

# HVTECK CU 3/C 115NLEPR TS PVC AIA PVC 5kV 133% CSA

3 Conductor, 115 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

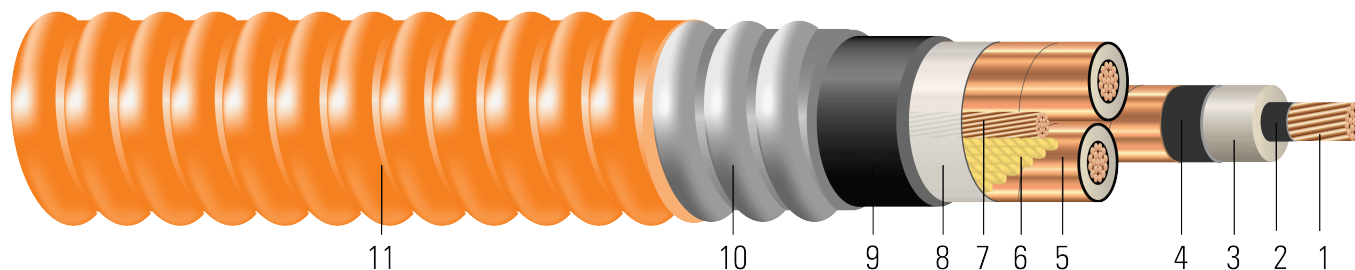


Image not to scale. See Table 1 for dimensions.

## 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:** 115 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. **Filler:** Interstices filled with non-hydroscoping/non-wicking fillers
7. **Grounding Conductor:** Class B compressed stranded bare copper ground per ASTM B3 and ASTM B8
8. **Binder:** Polypropylene tape
9. **Inner Jacket:** PVC inner jacket
10. **Armour:** Aluminum Interlocked Armour (AIA)
11. **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)



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- IEEE 383 Flame Test (70,000 btu)
- IEEE 1202 FT4 Flame Test (70,000) BTU/hr Vertical Tray Test
- 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# 3/C [#AWG or #kcmil] CU 115 NLEPR AIA 5kV 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 | Ground Size | Inner Jacket Thickness | Dia. Over Armour | Overall Jacket Thickness | Approx. OD | Copper Weight | Approx. Weight |
|---------------------|------------|--------|-------------------------|--------------------------|------------------|---------------------------------|-------------|------------------------|------------------|--------------------------|------------|---------------|----------------|
|                     | AWG/Kcmil  | No.    | inch                    | inch                     | mil              | inch                            | AWG         | mil                    | inch             | mil                      | inch       | lb/1000ft     | lb/1000ft      |
| 582464 <sup>^</sup> | 2          | 7      | 0.282                   | 0.551                    | 115              | 0.611                           | 6           | 80                     | 1.797            | 65                       | 1.929      | 856           | 2006           |
| 646923              | 2          | 7      | 0.282                   | 0.545                    | 115              | 0.605                           | 6           | 80                     | 1.860            | 60                       | 1.980      | 866           | 2132           |
| TBA                 | 1          | 19     | 0.322                   | 0.590                    | 115              | 0.650                           | 6           | 80                     | 1.963            | 60                       | 2.083      | 902           | 2282           |
| 644322 <sup>^</sup> | 1/0        | 19     | 0.361                   | 0.630                    | 115              | 0.690                           | 6           | 110                    | 2.104            | 60                       | 2.224      | 1251          | 2814           |
| 582463 <sup>^</sup> | 2/0        | 19     | 0.405                   | 0.673                    | 115              | 0.733                           | 6           | 110                    | 2.080            | 65                       | 2.212      | 1559          | 2981           |
| 599626              | 2/0        | 19     | 0.405                   | 0.674                    | 115              | 0.734                           | 6           | 110                    | 2.199            | 60                       | 2.319      | 1560          | 3230           |
| TBA                 | 3/0        | 19     | 0.456                   | 0.724                    | 115              | 0.784                           | 4           | 110                    | 2.313            | 75                       | 2.463      | 1744          | 3637           |
| TBA                 | 4/0        | 19     | 0.512                   | 0.780                    | 115              | 0.840                           | 4           | 110                    | 2.434            | 75                       | 2.584      | 2156          | 4190           |
| 646655 <sup>^</sup> | 250        | 37     | 0.558                   | 0.834                    | 115              | 0.894                           | 4           | 110                    | 2.510            | 75                       | 2.660      | 2689          | 4776           |
| 646924              | 250        | 37     | 0.558                   | 0.834                    | 115              | 0.894                           | 4           | 110                    | 2.510            | 75                       | 2.660      | 2689          | 4772           |
| 646645 <sup>^</sup> | 350        | 37     | 0.661                   | 0.917                    | 115              | 0.977                           | 3           | 110                    | 2.724            | 75                       | 2.874      | 3680          | 6029           |
| 646640 <sup>^</sup> | 500        | 37     | 0.789                   | 1.042                    | 115              | 1.102                           | 3           | 110                    | 2.994            | 75                       | 3.144      | 5111          | 7790           |
| 675407              | 500        | 37     | 0.789                   | 1.042                    | 115              | 1.102                           | 3           | 110                    | 2.994            | 75                       | 3.144      | 5111          | 7824           |
| 671532              | 750        | 61     | 0.968                   | 1.254                    | 115              | 1.314                           | 2           | 125                    | 3.502            | 85                       | 3.672      | 7539          | 11057          |
| TBA                 | 1000       | 61     | 1.117                   | 1.403                    | 115              | 1.463                           | 1           | 125                    | 3.809            | 85                       | 3.979      | 9693          | 13639          |

