# HVTECK AL 1/C 320NLEPR TS PVC AIA PVC 25kV 133% CSA

Single Conductor, 320 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

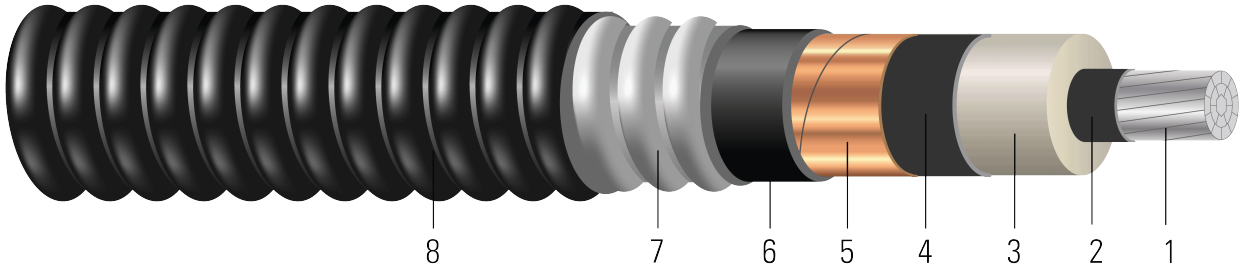



Image not to scale. See Table 1 for dimensions.

## 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:** 320 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:** Black Polyvinyl Chloride (PVC) Jacket

## APPLICATIONS AND FEATURES:

Southwire's 25kV 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 320 NLEPR AIA 25kV 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 | Approx. Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| AWG/ Kcmil | No. | inch | inch | mil | inch | mil | inch | mil | inch | lb/1000ft |
| 1 | 19 | 0.298 | 0.976 | 320 | 1.036 | 80 | 1.548 | 60 | 1.668 | 1072 |
| 1/0 | 19 | 0.336 | 1.014 | 320 | 1.074 | 80 | 1.586 | 60 | 1.706 | 1133 |
| 2/0 | 19 | 0.376 | 1.054 | 320 | 1.114 | 80 | 1.650 | 60 | 1.770 | 1233 |
| 3/0 | 19 | 0.422 | 1.100 | 320 | 1.160 | 80 | 1.696 | 60 | 1.816 | 1317 |
| 4/0 | 19 | 0.474 | 1.152 | 320 | 1.212 | 80 | 1.748 | 60 | 1.868 | 1415 |
| 250 | 37 | 0.520 | 1.206 | 320 | 1.266 | 80 | 1.802 | 60 | 1.922 | 1513 |
| 350 | 37 | 0.615 | 1.301 | 320 | 1.361 | 80 | 1.897 | 60 | 2.017 | 1802 |
| 500 | 37 | 0.735 | 1.421 | 320 | 1.481 | 110 | 2.077 | 60 | 2.197 | 2202 |
| 750 | 61 | 0.908 | 1.604 | 320 | 1.664 | 110 | 2.260 | 75 | 2.410 | 2737 |
| 1000 | 61 | 1.060 | 1.756 | 320 | 1.816 | 110 | 2.412 | 75 | 2.562 | 3160 |

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


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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 |
| 1 | 20.0 | 502 | 0.211 | 0.266 | 0.058 | 0.061 | 0.620 + j0.342 | 0.267 + j0.060 | 3240 | 193 | 194 |
| 1/0 | 20.5 | 633 | 0.168 | 0.211 | 0.054 | 0.059 | 0.562 + j0.329 | 0.212 + j0.058 | 3358 | 221 | 219 |
| 2/0 | 21.2 | 798 | 0.133 | 0.167 | 0.051 | 0.057 | 0.515 + j0.316 | 0.168 + j0.056 | 3482 | 253 | 246 |
| 3/0 | 21.8 | 1006 | 0.105 | 0.133 | 0.047 | 0.055 | 0.477 + j0.301 | 0.134 + j0.054 | 3625 | 288 | 275 |
| 4/0 | 22.4 | 1269 | 0.084 | 0.105 | 0.044 | 0.053 | 0.445 + j0.286 | 0.106 + j0.052 | 3786 | 327 | 305 |
| 250 | 23.1 | 1500 | 0.071 | 0.090 | 0.041 | 0.052 | 0.425 + j0.272 | 0.091 + j0.050 | 3953 | 367 | 343 |
| 350 | 24.2 | 2100 | 0.050 | 0.065 | 0.037 | 0.049 | 0.392 + j0.248 | 0.066 + j0.047 | 4247 | 443 | 399 |
| 500 | 26.4 | 3000 | 0.035 | 0.046 | 0.032 | 0.047 | 0.361 + j0.223 | 0.047 + j0.045 | 4619 | 529 | 451 |
| 750 | 28.9 | 4500 | 0.024 | 0.033 | 0.028 | 0.044 | 0.331 + j0.192 | 0.034 + j0.043 | 5186 | 633 | 505 |
| 1000 | 30.7 | 6000 | 0.018 | 0.026 | 0.024 | 0.042 | 0.310 + j0.170 | 0.027 + j0.041 | 5657 | 711 | 544 |

