



## 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

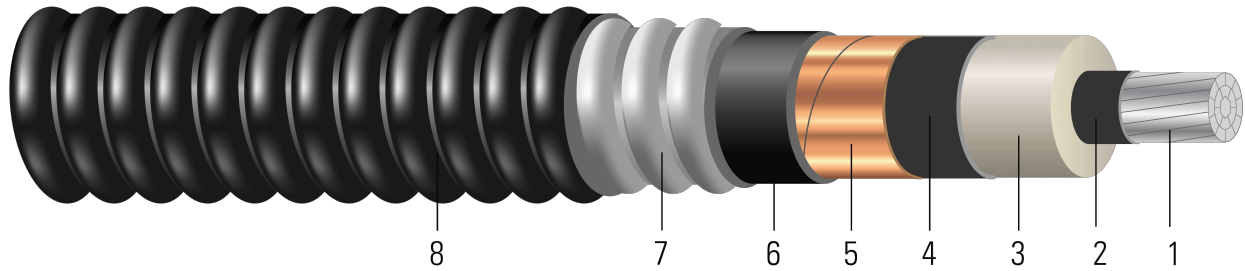


Image not to scale. See Table 1 for dimensions.

### 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)





- 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

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                                     |
| 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 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 | 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

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 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/<br>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 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