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                                     |
| 2          | 13.5               | 1592             | 0.162                | 0.204                | 0.031                       | 0.040                      | 0.574 + j0.516          | 0.204 + j0.041              | 1920                                   | 172                            | 201                                     |
| 2          | 13.9               | 1592             | 0.162                | 0.204                | 0.030                       | 0.040                      | 0.574 + j0.516          | 0.204 + j0.041              | 1920                                   | 172                            | 201                                     |
| 1          | 14.6               | 2008             | 0.128                | 0.162                | 0.030                       | 0.039                      | 0.535 + j0.492          | 0.162 + j0.039              | 2044                                   | 197                            | 228                                     |
| 1/0        | 15.6               | 2534             | 0.102                | 0.128                | 0.026                       | 0.037                      | 0.502 + j0.471          | 0.128 + j0.037              | 2165                                   | 225                            | 257                                     |
| 2/0        | 15.5               | 3194             | 0.081                | 0.102                | 0.024                       | 0.036                      | 0.477 + j0.449          | 0.102 + j0.036              | 2302                                   | 260                            | 292                                     |
| 2/0        | 16.2               | 3194             | 0.081                | 0.102                | 0.024                       | 0.036                      | 0.477 + j0.449          | 0.102 + j0.036              | 2302                                   | 260                            | 292                                     |
| 3/0        | 17.2               | 4027             | 0.064                | 0.081                | 0.020                       | 0.030                      | 0.456 + j0.424          | 0.081 + j0.035              | 2459                                   | 297                            | 330                                     |
| 4/0        | 18.1               | 5078             | 0.051                | 0.065                | 0.020                       | 0.030                      | 0.439 + j0.399          | 0.065 + j0.034              | 2633                                   | 342                            | 372                                     |
| 250        | 18.6               | 6000             | 0.043                | 0.056                | 0.018                       | 0.033                      | 0.428 + j0.376          | 0.056 + j0.033              | 2800                                   | 376                            | 410                                     |
| 250        | 18.6               | 6000             | 0.043                | 0.056                | 0.018                       | 0.033                      | 0.428 + j0.376          | 0.056 + j0.033              | 2800                                   | 376                            | 410                                     |
| 350        | 20.1               | 8400             | 0.031                | 0.041                | 0.015                       | 0.032                      | 0.406 + j0.338          | 0.041 + j0.032              | 3120                                   | 460                            | 487                                     |
| 500        | 22.0               | 12000            | 0.022                | 0.030                | 0.013                       | 0.030                      | 0.385 + j0.297          | 0.030 + j0.030              | 3516                                   | 556                            | 573                                     |
| 500        | 22.0               | 12000            | 0.022                | 0.030                | 0.013                       | 0.030                      | 0.385 + j0.297          | 0.030 + j0.030              | 3516                                   | 556                            | 573                                     |
| 750        | 25.7               | 18000            | 0.014                | 0.023                | 0.012                       | 0.029                      | 0.360 + j0.248          | 0.023 + j0.029              | 4102                                   | 678                            | 668                                     |
| 1000       | 27.9               | 24000            | 0.011                | 0.020                | 0.010                       | 0.030                      | 0.341 + j0.217          | 0.020 + j0.028              | 4563                                   | 798                            | 772                                     |

