

# HVTECK CU 1/C 345NLEPR TS PVC AIA PVC 28kV 133% CSA

Single Conductor, 345 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 compressed stranded bare copper per ASTM B3 and ASTM B8
2. **Conductor Shield:** Semi-conducting cross-linked copolymer
3. **Insulation:** 345 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 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 345 NLEPR AIA 28kV 133% 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/<br>Kcmil | No.    | inch                    | inch                     | mil              | inch                            | mil                    | inch             | mil                      | inch       | lb/1000ft     | lb/1000ft      |
| TBA                 | 1             | 19     | 0.322                   | 1.050                    | 345              | 1.110                           | 80                     | 1.646            | 60                       | 1.766      | 280           | 1376           |
| TBA                 | 1/0           | 19     | 0.361                   | 1.089                    | 345              | 1.149                           | 80                     | 1.685            | 60                       | 1.805      | 348           | 1487           |
| TBA                 | 2/0           | 19     | 0.405                   | 1.133                    | 345              | 1.193                           | 80                     | 1.729            | 60                       | 1.849      | 434           | 1622           |
| TBA                 | 3/0           | 19     | 0.456                   | 1.184                    | 345              | 1.244                           | 80                     | 1.780            | 60                       | 1.900      | 543           | 1788           |
| TBA                 | 4/0           | 19     | 0.512                   | 1.240                    | 345              | 1.300                           | 80                     | 1.836            | 60                       | 1.956      | 679           | 1985           |
| TBA                 | 250           | 37     | 0.558                   | 1.294                    | 345              | 1.354                           | 80                     | 1.890            | 60                       | 2.010      | 798           | 2261           |
| 577263 <sup>^</sup> | 350           | 37     | 0.661                   | 1.377                    | 345              | 1.437                           | 80                     | 2.071            | 60                       | 2.191      | 1195          | 2837           |
| TBA                 | 500           | 37     | 0.789                   | 1.525                    | 345              | 1.585                           | 110                    | 2.181            | 60                       | 2.301      | 1576          | 3434           |
| TBA                 | 750           | 61     | 0.968                   | 1.714                    | 345              | 1.774                           | 110                    | 2.370            | 75                       | 2.520      | 2352          | 4524           |

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

<sup>^</sup>Yellow outer jacket



**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          | 21.2               | 669              | 0.128                | 0.162                | 0.058                       | 0.061                      | 0.510 + j0.322          | 0.163 + j0.061              | 3470                                   | 245                            | 244                                     |
| 1/0        | 21.7               | 844              | 0.102                | 0.128                | 0.054                       | 0.059                      | 0.473 + j0.309          | 0.129 + j0.059              | 3590                                   | 278                            | 272                                     |
| 2/0        | 22.2               | 1064             | 0.081                | 0.102                | 0.051                       | 0.057                      | 0.444 + j0.296          | 0.103 + j0.057              | 3727                                   | 316                            | 303                                     |
| 3/0        | 22.8               | 1342             | 0.064                | 0.081                | 0.047                       | 0.055                      | 0.418 + j0.281          | 0.082 + j0.055              | 3885                                   | 356                            | 333                                     |
| 4/0        | 23.5               | 1692             | 0.051                | 0.065                | 0.044                       | 0.053                      | 0.397 + j0.267          | 0.066 + j0.053              | 4058                                   | 403                            | 367                                     |
| 250        | 24.1               | 2000             | 0.043                | 0.056                | 0.041                       | 0.051                      | 0.383 + j0.254          | 0.057 + j0.051              | 4226                                   | 455                            | 411                                     |
| 350        | 26.3               | 2800             | 0.031                | 0.041                | 0.036                       | 0.049                      | 0.358 + j0.231          | 0.042 + j0.049              | 4545                                   | 537                            | 459                                     |
| 500        | 27.6               | 4000             | 0.022                | 0.030                | 0.032                       | 0.046                      | 0.335 + j0.207          | 0.031 + j0.046              | 4941                                   | 616                            | 499                                     |
| 750        | 30.2               | 6000             | 0.014                | 0.023                | 0.028                       | 0.044                      | 0.311 + j0.178          | 0.024 + j0.044              | 5527                                   | 716                            | 557                                     |

