# HVTECK CU 1/C 280NLEPR TS PVC AIA PVC 28kV 100% CSA

Single Conductor, 280 Mils No Lead Ethylene Propylene Rubber (NL-EPR), 100% Insulation Level, Tape Shield, Polyvinyl Chloride (PVC) Inner Jacket, Aluminum Interlocked Armour (AIA), Polyvinyl Chloride (PVC) Jacket

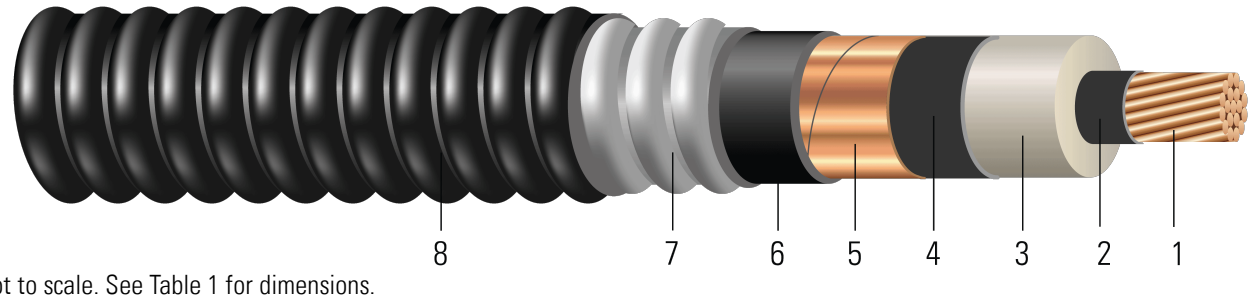



Image not to scale. See Table 1 for dimensions.

## 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:** 280 Mils No Lead Ethylene Propylene Rubber (NL-EPR) 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:** Black Polyvinyl Chloride (PVC) Jacket

## APPLICATIONS AND FEATURES:

Southwire's 28kV 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)



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- 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 280 NLEPR AIA 28kV 100% 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 |
| 1 | 19 | 0.322 | 0.92 | 280 | 0.98 | 80 | 1.37 | 50 | 1.47 | 339 | 1233 | 4 |
| 1/0 | 19 | 0.362 | 0.96 | 280 | 1.02 | 80 | 1.41 | 50 | 1.51 | 410 | 1344 | 4 |
| 2/0 | 19 | 0.405 | 1.003 | 280 | 1.063 | 80 | 1.453 | 50 | 1.553 | 498 | 1475 | 4 |
| 3/0 | 19 | 0.456 | 1.054 | 280 | 1.114 | 80 | 1.604 | 60 | 1.724 | 610 | 1815 | 4.5 |
| 4/0 | 19 | 0.512 | 1.11 | 280 | 1.17 | 80 | 1.66 | 60 | 1.78 | 749 | 2016 | 4.5 |
| 250 | 37 | 0.558 | 1.164 | 280 | 1.224 | 80 | 1.714 | 60 | 1.834 | 873 | 2203 | 5 |
| 350 | 37 | 0.661 | 1.267 | 280 | 1.327 | 80 | 1.817 | 60 | 1.937 | 1190 | 2635 | 5 |
| 500 | 37 | 0.789 | 1.395 | 280 | 1.455 | 80 | 1.945 | 60 | 2.065 | 1664 | 3251 | 5.5 |
| 750 | 61 | 0.968 | 1.584 | 280 | 1.644 | 110 | 2.194 | 60 | 2.314 | 2451 | 4379 | 6 |

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
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 | 10.3 | 669 | 0.128 | 0.175 | 0.049 | 0.057 | 0.530+j0.402 | 0.176+j0.062 | 3067 | 245 | 244 |
| 1/0 | 10.6 | 844 | 0.102 | 0.139 | 0.046 | 0.055 | 0.493+j0.387 | 0.140+j0.060 | 3191 | 278 | 272 |
| 2/0 | 10.9 | 1064 | 0.082 | 0.112 | 0.043 | 0.053 | 0.465+j0.372 | 0.113+j0.058 | 3325 | 316 | 303 |
| 3/0 | 12.1 | 1342 | 0.064 | 0.087 | 0.04 | 0.052 | 0.436+j0.355 | 0.088+j0.058 | 3483 | 356 | 333 |
| 4/0 | 12.5 | 1692 | 0.051 | 0.07 | 0.037 | 0.05 | 0.417+j0.338 | 0.071+j0.056 | 3656 | 403 | 367 |
| 250 | 12.8 | 2000 | 0.043 | 0.059 | 0.034 | 0.049 | 0.403+j0.322 | 0.060+j0.054 | 3823 | 455 | 411 |
| 350 | 13.6 | 2800 | 0.031 | 0.043 | 0.03 | 0.046 | 0.381+j0.295 | 0.044+j0.052 | 4143 | 537 | 459 |
| 500 | 14.5 | 4000 | 0.021 | 0.03 | 0.027 | 0.044 | 0.359+j0.266 | 0.032+j0.049 | 4539 | 616 | 499 |
| 750 | 16.2 | 6000 | 0.014 | 0.021 | 0.023 | 0.042 | 0.335+j0.229 | 0.023+j0.047 | 5125 | 716 | 557 |

