



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

Single Conductor, 90 MiIs 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:** 90 MiIs 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:** 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
- ASTM B801 Concentric-Lay-Stranded Conductors of 8000 Series Aluminum Alloy
- ASTM B836 Compact Rounded Stranded Aluminum 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 NLEPR 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**

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
2	7	0.282	0.500	90	0.560	65	0.932	50	1.032	215	609
1	19	0.322	0.540	90	0.600	65	0.972	50	1.072	270	688
1/0	19	0.361	0.579	90	0.639	65	1.011	50	1.111	338	780
2/0	19	0.405	0.623	90	0.683	80	1.085	50	1.185	424	926
3/0	19	0.456	0.674	90	0.734	80	1.136	50	1.236	577	1110
4/0	19	0.512	0.730	90	0.790	80	1.192	50	1.292	717	1286
250	37	0.558	0.784	90	0.844	80	1.356	50	1.456	839	1458
350	37	0.661	0.887	90	0.947	80	1.459	50	1.559	1157	1843
500	37	0.789	1.015	90	1.075	80	1.587	60	1.707	1630	2433
750	61	0.968	1.204	90	1.264	80	1.800	60	1.920	2417	3391
1000	61	1.117	1.353	90	1.413	80	1.949	60	2.069	3201	4376

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	0.026	0.051	0.553 + j0.534	0.205 + j0.052	1766	215	221
1	12.9	669	0.128	0.162	0.023	0.049	0.516 + j0.511	0.163 + j0.050	1889	245	247
1/0	13.3	844	0.102	0.128	0.021	0.047	0.486 + j0.489	0.129 + j0.048	2010	278	275
2/0	14.2	1064	0.081	0.102	0.020	0.046	0.463 + j0.466	0.103 + j0.047	2147	317	306
3/0	8.6	1342	0.064	0.081	0.020	0.045	0.443 + j0.446	0.082 + j0.045	2274	357	335
4/0	9.0	1692	0.051	0.065	0.018	0.043	0.429 + j0.42	0.066 + j0.043	2447	404	369
250	10.1	2000	0.043	0.056	0.017	0.044	0.418 + j0.397	0.057 + j0.044	2614	456	412
350	10.9	2800	0.031	0.041	0.015	0.041	0.4 + j0.357	0.042 + j0.041	2934	537	456
500	11.9	4000	0.022	0.030	0.013	0.039	0.381 + j0.314	0.031 + j0.04	3330	616	497
750	13.4	6000	0.014	0.023	0.011	0.037	0.359 + j0.262	0.024 + j0.037	3916	706	551
1000	14.4	8000	0.011	0.019	0.010	0.036	0.342 + j0.229	0.02 + j0.036	4377	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)**

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
2	7	7.16	12.70	2.29	14.22	1.65	23.67	1.27	26.21	320	906
1	19	8.18	13.72	2.29	15.24	1.65	24.69	1.27	27.23	402	1024
1/0	19	9.17	14.71	2.29	16.23	1.65	25.68	1.27	28.22	503	1161
2/0	19	10.29	15.82	2.29	17.35	2.03	27.56	1.27	30.10	631	1378
3/0	19	11.58	17.12	2.29	18.64	2.03	28.85	1.27	31.39	859	1652
4/0	19	13.00	18.54	2.29	20.07	2.03	30.28	1.27	32.82	1067	1914
250	37	14.17	19.91	2.29	21.44	2.03	34.44	1.27	36.98	1249	2170
350	37	16.79	22.53	2.29	24.05	2.03	37.06	1.27	39.60	1722	2743
500	37	20.04	25.78	2.29	27.30	2.03	40.31	1.52	43.36	2426	3621
750	61	24.59	30.58	2.29	32.11	2.03	45.72	1.52	48.77	3597	5046
1000	61	28.37	34.37	2.29	35.89	2.03	49.50	1.52	52.55	4764	6512

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 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	0.0079	0.1673	0.553 + j0.534	0.205 + j0.052	1766	215	221
1	327.66	2977	0.4199	0.53	0.0070	0.1608	0.516 + j0.511	0.163 + j0.050	1889	245	247
1/0	337.82	3756	0.3346	0.42	0.0064	0.1542	0.486 + j0.489	0.129 + j0.048	2010	278	275
2/0	360.68	4735	0.2657	0.33	0.0061	0.1509	0.463 + j0.466	0.103 + j0.047	2147	317	306
3/0	218.44	5972	0.2100	0.27	0.0061	0.1476	0.443 + j0.446	0.082 + j0.045	2274	357	335
4/0	228.60	7529	0.1673	0.21	0.0055	0.1411	0.429 + j0.42	0.066 + j0.043	2447	404	369
250	256.54	8900	0.1411	0.18	0.0052	0.1444	0.418 + j0.397	0.057 + j0.044	2614	456	412
350	276.86	12460	0.1017	0.13	0.0046	0.1345	0.4 + j0.357	0.042 + j0.041	2934	537	456
500	302.26	17800	0.0722	0.10	0.0040	0.1280	0.381 + j0.314	0.031 + j0.04	3330	616	497
750	340.36	26700	0.0459	0.08	0.0034	0.1214	0.359 + j0.262	0.024 + j0.037	3916	706	551
1000	365.76	35600	0.0361	0.06	0.0030	0.1181	0.342 + j0.229	0.02 + j0.036	4377	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

