.38 | 0.0061 | 0.1575 | 0.359+j0.116 | 0.119+j0.052 | 3879 | 329 | 309 |
| 250 | 299.72 | 6675 | 0.2297 | 0.31 | 0.0058 | 0.1608 | 0.298+j0.081 | 0.102+j0.052 | 4987 | 370 | 347 |
| 350 | 317.50 | 9345 | 0.1673 | 0.23 | 0.0049 | 0.1509 | 0.241+j0.060 | 0.076+j0.049 | 6095 | 446 | 402 |
| 500 | 337.82 | 13350 | 0.1181 | 0.16 | 0.0043 | 0.1444 | 0.197+j0.047 | 0.057+j0.046 | 7203 | 533 | 451 |
| 750 | 370.84 | 20025 | 0.0755 | 0.11 | 0.0037 | 0.1345 | 0.148+j0.032 | 0.041+j0.042 | 9420 | 631 | 500 |
| 1000 | 419.10 | 26700 | 0.0558 | 0.08 | 0.0030 | 0.1280 | 0.140+j0.033 | 0.033+j0.042 | 9420 | 707 | 539 |

* Inductive impedance is based on non-ferrous conduit with one diameter spacing center-to-center.
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3-1/C in air copper and aluminum: D17M
3-1/C direct buried copper and aluminum: D17A


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