* 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


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## 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 |
| 1 | 19 | 8.18 | 23.37 | 7.11 | 24.89 | 2.03 | 34.80 | 1.27 | 37.34 | 504 | 1835 | 4 |
| 1/0 | 19 | 9.19 | 24.38 | 7.11 | 25.91 | 2.03 | 35.81 | 1.27 | 38.35 | 610 | 2000 | 4 |
| 2/0 | 19 | 10.29 | 25.48 | 7.11 | 27.00 | 2.03 | 36.91 | 1.27 | 39.45 | 741 | 2195 | 4 |
| 3/0 | 19 | 11.58 | 26.77 | 7.11 | 28.30 | 2.03 | 40.74 | 1.52 | 43.79 | 908 | 2701 | 4.5 |
| 4/0 | 19 | 13.00 | 28.19 | 7.11 | 29.72 | 2.03 | 42.16 | 1.52 | 45.21 | 1115 | 3000 | 4.5 |
| 250 | 37 | 14.17 | 29.57 | 7.11 | 31.09 | 2.03 | 43.54 | 1.52 | 46.58 | 1299 | 3278 | 5 |
| 350 | 37 | 16.79 | 32.18 | 7.11 | 33.71 | 2.03 | 46.15 | 1.52 | 49.20 | 1771 | 3921 | 5 |
| 500 | 37 | 20.04 | 35.43 | 7.11 | 36.96 | 2.03 | 49.40 | 1.52 | 52.45 | 2476 | 4838 | 5.5 |
| 750 | 61 | 24.59 | 40.23 | 7.11 | 41.76 | 2.79 | 55.73 | 1.52 | 58.78 | 3647 | 6517 | 6 |

All dimensions are nominal and subject to normal manufacturing tolerances
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1 Comply with ICEA S-93-639 Appendix C for jacket thickness determination
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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 | 261.62 | 2977 | 0.4199 | 0.57 | 0.0149 | 0.1870 | 0.530+j0.402 | 0.176+j0.062 | 3067 | 245 | 244 |
| 1/0 | 269.24 | 3756 | 0.3346 | 0.46 | 0.0140 | 0.1804 | 0.493+j0.387 | 0.140+j0.060 | 3191 | 278 | 272 |
| 2/0 | 276.86 | 4735 | 0.2690 | 0.37 | 0.0131 | 0.1739 | 0.465+j0.372 | 0.113+j0.058 | 3325 | 316 | 303 |
| 3/0 | 307.34 | 5972 | 0.2100 | 0.29 | 0.0122 | 0.1706 | 0.436+j0.355 | 0.088+j0.058 | 3483 | 356 | 333 |
| 4/0 | 317.50 | 7529 | 0.1673 | 0.23 | 0.0113 | 0.1640 | 0.417+j0.338 | 0.071+j0.056 | 3656 | 403 | 367 |
| 250 | 325.12 | 8900 | 0.1411 | 0.19 | 0.0104 | 0.1608 | 0.403+j0.322 | 0.060+j0.054 | 3823 | 455 | 411 |
| 350 | 345.44 | 12460 | 0.1017 | 0.14 | 0.0091 | 0.1509 | 0.381+j0.295 | 0.044+j0.052 | 4143 | 537 | 459 |
| 500 | 368.30 | 17800 | 0.0689 | 0.10 | 0.0082 | 0.1444 | 0.359+j0.266 | 0.032+j0.049 | 4539 | 616 | 499 |
| 750 | 411.48 | 26700 | 0.0459 | 0.07 | 0.0070 | 0.1378 | 0.335+j0.229 | 0.023+j0.047 | 5125 | 716 | 557 |

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