\* 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 | Ground Size | Inner Jacket Thickness | Dia. Over Armour | Overall Jacket Thickness | Approx. OD | Copper Weight | Approx. Weight |
|--------------|------------|--------|-------------------------|--------------------------|------------------|---------------------------------|-------------|------------------------|------------------|--------------------------|------------|---------------|----------------|
|              | AWG/Kcmil  | No.    | mm                      | mm                       | mm               | mm                              | AWG         | mm                     | mm               | mm                       | mm         | kg/km         | kg/km          |
| 582464^      | 2          | 7      | 7.16                    | 14.00                    | 2.92             | 15.52                           | 6           | 2.03                   | 45.64            | 1.65                     | 49.00      | 1274          | 2985           |
| 646923       | 2          | 7      | 7.16                    | 13.84                    | 2.92             | 15.37                           | 6           | 2.03                   | 47.24            | 1.52                     | 50.29      | 1289          | 3173           |
| TBA          | 1          | 19     | 8.18                    | 14.99                    | 2.92             | 16.51                           | 6           | 2.03                   | 49.86            | 1.52                     | 52.91      | 1342          | 3396           |
| 644322^      | 1/0        | 19     | 9.17                    | 16.00                    | 2.92             | 17.53                           | 6           | 2.79                   | 53.44            | 1.52                     | 56.49      | 1862          | 4188           |
| 582463^      | 2/0        | 19     | 10.29                   | 17.09                    | 2.92             | 18.62                           | 6           | 2.79                   | 52.83            | 1.65                     | 56.18      | 2320          | 4436           |
| 599626       | 2/0        | 19     | 10.29                   | 17.12                    | 2.92             | 18.64                           | 6           | 2.79                   | 55.85            | 1.52                     | 58.90      | 2322          | 4807           |
| TBA          | 3/0        | 19     | 11.58                   | 18.39                    | 2.92             | 19.91                           | 4           | 2.79                   | 58.75            | 1.91                     | 62.56      | 2595          | 5412           |
| TBA          | 4/0        | 19     | 13.00                   | 19.81                    | 2.92             | 21.34                           | 4           | 2.79                   | 61.82            | 1.91                     | 65.63      | 3208          | 6235           |
| 646655^      | 250        | 37     | 14.17                   | 21.18                    | 2.92             | 22.71                           | 4           | 2.79                   | 63.75            | 1.91                     | 67.56      | 4002          | 7107           |
| 646924       | 250        | 37     | 14.17                   | 21.18                    | 2.92             | 22.71                           | 4           | 2.79                   | 63.75            | 1.91                     | 67.56      | 4002          | 7102           |
| 646645^      | 350        | 37     | 16.79                   | 23.29                    | 2.92             | 24.82                           | 3           | 2.79                   | 69.19            | 1.91                     | 73.00      | 5476          | 8972           |
| 646640^      | 500        | 37     | 20.04                   | 26.47                    | 2.92             | 27.99                           | 3           | 2.79                   | 76.05            | 1.91                     | 79.86      | 7606          | 11593          |
| 675407       | 500        | 37     | 20.04                   | 26.47                    | 2.92             | 27.99                           | 3           | 2.79                   | 76.05            | 1.91                     | 79.86      | 7606          | 11643          |
| 671532       | 750        | 61     | 24.59                   | 31.85                    | 2.92             | 33.38                           | 2           | 3.18                   | 88.95            | 2.16                     | 93.27      | 11219         | 16455          |
| TBA          | 1000       | 61     | 28.37                   | 35.64                    | 2.92             | 37.16                           | 1           | 3.18                   | 96.75            | 2.16                     | 101.07     | 14425         | 20297          |

