# HVTECK AL 1/C 140NLEPR TS PVC AIA PVC 8kV 133% CSA

Single Conductor, 140 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

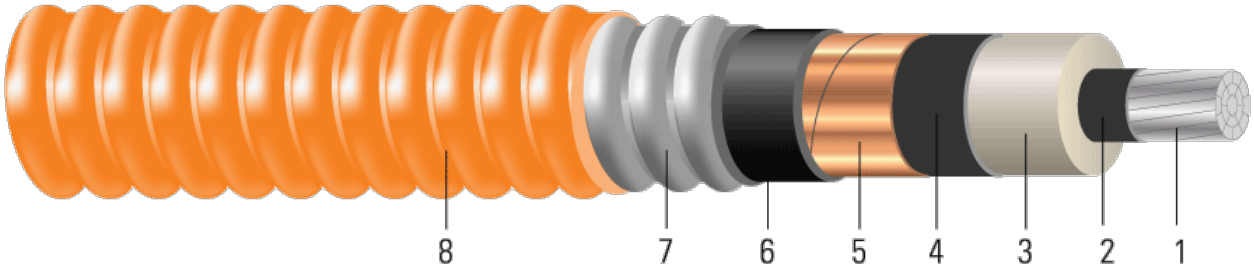


Image not to scale. See Table 1 for dimensions.

## 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:** 140 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. **Inner Jacket:** PVC inner jacket
7. **Armour:** Aluminum Interlocked Armour (AIA)
8. **Overall Jacket:** Orange Polyvinyl Chloride (PVC) Jacket

## APPLICATIONS AND FEATURES:

Southwire's 8kV 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 (1/0 and Larger)


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- 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 140 NLEPR AIA 8kV 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 | Inner Jacket Thickness | Dia. Over Armour | Overall Jacket Thickness | Approx. OD | Copper Weight | Approx. Weight | Conduit Size* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AWG/ Kcmil | No. | inch | inch | mil | inch | mil | inch | mil | inch | lb/1000ft | lb/1000ft | inch |
| 2 | 7 | 0.268 | 0.586 | 140 | 0.646 | 65 | 1.006 | 50 | 1.106 | 53 | 615 | 3 |
| 1 | 19 | 0.299 | 0.617 | 140 | 0.677 | 65 | 1.037 | 50 | 1.137 | 56 | 656 | 3 |
| 1/0 | 19 | 0.336 | 0.654 | 140 | 0.714 | 80 | 1.104 | 50 | 1.204 | 59 | 738 | 3 |
| 2/0 | 19 | 0.376 | 0.694 | 140 | 0.754 | 80 | 1.144 | 50 | 1.244 | 62 | 798 | 3 |
| 3/0 | 19 | 0.423 | 0.741 | 140 | 0.801 | 80 | 1.191 | 50 | 1.291 | 66 | 870 | 3.5 |
| 4/0 | 19 | 0.475 | 0.793 | 140 | 0.853 | 80 | 1.243 | 50 | 1.343 | 70 | 955 | 3.5 |
| 250 | 37 | 0.52 | 0.846 | 140 | 0.906 | 80 | 1.296 | 50 | 1.396 | 75 | 1039 | 3.5 |
| 350 | 37 | 0.616 | 0.942 | 140 | 1.002 | 80 | 1.392 | 50 | 1.492 | 82 | 1215 | 4 |
| 500 | 37 | 0.736 | 1.062 | 140 | 1.122 | 80 | 1.612 | 60 | 1.732 | 92 | 1637 | 4.5 |
| 750 | 61 | 0.908 | 1.244 | 140 | 1.304 | 80 | 1.794 | 60 | 1.914 | 107 | 2055 | 5 |
| 1000 | 61 | 1.117 | 1.453 | 140 | 1.513 | 110 | 2.063 | 60 | 2.183 | 124 | 2606 | 5.5 |

