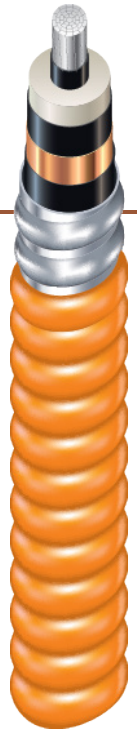

HVTECK SPECIFICATIONS

# HVTECK AL 1/C 90EPR TS PVC AIA PVC 5KV 100% CSA

## PRODUCT HIGHLIGHTS

Southwire's 5KV HVTECK is a CSA armoured cable for industrial and commercial medium voltage applications. Rated FT4, -40°C, Hazardous Locations (HL) and 105°C for use in harsh Canadian environments. For installation in cable trays, duct banks, direct burial, troughs, continuous rigid cable supports and concrete encaseable.

## CONSTRUCTION

### Conductor
- Class B - compact stranded -8000 Series Aluminum -ACM

### Options
- Class B compact stranded copper
- Class B compressed stranded copper
- Strand blocking technology
- Tinning on copper conductors

### Conductor Shield
- Extruded semi-conducting thermosetting polymeric layer

### Insulation
- No-lead EPR (Ethylene Propylene Rubber)
- Thickness: 0.09 inches (2.29mm) - nominal
- Insulation level: 100% - grounded system
- 105°C rated

### Insulation Shield
- Extruded Semi-conducting thermosetting polymeric layer
- CSA 68.10 - Shield Removal/termination requirements are printed on the surface
- Meets requirement of ICEA but built to CSA standards

### Copper Tape Shield
- Helically wrapped 5 mil copper tape with 25% overlap
- Not designed to carry ground fault current
- A separate bonding/grounding conductor may be required

### Inner Jacket
- Black PVC
- Thickness:
  No.2 AWG to No.2/0 AWG = 0.06 inches (1.52mm)
  No.3/0 AWG to 1000 kcmil = 0.08 inches (2.03mm)

### Armour
- Aluminum Interlocked Armour (AIA)
- Optional Galvanized Steel Interlocked Armour (GSIA)

### Overall Jacket
- Orange PVC (optional colours available)
- Nominal Thickness:
  No.2 AWG to 350 kcmil = 0.05 inches (1.27mm)
  500 kcmil to 1000 kcmil = 0.06 inches (1.52mm)

### Typical Print Legend
- (CSA) SOUTHWIRE (NESC) #P# [#AWG or #kcmil] CPT AL 90 EPR AIA 5KV 100% INS LEVEL 25% TS SUN RES 105° FT4 HL (-40°C) LTGG RoHS YEAR [SEQUENTIAL METER MARKS]

