



## HVTECK SPECIFICATIONS

# HVTECK CU 3/C 90EPR TS PVC AIA PVC 5KV 100% CSA

### PRODUCT HIGHLIGHTS

Southwire's 5KV HVTECK is a CSA armoured cable for industrial and commercial medium voltage applications. Rated FT4, -40°C, Hazardous Locations (HL) and 105°C for use in harsh Canadian environments. For installation in cable trays, duct banks, direct burial, troughs, continuous rigid cable supports and concrete encaseable.

### CONSTRUCTION

#### Conductor

- Class B compressed stranded copper
- in accordance with ASTM B3 and ASTM B8

#### Options

- Class B compact stranded -8000 Series Aluminum -ACM
- Class B compact stranded copper

#### Conductor Shield

- Extruded semi-conducting thermosetting polymeric layer

#### Insulation

- No-lead EPR (Ethylene Propylene Rubber)
- Thickness: 0.09 inches (2.29mm) - nominal
- Insulation level: 100% - grounded system
- 105°C rated

#### Insulation Shield

- Extruded Semi-conducting thermosetting polymeric layer
- CSA 68.10 - Shield Removal/termination requirements are printed on the surface

- Phase identification as per ICEA Method 3, using printed circuit numbers
- Meets requirement of ICEA but built to CSA standards

#### Copper Tape Shield

- Helically wrapped 5 mil copper tape with 25% overlap

#### Bonding Conductor

- Class B compressed stranded bare copper
- in accordance with ASTM B3 and B8

#### Fillers

- Non-wicking, non-hygroscopic

#### Inner Jacket

- Black PVC
- Thickness:
  - No.2 AWG to No.1/0 AWG = 0.08 inches (2.03mm)
  - No.2/0 AWG to 500 kcmil = 0.11 inches (2.79mm)
  - 750 kcmil to 1000 kcmil = 0.14 inches (3.56mm)

#### Armour

- Aluminum Interlocked Armour (AIA)
- Optional Galvanized Steel Interlocked Armour (GSIA)

#### Overall Jacket

- Orange PVC (optional colours available)
- Nominal Thickness:
  - No.2 AWG to No.3/0 AWG = 0.06 inches (1.52mm)
  - No.4/0 AWG to 500 kcmil = 0.075 inches (1.91mm)
  - 750 kcmil to 1000 kcmil = 0.085 inches (2.16mm)

#### Typical Print Legend

- (CSA) SOUTHWIRE (NESC) #P# 3/C [#AWG or #kcmil] CU 90 EPR AIA 5KV 100% INS LEVEL 25% TS SUN RES 105° FT4 HL (-40°C) LTGG RoHS YEAR [SEQUENTIAL METER MARKS]