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 | 7.7 | 398 | 0.266 | 0.365 | 0.034 | 0.054 | 0.705+j0.528 | 0.366+j0.059 | 2033 | 169 | 176 |
| 1 | 8 | 502 | 0.211 | 0.289 | 0.032 | 0.052 | 0.633+j0.512 | 0.290+j0.056 | 2129 | 194 | 198 |
| 1/0 | 8.4 | 633 | 0.167 | 0.229 | 0.029 | 0.051 | 0.576+j0.494 | 0.230+j0.055 | 2243 | 222 | 223 |
| 2/0 | 8.7 | 798 | 0.133 | 0.182 | 0.027 | 0.049 | 0.532+j0.475 | 0.183+j0.053 | 2367 | 255 | 250 |
| 3/0 | 9 | 1006 | 0.105 | 0.144 | 0.025 | 0.047 | 0.496+j0.455 | 0.145+j0.051 | 2513 | 290 | 278 |
| 4/0 | 9.4 | 1269 | 0.084 | 0.115 | 0.023 | 0.046 | 0.469+j0.434 | 0.116+j0.049 | 2674 | 329 | 309 |
| 250 | 9.8 | 1500 | 0.07 | 0.096 | 0.021 | 0.044 | 0.451+j0.413 | 0.097+j0.048 | 2838 | 370 | 347 |
| 350 | 10.4 | 2100 | 0.051 | 0.07 | 0.018 | 0.042 | 0.424+j0.379 | 0.071+j0.046 | 3136 | 446 | 402 |
| 500 | 12.1 | 3000 | 0.036 | 0.05 | 0.016 | 0.041 | 0.399+j0.340 | 0.051+j0.045 | 3507 | 533 | 451 |
| 750 | 13.4 | 4500 | 0.023 | 0.033 | 0.013 | 0.039 | 0.372+j0.291 | 0.034+j0.043 | 4071 | 631 | 500 |
| 1000 | 15.3 | 6000 | 0.017 | 0.025 | 0.011 | 0.037 | 0.349+j0.247 | 0.027+j0.042 | 4719 | 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 | Inner Jacket Thickness | Dia. Over Armour | Overall Jacket Thickness | Approx. OD | Copper Weight | Approx. Weight | Conduit Size* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AWG/ Kcmil | No. | mm | mm | mm | mm | mm | mm | mm | mm | kg/km | kg/km | inch |
| 2 | 7 | 6.81 | 14.88 | 3.56 | 16.41 | 1.65 | 25.55 | 1.27 | 28.09 | 79 | 915 | 3 |
| 1 | 19 | 7.59 | 15.67 | 3.56 | 17.20 | 1.65 | 26.34 | 1.27 | 28.88 | 83 | 976 | 3 |
| 1/0 | 19 | 8.53 | 16.61 | 3.56 | 18.14 | 2.03 | 28.04 | 1.27 | 30.58 | 88 | 1098 | 3 |
| 2/0 | 19 | 9.55 | 17.63 | 3.56 | 19.15 | 2.03 | 29.06 | 1.27 | 31.60 | 92 | 1188 | 3 |
| 3/0 | 19 | 10.74 | 18.82 | 3.56 | 20.35 | 2.03 | 30.25 | 1.27 | 32.79 | 98 | 1295 | 3.5 |
| 4/0 | 19 | 12.07 | 20.14 | 3.56 | 21.67 | 2.03 | 31.57 | 1.27 | 34.11 | 104 | 1421 | 3.5 |
| 250 | 37 | 13.21 | 21.49 | 3.56 | 23.01 | 2.03 | 32.92 | 1.27 | 35.46 | 112 | 1546 | 3.5 |
| 350 | 37 | 15.65 | 23.93 | 3.56 | 25.45 | 2.03 | 35.36 | 1.27 | 37.90 | 122 | 1808 | 4 |
| 500 | 37 | 18.69 | 26.97 | 3.56 | 28.50 | 2.03 | 40.94 | 1.52 | 43.99 | 137 | 2436 | 4.5 |
| 750 | 61 | 23.06 | 31.60 | 3.56 | 33.12 | 2.03 | 45.57 | 1.52 | 48.62 | 159 | 3058 | 5 |
| 1000 | 61 | 28.37 | 36.91 | 3.56 | 38.43 | 2.79 | 52.40 | 1.52 | 55.45 | 185 | 3878 | 5.5 |

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 | 195.58 | 1771 | 0.8727 | 1.20 | 0.0104 | 0.1772 | 0.705+j0.528 | 0.366+j0.059 | 2033 | 169 | 176 |
| 1 | 203.20 | 2234 | 0.6923 | 0.95 | 0.0098 | 0.1706 | 0.633+j0.512 | 0.290+j0.056 | 2129 | 194 | 198 |
| 1/0 | 213.36 | 2817 | 0.5479 | 0.75 | 0.0088 | 0.1673 | 0.576+j0.494 | 0.230+j0.055 | 2243 | 222 | 223 |
| 2/0 | 220.98 | 3551 | 0.4364 | 0.60 | 0.0082 | 0.1608 | 0.532+j0.475 | 0.183+j0.053 | 2367 | 255 | 250 |
| 3/0 | 228.60 | 4477 | 0.3445 | 0.47 | 0.0076 | 0.1542 | 0.496+j0.455 | 0.145+j0.051 | 2513 | 290 | 278 |
| 4/0 | 238.76 | 5647 | 0.2756 | 0.38 | 0.0070 | 0.1509 | 0.469+j0.434 | 0.116+j0.049 | 2674 | 329 | 309 |
| 250 | 248.92 | 6675 | 0.2297 | 0.31 | 0.0064 | 0.1444 | 0.451+j0.413 | 0.097+j0.048 | 2838 | 370 | 347 |
| 350 | 264.16 | 9345 | 0.1673 | 0.23 | 0.0055 | 0.1378 | 0.424+j0.379 | 0.071+j0.046 | 3136 | 446 | 402 |
| 500 | 307.34 | 13350 | 0.1181 | 0.16 | 0.0049 | 0.1345 | 0.399+j0.340 | 0.051+j0.045 | 3507 | 533 | 451 |
| 750 | 340.36 | 20025 | 0.0755 | 0.11 | 0.0040 | 0.1280 | 0.372+j0.291 | 0.034+j0.043 | 4071 | 631 | 500 |
| 1000 | 388.62 | 26700 | 0.0558 | 0.08 | 0.0034 | 0.1214 | 0.349+j0.247 | 0.027+j0.042 | 4719 | 707 | 539 |

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