



## HVTECK CU 3/C 90TRXLPE TS PVC AIA PVC 5kV 100% CSA

3 Conductor, 90 Mils 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 Mils 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. **Filler:** Non-wicking, non-hygroscopic and flame retardant polypropylene filler
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)





- 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 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	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
TBA	2	7	0.282	0.500	90	0.560	6	80	1.769	60	1.889	735	1796
TBA	1	19	0.322	0.540	90	0.600	6	80	1.855	60	1.975	899	2130
TBA	1/0	19	0.361	0.579	90	0.639	6	80	1.939	60	2.059	1105	2417
TBA	2/0	19	0.405	0.623	90	0.683	6	110	2.094	60	2.214	1365	2893
TBA	3/0	19	0.456	0.674	90	0.734	4	110	2.205	60	2.325	1741	3387
TBA	4/0	19	0.512	0.730	90	0.790	4	110	2.326	75	2.476	2153	4000
TBA	250	37	0.558	0.784	90	0.844	4	110	2.442	75	2.592	2516	4503
590630	350	35	0.661	0.842	90	0.902	3	110	2.562	75	2.712	3702	5732
TBA	500	37	0.789	1.015	90	1.075	3	110	2.941	75	3.091	4901	7463
590631	750	61	0.968	1.144	90	1.204	2	125	3.250	85	3.420	7569	10572
TBA	1000	61	1.117	1.353	90	1.413	1	125	3.701	85	3.871	9690	13351

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	13.2	1592	0.162	0.204	0.030	0.038	0.569 + j0.543	0.204 + j0.039	1766	172	201
1	13.8	2008	0.128	0.162	0.030	0.037	0.531 + j0.518	0.162 + j0.037	1889	197	228
1/0	14.4	2534	0.102	0.128	0.030	0.035	0.500 + j0.495	0.128 + j0.036	2010	225	257
2/0	15.5	3194	0.081	0.102	0.030	0.030	0.476 + j0.471	0.102 + j0.035	2147	260	292
3/0	16.3	4027	0.064	0.081	0.020	0.030	0.456 + j0.445	0.081 + j0.034	2305	297	330
4/0	17.3	5078	0.051	0.065	0.020	0.030	0.440 + j0.419	0.065 + j0.032	2478	342	372
250	18.1	6000	0.043	0.056	0.020	0.030	0.430 + j0.395	0.056 + j0.032	2645	376	410
350	19.0	8400	0.031	0.041	0.014	0.030	0.410 + j0.354	0.041 + j0.031	2965	460	487
500	21.6	12000	0.020	0.030	0.020	0.030	0.389 + j0.310	0.030 + j0.029	3361	556	573
750	23.9	18000	0.014	0.023	0.009	0.028	0.365 + j0.258	0.023 + j0.028	3947	678	668
1000	27.1	24000	0.011	0.020	0.011	0.030	0.346 + j0.225	0.020 + j0.027	4408	798	772

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

\* Calculations are based on 5 mil 25 % over lapping copper tape shield / Conductor temperature of 90°C / Shield temperature of 45°C / Earth resistivity of 100 ohms-meter

\* Ampacities are based on Table D17N of the Canadian Electrical Code Part I (40°C Ambient Air Temperature, indoor installation)

\* Ampacities are based on Table D17E of the Canadian Electrical Code Part I

\* CEC ampacities are based on:

3/C in air copper and aluminum: D17N

3/C direct buried copper and aluminum: D17E





**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
TBA	2	7	7.16	12.70	2.29	14.22	6	2.03	44.93	1.52	47.98	1094	2673
TBA	1	19	8.18	13.72	2.29	15.24	6	2.03	47.12	1.52	50.17	1338	3170
TBA	1/0	19	9.17	14.71	2.29	16.23	6	2.03	49.25	1.52	52.30	1644	3597
TBA	2/0	19	10.29	15.82	2.29	17.35	6	2.79	53.19	1.52	56.24	2031	4305
TBA	3/0	19	11.58	17.12	2.29	18.64	4	2.79	56.01	1.52	59.06	2591	5040
TBA	4/0	19	13.00	18.54	2.29	20.07	4	2.79	59.08	1.91	62.89	3204	5953
TBA	250	37	14.17	19.91	2.29	21.44	4	2.79	62.03	1.91	65.84	3744	6701
590630	350	35	16.79	21.39	2.29	22.91	3	2.79	65.07	1.91	68.88	5509	8530
TBA	500	37	20.04	25.78	2.29	27.30	3	2.79	74.70	1.91	78.51	7293	11106
590631	750	61	24.59	29.06	2.29	30.58	2	3.18	82.55	2.16	86.87	11264	15733
TBA	1000	61	28.37	34.37	2.29	35.89	1	3.18	94.01	2.16	98.32	14420	19868

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





**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	335.28	7084	0.5315	0.67	0.0091	0.1247	0.569 + j0.543	0.204 + j0.039	1766	172	201
1	350.52	8936	0.4199	0.53	0.0091	0.1214	0.531 + j0.518	0.162 + j0.037	1889	197	228
1/0	365.76	11276	0.3346	0.42	0.0091	0.1148	0.500 + j0.495	0.128 + j0.036	2010	225	257
2/0	393.70	14213	0.2657	0.33	0.0091	0.0984	0.476 + j0.471	0.102 + j0.035	2147	260	292
3/0	414.02	17920	0.2100	0.27	0.0061	0.0984	0.456 + j0.445	0.081 + j0.034	2305	297	330
4/0	439.42	22597	0.1673	0.21	0.0061	0.0984	0.440 + j0.419	0.065 + j0.032	2478	342	372
250	459.74	26700	0.1411	0.18	0.0061	0.0984	0.430 + j0.395	0.056 + j0.032	2645	376	410
350	482.60	37380	0.1017	0.13	0.0043	0.0984	0.410 + j0.354	0.041 + j0.031	2965	460	487
500	548.64	53400	0.0656	0.10	0.0061	0.0984	0.389 + j0.310	0.030 + j0.029	3361	556	573
750	607.06	80100	0.0459	0.08	0.0027	0.0919	0.365 + j0.258	0.023 + j0.028	3947	678	668
1000	688.34	106800	0.0361	0.07	0.0034	0.0984	0.346 + j0.225	0.020 + j0.027	4408	798	772

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