**TABLE 1 - WEIGHTS & MEASUREMENTS**

HVTECK Product Code	Conductor Size *	Conductor Diameter		Diameter Over Insulation		Diameter Over Insulation Shield		Bonding Cond. Size	Diameter Over Inner Jacket		Diameter Over Armour		Approx. Overall Diameter		Minimum Bend Radius		Approx. Weight of Cable		Max. Reel Weight (reel and cable)**		Max. Reel Diameter / Width **		Max. Length of Cable on Reel **	
	AWG or Kcmil	inches	mm	inches	mm	inches	mm	AWG	inches	mm	inches	mm	inches	mm	inches	mm	lb / 1000ft	kg/km	lbs	kg	inches	m	feet	m
CU90F44-002	2(7)	0.283	7.2	0.493	12.5	0.573	14.6	6	1.441	36.6	1.761	44.7	1.881	47.8	13.2	334	1875	2791	10718	4862	104/56.5	2.64/1.44	5000	1524
CU90F44-001	1(19)	0.322	8.2	0.532	13.5	0.612	15.5	6	1.525	38.7	1.855	47.1	1.975	50.2	13.8	351	2182	3247	12464	5654	108/70.5	2.74/1.79	5000	1524
CU90F44-010	1/0(19)	0.362	9.2	0.572	14.5	0.652	16.6	6	1.612	40.9	1.942	49.3	2.062	52.4	14.4	367	2466	3670	13886	6298	108/70.5	2.74/1.79	5000	1524
CU90F44-020	2/0(19)	0.405	10.3	0.615	15.6	0.695	17.7	6	1.764	44.8	2.094	53.2	2.214	56.2	15.5	394	2930	4360	14739	6686	108/70.5	2.74/1.79	4500	1372
CU90F44-030	3/0(19)	0.456	11.6	0.666	16.9	0.746	18.9	4	1.875	47.6	2.205	56.0	2.325	59.0	16.3	413	3410	5075	14684	6661	108/70.5	2.74/1.79	3850	1173
CU90F44-040	4/0(19)	0.512	13.0	0.722	18.3	0.802	20.4	4	1.996	50.7	2.326	59.1	2.476	62.9	17.3	440	4007	5962	15779	7157	108/70.5	2.74/1.79	3550	1082
CU90F44-250	250(37)	0.558	14.2	0.778	19.8	0.858	21.8	4	2.116	53.8	2.446	62.1	2.596	66.0	18.2	462	4406	6557	14553	6601	108/70.5	2.74/1.79	2950	899
CU90F44-350	350(37)	0.661	16.8	0.881	22.4	0.961	24.4	3	2.339	59.4	2.669	67.8	2.819	71.6	19.7	501	5788	8614	14868	6744	108/70.5	2.74/1.79	2300	701
CU90F44-500	500(37)	0.789	20.0	1.009	25.6	1.089	27.7	3	2.615	66.4	2.945	74.8	3.095	78.6	21.7	550	7477	11127	16509	7488	108/70.5	2.74/1.79	2000	610
CU90F44-750	750(61)	0.968	24.6	1.198	30.4	1.278	32.5	2	3.084	78.3	3.414	86.7	3.584	91.0	25.1	637	10566	15724	13178	5977	108/70.5	2.74/1.79	1100	335
CU90F44-1000	1000(61)	1.117	28.4	1.347	34.2	1.427	36.2	1	3.406	86.5	3.736	94.9	3.906	99.2	27.3	694	13312	19811	15533	7046	108/70.5	2.74/1.79	1050	320

NOTE: These are minimum average dimensions as per CSA Standards.

\* Other conductor sizes and outer jacket colours are available upon request. (#s in brackets represent # of strands / conductor)

\*\* Longer maximum lengths may be possible. Standard sizes and lengths may be supplied. Reel sizes are not guaranteed. The factory reserves the right to make changes as necessary to optimize manufacturing requirements.



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## HVTECK CU 3/C 90EPR TS PVC AIA PVC 5KV 100% CSA

### DESIGN

#### Qualification Standards

- 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 C22.2 No. 174 - Cables in Hazardous Locations
- ICEA S-93-639 (NEMA WC 74) 5 to 46 KV - Shielded Power Cable
- AEIC CS-8 - Qualification Testing Requirements

#### Flame Test Ratings

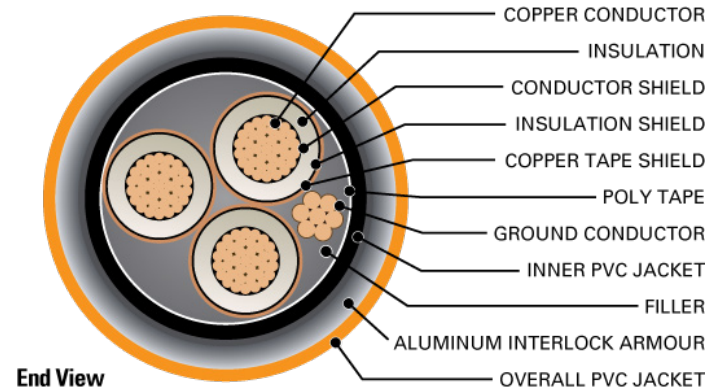
- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 BTU/Hr)

#### Product Ratings

- CSA C22.2 No. 2556 & No. 0.3 - Wire and Cable Test Methods
- CSA LTGG [-40°C] - as per C68.10 - for Cold Bend and Impact rating
- CSA HL - for Hazardous Locations rating
- CSA FT4 - for Flame Retardancy rating
- CSA SUN RES - for Sunlight Resistant rating