## TABLE 1 - WEIGHTS & MEASUREMENTS

| | Conductor Size * | Conductor Diameter | | Diameter Over Insulation | | Diameter Over Insulation Shield | | Diameter Over Inner Jacket | | Diameter Over Armour | | Approx. Overall Diameter | | Minimum Bend Radius | | Approx. Weight of Cable | | Max. Reel Weight (reel and cable) ** | | Max. Reel Diameter / Width ** | | Max. Length of Cable on Reel ** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HVTECK Product Code | AWG or Kcmil | inches | mm | inches | mm | inches | mm | inches | mm | inches | mm | inches | mm | inches | mm | lb / 1000ft | kg/km | lbs | kg | inches | m | feet | m |
| AL90V54-002 | 2(7) | 0.268 | 6.8 | 0.478 | 12.1 | 0.558 | 14.2 | 0.698 | 17.7 | 1.018 | 25.9 | 1.118 | 28.4 | 13.4 | 341 | 524 | 780 | 3895 | 1767 | 78/54 | 1.98/1.37 | 6000 | 1829 |
| AL90V54-001 | 1(19) | 0.299 | 7.6 | 0.509 | 12.9 | 0.589 | 15.0 | 0.729 | 18.5 | 1.049 | 26.6 | 1.149 | 29.2 | 13.8 | 350 | 562 | 837 | 4123 | 1870 | 78/54 | 1.98/1.37 | 6000 | 1829 |
| AL90V54-010 | 1/0(19) | 0.336 | 8.5 | 0.546 | 13.9 | 0.626 | 15.9 | 0.766 | 19.5 | 1.086 | 27.6 | 1.186 | 30.1 | 14.2 | 361 | 609 | 906 | 4402 | 1997 | 78/54 | 1.98/1.37 | 6000 | 1829 |
| AL90V54-020 | 2/0(19) | 0.376 | 9.6 | 0.586 | 14.9 | 0.666 | 16.9 | 0.806 | 20.5 | 1.126 | 28.6 | 1.226 | 31.1 | 14.7 | 374 | 663 | 986 | 4725 | 2143 | 78/54 | 1.98/1.37 | 6000 | 1829 |
| AL90V54-030 | 3/0(19) | 0.423 | 10.7 | 0.633 | 16.1 | 0.713 | 18.1 | 0.893 | 22.7 | 1.213 | 30.8 | 1.313 | 33.4 | 15.8 | 400 | 772 | 1149 | 5382 | 2441 | 78/54 | 1.98/1.37 | 6000 | 1829 |
| AL90V54-040 | 4/0(19) | 0.475 | 12.1 | 0.685 | 17.4 | 0.765 | 19.4 | 0.945 | 24.0 | 1.265 | 32.1 | 1.365 | 34.7 | 16.4 | 416 | 852 | 1268 | 6269 | 2844 | 96/54.5 | 2.44/1.38 | 6000 | 1829 |
| AL90V54-250 | 250(37) | 0.520 | 13.2 | 0.740 | 18.8 | 0.820 | 20.8 | 1.000 | 25.4 | 1.320 | 33.5 | 1.420 | 36.1 | 17.0 | 433 | 932 | 1388 | 6754 | 3063 | 96/54.5 | 2.44/1.38 | 6000 | 1829 |
| AL90V54-350 | 350(37) | 0.616 | 15.6 | 0.836 | 21.2 | 0.916 | 23.3 | 1.096 | 27.8 | 1.416 | 36.0 | 1.516 | 38.5 | 18.2 | 462 | 1136 | 1691 | 7978 | 3619 | 96/54.5 | 2.44/1.38 | 6000 | 1829 |
| AL90V54-500 | 500(37) | 0.736 | 18.7 | 0.956 | 24.3 | 1.036 | 26.3 | 1.216 | 30.9 | 1.536 | 39.0 | 1.656 | 42.1 | 19.9 | 505 | 1401 | 2085 | 9750 | 4423 | 104/56.5 | 2.64/1.44 | 6000 | 1829 |
| AL90V54-750 | 750(61) | 0.908 | 23.1 | 1.138 | 28.9 | 1.218 | 30.9 | 1.398 | 35.5 | 1.718 | 43.6 | 1.838 | 46.7 | 22.1 | 560 | 1789 | 2662 | 12289 | 5574 | 108/70.5 | 2.74/1.79 | 6000 | 1829 |
| AL90V54-1000 | 1000(61) | 1.060 | 26.9 | 1.290 | 32.8 | 1.370 | 34.8 | 1.550 | 39.4 | 1.880 | 47.8 | 2.000 | 50.8 | 24.0 | 610 | 2216 | 3297 | 14074 | 6384 | 108/70.5 | 2.74/1.79 | 5650 | 1722 |

NOTE: These are minimum average dimensions as per CSA Standards.

* Other conductor sizes and outer jacket colours are available upon request. (#s in brackets represent # of strands / conductor)

** Longer maximum lengths may be possible. Standard sizes and lengths may be supplied. Reel sizes are not guaranteed. The factory reserves the right to make changes as necessary to optimize manufacturing requirements.



