



HVTECK CU 1/C 90TRXLPE TS PVC AIA PVC 5kV 100% CSA

Single Conductor, 90 Mil's Tree Retardant Cross Linked Polyethylene, 100% 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 compressed stranded bare copper per ASTM B3 and ASTM B8
2. **Conductor Shield:** Semi-conducting cross-linked copolymer
3. **Insulation:** 90 Mil's Tree Retardant Cross Linked Polyethylene 100% 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 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 B3 Soft or Annealed Copper Wire
- ASTM B8 Concentric-Lay-Stranded Copper 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] CU 90 TRXLPE AIA 5kv 100% INS LEVEL 25% TS SUN RES 105°C FT4 HL (-40°C) LTGG RoHS YEAR [SEQUENTIAL METER MARKS]

Table 1 – Weights and Measurements

| Stock Number | 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 |
|--------------|---------------|--------|-------------------------|--------------------------|------------------|---------------------------------|------------------------|------------------|--------------------------|------------|---------------|----------------|
| | AWG/ Kcmil | No. | inch | inch | mil | inch | mil | inch | mil | inch | lb/1000ft | lb/1000ft |
| TBA | 2 | 7 | 0.282 | 0.500 | 90 | 0.560 | 65 | 0.932 | 50 | 1.032 | 215 | 609 |
| TBA | 1 | 19 | 0.322 | 0.540 | 90 | 0.600 | 65 | 0.972 | 50 | 1.072 | 270 | 688 |
| TBA | 1/0 | 19 | 0.361 | 0.579 | 90 | 0.639 | 65 | 1.011 | 50 | 1.111 | 338 | 780 |
| TBA | 2/0 | 19 | 0.405 | 0.623 | 90 | 0.683 | 80 | 1.085 | 50 | 1.185 | 424 | 926 |
| TBA | 3/0 | 19 | 0.456 | 0.674 | 90 | 0.734 | 80 | 1.136 | 50 | 1.236 | 533 | 1067 |
| TBA | 4/0 | 19 | 0.512 | 0.730 | 90 | 0.790 | 80 | 1.192 | 50 | 1.292 | 669 | 1240 |
| TBA | 250 | 37 | 0.558 | 0.784 | 90 | 0.844 | 80 | 1.356 | 50 | 1.456 | 788 | 1407 |
| TBA | 350 | 37 | 0.661 | 0.887 | 90 | 0.947 | 80 | 1.459 | 50 | 1.559 | 1100 | 1786 |
| TBA | 500 | 37 | 0.789 | 1.015 | 90 | 1.075 | 80 | 1.587 | 60 | 1.707 | 1566 | 2368 |
| TBA | 750 | 61 | 0.968 | 1.204 | 90 | 1.264 | 80 | 1.800 | 60 | 1.920 | 2341 | 3317 |
| 599660 | 1000 | 61 | 1.117 | 1.353 | 90 | 1.413 | 80 | 1.937 | 60 | 2.057 | 3199 | 4311 |

All dimensions are nominal and subject to normal manufacturing tolerances
 ◇ Cable marked with this symbol is a standard stock item
 1 Comply with ICEA S-93-639 Appendix C for jacket thickness determination





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 | 12.4 | 530 | 0.162 | 0.204 | 0.034 | 0.051 | 0.553 + j0.534 | 0.205 + j0.052 | 1766 | 215 | 221 |
| 1 | 12.9 | 669 | 0.128 | 0.162 | 0.031 | 0.049 | 0.516 + j0.511 | 0.163 + j0.050 | 1889 | 245 | 247 |
| 1/0 | 13.3 | 844 | 0.102 | 0.128 | 0.028 | 0.047 | 0.486 + j0.489 | 0.129 + j0.048 | 2010 | 278 | 275 |
| 2/0 | 14.2 | 1064 | 0.081 | 0.102 | 0.026 | 0.046 | 0.463 + j0.466 | 0.103 + j0.047 | 2147 | 317 | 306 |
| 3/0 | 14.8 | 1342 | 0.064 | 0.081 | 0.023 | 0.045 | 0.444 + j0.442 | 0.082 + j0.045 | 2305 | 357 | 335 |
| 4/0 | 15.5 | 1692 | 0.051 | 0.065 | 0.021 | 0.043 | 0.429 + j0.416 | 0.066 + j0.043 | 2478 | 404 | 369 |
| 250 | 17.5 | 2000 | 0.043 | 0.056 | 0.020 | 0.044 | 0.418 + j0.393 | 0.057 + j0.044 | 2645 | 456 | 412 |
| 350 | 18.7 | 2800 | 0.031 | 0.041 | 0.017 | 0.041 | 0.400 + j0.353 | 0.042 + j0.041 | 2965 | 537 | 456 |
| 500 | 20.5 | 4000 | 0.022 | 0.030 | 0.015 | 0.039 | 0.381 + j0.311 | 0.031 + j0.040 | 3361 | 616 | 497 |
| 750 | 23.0 | 6000 | 0.014 | 0.023 | 0.012 | 0.037 | 0.358 + j0.259 | 0.024 + j0.037 | 3947 | 706 | 551 |
| 1000 | 24.7 | 8000 | 0.011 | 0.019 | 0.011 | 0.036 | 0.341 + j0.227 | 0.020 + j0.036 | 4408 | 813 | 596 |