#### Operating Temperatures

- -40°C - CSA Cold Bend and Impact Temperature
- -25°C - Min. Installation Temperature
- 105°C - Max Continuous Operating Temperature
- 140°C for Emergency Overload Temperature
- 250°C for Short Circuit Temperature



**TABLE 2 - ENGINEERING SPECIFICATIONS**

HVTECK Product Code	Maximum Pulling Tension		DC Resistance @ 25°C R <sub>DC</sub>		AC Resistance @ 90°C 60 Hz (triplex formation) R <sub>AC</sub>		Inductance L		Capacitance C		Inductive Reactance @ 60Hz (triplexed) X <sub>L</sub>		Capacitive Reactance @ 60Hz (triplexed) X <sub>C</sub>		Positive - Sequence Impedance*	Zero - Sequence Impedance*	Short Circuit Current (each phase conductor) @ 60Hz	Allowable Ampacities in Ventilated Cable Tray †	Allowable Ampacities Directly Buried in Earth ‡
	lb	Newtons	Ω / 1000 ft.	Ω / km	Ω / 1000 ft.	Ω / km	mH / 1000 ft	mH / km	μF / 1000 ft	μF / km	Ω / 1000 ft.	Ω / km	MΩ • 1000ft	MΩ • km	Ω / 1000ft	Ω / 1000ft	kAmps	Amps	Amps
CU90F44-002	1593	7084	0.162	0.532	0.203	0.665	0.0914	0.2999	0.0885	0.2905	0.0345	0.1131	0.0300	0.0091	0.203 + j0.039	0.569 + j0.533	4.5	172	201
CU90F44-001	2009	8935	0.129	0.423	0.161	0.530	0.0882	0.2893	0.0979	0.3212	0.0332	0.1091	0.0271	0.0083	0.162 + j0.037	0.532 + j0.510	5.7	197	228
CU90F44-010	2534	11274	0.102	0.335	0.128	0.419	0.0855	0.2804	0.1074	0.3525	0.0322	0.1057	0.0247	0.0075	0.128 + j0.036	0.501 + j0.487	7.2	225	257
CU90F44-020	3194	14209	0.081	0.266	0.102	0.333	0.0830	0.2724	0.1176	0.3860	0.0313	0.1027	0.0225	0.0069	0.102 + j0.035	0.477 + j0.464	9.0	260	292
CU90F44-030	4027	17914	0.064	0.211	0.081	0.265	0.0807	0.2647	0.1297	0.4257	0.0304	0.0998	0.0204	0.0062	0.081 + j0.034	0.456 + j0.439	11.4	297	330
CU90F44-040	5078	22590	0.051	0.167	0.064	0.211	0.0785	0.2576	0.1430	0.4692	0.0296	0.0971	0.0186	0.0057	0.065 + j0.033	0.440 + j0.412	14.3	342	372
CU90F44-250	6000	26689	0.043	0.141	0.054	0.179	0.0778	0.2554	0.1479	0.4852	0.0293	0.0963	0.0179	0.0055	0.055 + j0.032	0.428 + j0.388	16.9	376	410
CU90F44-350	8400	37365	0.031	0.101	0.039	0.129	0.0751	0.2463	0.1711	0.5613	0.0283	0.0929	0.0155	0.0047	0.040 + j0.031	0.407 + j0.348	23.7	460	487
CU90F44-500	12000	53379	0.022	0.071	0.028	0.093	0.0726	0.2381	0.1998	0.6556	0.0274	0.0898	0.0133	0.0040	0.029 + j0.029	0.386 + j0.305	33.9	556	573
CU90F44-750	18000	80068	0.014	0.047	0.020	0.065	0.0706	0.2315	0.2305	0.7564	0.0266	0.0873	0.0115	0.0035	0.020 + j0.028	0.360 + j0.254	50.8	678	668
CU90F44-1000	24000	106757	0.011	0.035	0.016	0.053	0.0690	0.2263	0.2625	0.8612	0.0260	0.0853	0.0101	0.0031	0.017 + j0.028	0.341 + j0.222	67.8	798	772

\* 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 2015 Canadian Electrical Code Part I (40°C Ambient Air Temperature, indoor installation)

‡ Ampacities are based on Table D17E of the 2015 Canadian Electrical Code Part I