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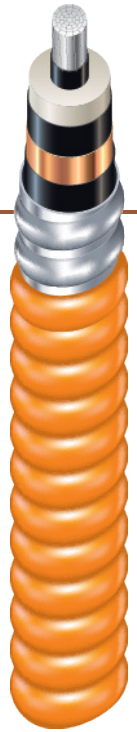


HVTECK SPECIFICATIONS

# HVTECK AL 1/C 90EPR TS PVC AIA PVC 5KV 100% CSA

## DESIGN

### Qualification Standards

- 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 C22.2 No. 174 - Cables in Hazardous Locations
- ICEA S-93-639 (NEMA WC 74) 5 to 46 kV - Shielded Power Cable
- AEIC CS-8 - Qualification Testing Requirements

### Flame Test Ratings

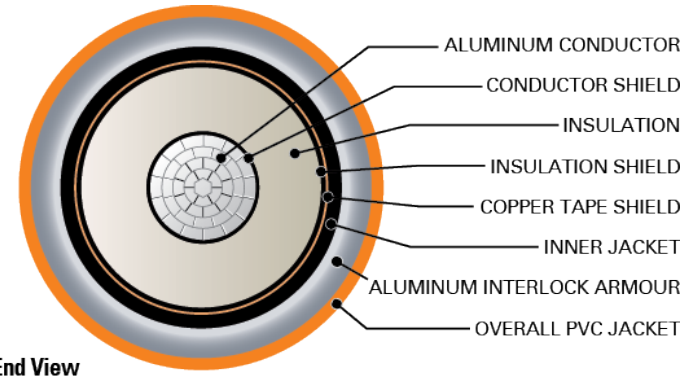
- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 BTU/Hr)

### Product Ratings

- CSA C22.2 No. 2556 & No. 0.3. - Wire and Cable Test Methods
- CSA LTGG [-40°C] - as per C68.10 - for Cold Bend and Impact rating
- CSA HL - for Hazardous Locations rating
- CSA FT4 - for Flame Retardancy rating
- CSA SUN RES - for Sunlight Resistant rating

### Operating Temperatures

- -40°C - CSA Cold Bend and Impact Temperature
- -25°C - Min. Installation Temperature
- 105°C - Max Continuous Operating Temperature
- 140°C for Emergency Overload Temperature
- 250°C for Short Circuit Temperature