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

**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                 | 1          | 19     | 8.18                    | 26.67                    | 8.76             | 28.19                           | 2.03                   | 41.81            | 1.52                     | 44.86      | 417           | 2048           |
| TBA                 | 1/0        | 19     | 9.17                    | 27.66                    | 8.76             | 29.18                           | 2.03                   | 42.80            | 1.52                     | 45.85      | 518           | 2213           |
| TBA                 | 2/0        | 19     | 10.29                   | 28.78                    | 8.76             | 30.30                           | 2.03                   | 43.92            | 1.52                     | 46.96      | 646           | 2414           |
| TBA                 | 3/0        | 19     | 11.58                   | 30.07                    | 8.76             | 31.60                           | 2.03                   | 45.21            | 1.52                     | 48.26      | 808           | 2661           |
| TBA                 | 4/0        | 19     | 13.00                   | 31.50                    | 8.76             | 33.02                           | 2.03                   | 46.63            | 1.52                     | 49.68      | 1010          | 2954           |
| TBA                 | 250        | 37     | 14.17                   | 32.87                    | 8.76             | 34.39                           | 2.03                   | 48.01            | 1.52                     | 51.05      | 1188          | 3365           |
| 577263 <sup>^</sup> | 350        | 37     | 16.79                   | 34.98                    | 8.76             | 36.50                           | 2.03                   | 52.60            | 1.52                     | 55.65      | 1778          | 4222           |
| TBA                 | 500        | 37     | 20.04                   | 38.73                    | 8.76             | 40.26                           | 2.79                   | 55.40            | 1.52                     | 58.45      | 2345          | 5110           |
| TBA                 | 750        | 61     | 24.59                   | 43.54                    | 8.76             | 45.06                           | 2.79                   | 60.20            | 1.91                     | 64.01      | 3500          | 6732           |

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

<sup>^</sup>Yellow outer jacket



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          | 538.48             | 2977             | 0.4199               | 0.53                 | 0.0177                      | 0.2001                     | 0.510 + j0.322          | 0.163 + j0.061              | 3470                                   | 245                            | 244                                     |
| 1/0        | 551.18             | 3756             | 0.3346               | 0.42                 | 0.0165                      | 0.1936                     | 0.473 + j0.309          | 0.129 + j0.059              | 3590                                   | 278                            | 272                                     |
| 2/0        | 563.88             | 4735             | 0.2657               | 0.33                 | 0.0155                      | 0.1870                     | 0.444 + j0.296          | 0.103 + j0.057              | 3727                                   | 316                            | 303                                     |
| 3/0        | 579.12             | 5972             | 0.2100               | 0.27                 | 0.0143                      | 0.1804                     | 0.418 + j0.281          | 0.082 + j0.055              | 3885                                   | 356                            | 333                                     |
| 4/0        | 596.90             | 7529             | 0.1673               | 0.21                 | 0.0134                      | 0.1739                     | 0.397 + j0.267          | 0.066 + j0.053              | 4058                                   | 403                            | 367                                     |
| 250        | 612.14             | 8900             | 0.1411               | 0.18                 | 0.0125                      | 0.1673                     | 0.383 + j0.254          | 0.057 + j0.051              | 4226                                   | 455                            | 411                                     |
| 350        | 668.02             | 12460            | 0.1017               | 0.13                 | 0.0110                      | 0.1608                     | 0.358 + j0.231          | 0.042 + j0.049              | 4545                                   | 537                            | 459                                     |
| 500        | 701.04             | 17800            | 0.0722               | 0.10                 | 0.0098                      | 0.1509                     | 0.335 + j0.207          | 0.031 + j0.046              | 4941                                   | 616                            | 499                                     |
| 750        | 767.08             | 26700            | 0.0459               | 0.08                 | 0.0085                      | 0.1444                     | 0.311 + j0.178          | 0.024 + j0.044              | 5527                                   | 716                            | 557                                     |

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