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

^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                                     |
| 2          | 342.90             | 7084             | 0.5315               | 0.67                 | 0.0094                      | 0.1312                     | 0.574 + j0.516          | 0.204 + j0.041              | 1920                                   | 172                            | 201                                     |
| 2          | 353.06             | 7084             | 0.5315               | 0.67                 | 0.0091                      | 0.1312                     | 0.574 + j0.516          | 0.204 + j0.041              | 1920                                   | 172                            | 201                                     |
| 1          | 370.84             | 8936             | 0.4199               | 0.53                 | 0.0091                      | 0.1280                     | 0.535 + j0.492          | 0.162 + j0.039              | 2044                                   | 197                            | 228                                     |
| 1/0        | 396.24             | 11276            | 0.3346               | 0.42                 | 0.0079                      | 0.1214                     | 0.502 + j0.471          | 0.128 + j0.037              | 2165                                   | 225                            | 257                                     |
| 2/0        | 393.70             | 14213            | 0.2657               | 0.33                 | 0.0073                      | 0.1181                     | 0.477 + j0.449          | 0.102 + j0.036              | 2302                                   | 260                            | 292                                     |
| 2/0        | 411.48             | 14213            | 0.2657               | 0.33                 | 0.0073                      | 0.1181                     | 0.477 + j0.449          | 0.102 + j0.036              | 2302                                   | 260                            | 292                                     |
| 3/0        | 436.88             | 17920            | 0.2100               | 0.27                 | 0.0061                      | 0.0984                     | 0.456 + j0.424          | 0.081 + j0.035              | 2459                                   | 297                            | 330                                     |
| 4/0        | 459.74             | 22597            | 0.1673               | 0.21                 | 0.0061                      | 0.0984                     | 0.439 + j0.399          | 0.065 + j0.034              | 2633                                   | 342                            | 372                                     |
| 250        | 472.44             | 26700            | 0.1411               | 0.18                 | 0.0055                      | 0.1083                     | 0.428 + j0.376          | 0.056 + j0.033              | 2800                                   | 376                            | 410                                     |
| 250        | 472.44             | 26700            | 0.1411               | 0.18                 | 0.0055                      | 0.1083                     | 0.428 + j0.376          | 0.056 + j0.033              | 2800                                   | 376                            | 410                                     |
| 350        | 510.54             | 37380            | 0.1017               | 0.13                 | 0.0046                      | 0.1050                     | 0.406 + j0.338          | 0.041 + j0.032              | 3120                                   | 460                            | 487                                     |
| 500        | 558.80             | 53400            | 0.0722               | 0.10                 | 0.0040                      | 0.0984                     | 0.385 + j0.297          | 0.030 + j0.030              | 3516                                   | 556                            | 573                                     |
| 500        | 558.80             | 53400            | 0.0722               | 0.10                 | 0.0040                      | 0.0984                     | 0.385 + j0.297          | 0.030 + j0.030              | 3516                                   | 556                            | 573                                     |
| 750        | 652.78             | 80100            | 0.0459               | 0.08                 | 0.0037                      | 0.0951                     | 0.360 + j0.248          | 0.023 + j0.029              | 4102                                   | 678                            | 668                                     |
| 1000       | 708.66             | 106800           | 0.0361               | 0.07                 | 0.0030                      | 0.0984                     | 0.341 + j0.217          | 0.020 + j0.028              | 4563                                   | 798                            | 772                                     |

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