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

## 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 | Approx. Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| AWG/ Kcmil | No. | mm | mm | mm | mm | mm | mm | mm | mm | kg/km |
| 1 | 19 | 7.57 | 24.79 | 8.13 | 26.31 | 2.03 | 39.32 | 1.52 | 42.37 | 1595 |
| 1/0 | 19 | 8.53 | 25.76 | 8.13 | 27.28 | 2.03 | 40.28 | 1.52 | 43.33 | 1686 |
| 2/0 | 19 | 9.55 | 26.77 | 8.13 | 28.30 | 2.03 | 41.91 | 1.52 | 44.96 | 1835 |
| 3/0 | 19 | 10.72 | 27.94 | 8.13 | 29.46 | 2.03 | 43.08 | 1.52 | 46.13 | 1960 |
| 4/0 | 19 | 12.04 | 29.26 | 8.13 | 30.78 | 2.03 | 44.40 | 1.52 | 47.45 | 2106 |
| 250 | 37 | 13.21 | 30.63 | 8.13 | 32.16 | 2.03 | 45.77 | 1.52 | 48.82 | 2252 |
| 350 | 37 | 15.62 | 33.05 | 8.13 | 34.57 | 2.03 | 48.18 | 1.52 | 51.23 | 2682 |
| 500 | 37 | 18.67 | 36.09 | 8.13 | 37.62 | 2.79 | 52.76 | 1.52 | 55.80 | 3277 |
| 750 | 61 | 23.06 | 40.74 | 8.13 | 42.27 | 2.79 | 57.40 | 1.91 | 61.21 | 4073 |
| 1000 | 61 | 26.92 | 44.60 | 8.13 | 46.13 | 2.79 | 61.26 | 1.91 | 65.07 | 4703 |

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


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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 |
| 1 | 508.00 | 2234 | 0.6923 | 0.87 | 0.0177 | 0.2001 | 0.620 + j0.342 | 0.267 + j0.060 | 3240 | 193 | 194 |
| 1/0 | 520.70 | 2817 | 0.5512 | 0.69 | 0.0165 | 0.1936 | 0.562 + j0.329 | 0.212 + j0.058 | 3358 | 221 | 219 |
| 2/0 | 538.48 | 3551 | 0.4364 | 0.55 | 0.0155 | 0.1870 | 0.515 + j0.316 | 0.168 + j0.056 | 3482 | 253 | 246 |
| 3/0 | 553.72 | 4477 | 0.3445 | 0.44 | 0.0143 | 0.1804 | 0.477 + j0.301 | 0.134 + j0.054 | 3625 | 288 | 275 |
| 4/0 | 568.96 | 5647 | 0.2756 | 0.34 | 0.0134 | 0.1739 | 0.445 + j0.286 | 0.106 + j0.052 | 3786 | 327 | 305 |
| 250 | 586.74 | 6675 | 0.2329 | 0.30 | 0.0125 | 0.1706 | 0.425 + j0.272 | 0.091 + j0.050 | 3953 | 367 | 343 |
| 350 | 614.68 | 9345 | 0.1640 | 0.21 | 0.0113 | 0.1608 | 0.392 + j0.248 | 0.066 + j0.047 | 4247 | 443 | 399 |
| 500 | 670.56 | 13350 | 0.1148 | 0.15 | 0.0098 | 0.1542 | 0.361 + j0.223 | 0.047 + j0.045 | 4619 | 529 | 451 |
| 750 | 734.06 | 20025 | 0.0787 | 0.11 | 0.0085 | 0.1444 | 0.331 + j0.192 | 0.034 + j0.043 | 5186 | 633 | 505 |
| 1000 | 779.78 | 26700 | 0.0591 | 0.09 | 0.0073 | 0.1378 | 0.310 + j0.170 | 0.027 + j0.041 | 5657 | 711 | 544 |

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