**End View**

## TABLE 2 - ENGINEERING SPECIFICATIONS

| HVTECK Product Code | Maximum Pulling Tension | | DC Resistance @ 25°C $R_{DC}$ | | AC Resistance @ 90°C 60 Hz (triplex formation) $R_{AC}$ | | Inductance L | | Capacitance C | | Inductive Reactance @ 60Hz (triplexed) $X_L$ | | Capacitive Reactance @ 60Hz (triplexed) $X_C$ | | Positive - Sequence Impedance* | Zero - Sequence Impedance* | Short Circuit Current (each phase conductor) @ 60Hz | Allowable Ampacities in Ventilated Cable Tray † | Allowable Ampacities Directly Buries in Earth ‡ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb | Newtons | Ω / 1000 ft. | Ω / km | Ω / 1000 ft. | Ω / km | mH / 1000 ft | mH / km | µF / 1000 ft | µF / km | Ω / 1000 ft. | Ω / km | MΩ • 1000ft | MΩ • km | Ω / 1000ft | Ω / 1000ft | kAmps | Amps | Amps |
| AL90V54-002 | 398 | 1771 | 0.265 | 0.869 | 0.333 | 1.093 | 0.0928 | 0.3046 | 0.0849 | 0.2787 | 0.0350 | 0.1148 | 0.0312 | 0.0095 | 0.334 + j0.054 | 0.680 + j0.533 | 2.9 | 169 | 176 |
| AL90V54-001 | 502 | 2234 | 0.211 | 0.692 | 0.265 | 0.870 | 0.0900 | 0.2953 | 0.0924 | 0.3031 | 0.0339 | 0.1113 | 0.0287 | 0.0088 | 0.266 + j0.053 | 0.616 + j0.515 | 3.7 | 194 | 198 |
| AL90V54-010 | 634 | 2818 | 0.168 | 0.551 | 0.211 | 0.693 | 0.0872 | 0.2860 | 0.1012 | 0.3321 | 0.0329 | 0.1078 | 0.0262 | 0.0080 | 0.212 + j0.051 | 0.567 + j0.495 | 4.7 | 222 | 223 |
| AL90V54-020 | 799 | 3552 | 0.133 | 0.436 | 0.167 | 0.549 | 0.0846 | 0.2776 | 0.1108 | 0.3634 | 0.0319 | 0.1047 | 0.0239 | 0.0073 | 0.168 + j0.049 | 0.526 + j0.474 | 5.9 | 255 | 250 |
| AL90V54-030 | 1007 | 4478 | 0.105 | 0.345 | 0.132 | 0.433 | 0.0821 | 0.2695 | 0.1219 | 0.4000 | 0.0310 | 0.1016 | 0.0218 | 0.0066 | 0.133 + j0.048 | 0.493 + j0.450 | 7.4 | 290 | 278 |
| AL90V54-040 | 1270 | 5647 | 0.084 | 0.274 | 0.105 | 0.345 | 0.0799 | 0.2621 | 0.1342 | 0.4404 | 0.0301 | 0.0988 | 0.0198 | 0.0060 | 0.106 + j0.046 | 0.467 + j0.426 | 9.4 | 329 | 309 |
| AL90V54-250 | 1500 | 6672 | 0.071 | 0.232 | 0.089 | 0.292 | 0.0791 | 0.2595 | 0.1393 | 0.4570 | 0.0298 | 0.0978 | 0.0190 | 0.0058 | 0.090 + j0.045 | 0.451 + j0.402 | 11.1 | 370 | 347 |
| AL90V54-350 | 2100 | 9341 | 0.051 | 0.166 | 0.064 | 0.209 | 0.0762 | 0.2500 | 0.1609 | 0.5280 | 0.0287 | 0.0942 | 0.0165 | 0.0050 | 0.065 + j0.042 | 0.424 + j0.364 | 15.5 | 446 | 402 |
| AL90V54-500 | 3000 | 13345 | 0.035 | 0.116 | 0.045 | 0.147 | 0.0735 | 0.2412 | 0.1879 | 0.6166 | 0.0277 | 0.0909 | 0.0141 | 0.0043 | 0.046 + j0.040 | 0.398 + j0.322 | 22.2 | 533 | 451 |
| AL90V54-750 | 4500 | 20017 | 0.024 | 0.077 | 0.030 | 0.099 | 0.0713 | 0.2340 | 0.2177 | 0.7142 | 0.0269 | 0.0882 | 0.0122 | 0.0037 | 0.031 + j0.038 | 0.370 + j0.270 | 33.2 | 631 | 500 |
| AL90V54-1000 | 6000 | 26689 | 0.018 | 0.058 | 0.023 | 0.076 | 0.0695 | 0.2282 | 0.2503 | 0.8211 | 0.0262 | 0.0860 | 0.0106 | 0.0032 | 0.024 + j0.036 | 0.349 + j0.235 | 44.3 | 707 | 539 |

* Calculations are based on three cables triplexed / 5 mil 25 % over lapping copper tape shield / Conductor temperature of 90°C / Shield temperature of 45°C / Earth resistivity of 100 ohms-meter

† Ampacities are based on Table D17M of the 2015 Canadian Electrical Code Part I (40°C Ambient Air Temperature, indoor installation)

‡ Ampacities are based on Table D17A of the 2015 Canadian Electrical Code Part I



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