* 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)

| Stock Number | 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 |
|--------------|------------|--------|-------------------------|--------------------------|------------------|---------------------------------|------------------------|------------------|--------------------------|------------|---------------|----------------|
| | AWG/Kcmil | No. | mm | mm | mm | mm | mm | mm | mm | mm | kg/km | kg/km |
| TBA | 2 | 7 | 7.16 | 12.70 | 2.29 | 14.22 | 1.65 | 23.67 | 1.27 | 26.21 | 320 | 906 |
| TBA | 1 | 19 | 8.18 | 13.72 | 2.29 | 15.24 | 1.65 | 24.69 | 1.27 | 27.23 | 402 | 1024 |
| TBA | 1/0 | 19 | 9.17 | 14.71 | 2.29 | 16.23 | 1.65 | 25.68 | 1.27 | 28.22 | 503 | 1161 |
| TBA | 2/0 | 19 | 10.29 | 15.82 | 2.29 | 17.35 | 2.03 | 27.56 | 1.27 | 30.10 | 631 | 1378 |
| TBA | 3/0 | 19 | 11.58 | 17.12 | 2.29 | 18.64 | 2.03 | 28.85 | 1.27 | 31.39 | 793 | 1588 |
| TBA | 4/0 | 19 | 13.00 | 18.54 | 2.29 | 20.07 | 2.03 | 30.28 | 1.27 | 32.82 | 996 | 1845 |
| TBA | 250 | 37 | 14.17 | 19.91 | 2.29 | 21.44 | 2.03 | 34.44 | 1.27 | 36.98 | 1173 | 2094 |
| TBA | 350 | 37 | 16.79 | 22.53 | 2.29 | 24.05 | 2.03 | 37.06 | 1.27 | 39.60 | 1637 | 2658 |
| TBA | 500 | 37 | 20.04 | 25.78 | 2.29 | 27.30 | 2.03 | 40.31 | 1.52 | 43.36 | 2330 | 3524 |
| TBA | 750 | 61 | 24.59 | 30.58 | 2.29 | 32.11 | 2.03 | 45.72 | 1.52 | 48.77 | 3484 | 4936 |
| 599660 | 1000 | 61 | 28.37 | 34.37 | 2.29 | 35.89 | 2.03 | 49.20 | 1.52 | 52.25 | 4761 | 6415 |





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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 | 314.96 | 2359 | 0.5315 | 0.67 | 0.0104 | 0.1673 | 0.553 + j0.534 | 0.205 + j0.052 | 1766 | 215 | 221 |
| 1 | 327.66 | 2977 | 0.4199 | 0.53 | 0.0094 | 0.1608 | 0.516 + j0.511 | 0.163 + j0.050 | 1889 | 245 | 247 |
| 1/0 | 337.82 | 3756 | 0.3346 | 0.42 | 0.0085 | 0.1542 | 0.486 + j0.489 | 0.129 + j0.048 | 2010 | 278 | 275 |
| 2/0 | 360.68 | 4735 | 0.2657 | 0.33 | 0.0079 | 0.1509 | 0.463 + j0.466 | 0.103 + j0.047 | 2147 | 317 | 306 |
| 3/0 | 375.92 | 5972 | 0.2100 | 0.27 | 0.0070 | 0.1476 | 0.444 + j0.442 | 0.082 + j0.045 | 2305 | 357 | 335 |
| 4/0 | 393.70 | 7529 | 0.1673 | 0.21 | 0.0064 | 0.1411 | 0.429 + j0.416 | 0.066 + j0.043 | 2478 | 404 | 369 |
| 250 | 444.50 | 8900 | 0.1411 | 0.18 | 0.0061 | 0.1444 | 0.418 + j0.393 | 0.057 + j0.044 | 2645 | 456 | 412 |
| 350 | 474.98 | 12460 | 0.1017 | 0.13 | 0.0052 | 0.1345 | 0.400 + j0.353 | 0.042 + j0.041 | 2965 | 537 | 456 |
| 500 | 520.70 | 17800 | 0.0722 | 0.10 | 0.0046 | 0.1280 | 0.381 + j0.311 | 0.031 + j0.040 | 3361 | 616 | 497 |
| 750 | 584.20 | 26700 | 0.0459 | 0.08 | 0.0037 | 0.1214 | 0.358 + j0.259 | 0.024 + j0.037 | 3947 | 706 | 551 |
| 1000 | 627.38 | 35600 | 0.0361 | 0.06 | 0.0034 | 0.1181 | 0.341 + j0.227 | 0.020 + j0.036 | 4408 | 813 | 596 |

* 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

