



CSA TRAY RATED

HVTC SPECIFICATIONS

HVTC AL 3/C 90EPR TS PVC 5KV 100% CSA



PRODUCT HIGHLIGHTS

Southwire's 5KV HVTC is a CSA approved copper tape shielded cable for Industrial and Commercial medium voltage applications. FT4, -40°C, and 105°C rated for use in harsh Canadian environments. Rated for installation in cable trays, duct banks, direct burial, troughs, continuous rigid cable supports and concrete encaseable. For use in cable trays, exposed run and hazardous locations as per the limitations in the Canadian Electrical Code Part I, particularly Table 19.

CONSTRUCTION

Conductor

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

Options

- Class B compact stranded copper
- Class B compressed stranded copper
- Strand blocking technology
- Tinning on copper conductors

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

Overall Jacket

- Orange PVC (optional colours available)
- Nominal Thickness:
No.2 AWG to No.2/0 AWG = 0.08 inches (2.03mm)
No.3/0 AWG to 500 kcmil = 0.11 inches (2.79mm)
750 kcmil to 1000 kcmil = 0.14 inches (3.56mm)

Typical Print Legend

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

TABLE 1 - WEIGHTS & MEASUREMENTS

HVTC Product Code	Conductor Size *	Conductor Diameter		Diameter Over Insulation		Diameter Over Insulation Shield		Bonding Cond. Size	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	lb / 1000ft	kg/km	lbs	kg	inches	m	feet	m
AL90X77-002	2(7)	0.268	6.8	0.478	12.1	0.558	14.2	8	1.408	35.8	9.9	250	939	1398	5447	2471	78/54	1.98/1.37	5000	1524
AL90X77-001	1(19)	0.299	7.6	0.509	12.9	0.589	15.0	6	1.475	37.5	10.3	262	1067	1587	6492	2945	96/54.5	2.44/1.38	5000	1524
AL90X77-010	1/0(19)	0.336	8.5	0.546	13.9	0.626	15.9	6	1.555	39.5	10.9	277	1187	1766	7093	3217	96/54.5	2.44/1.38	5000	1524
AL90X77-020	2/0(19)	0.376	9.6	0.586	14.9	0.666	16.9	6	1.642	41.7	11.5	292	1329	1977	7802	3539	96/54.5	2.44/1.38	5000	1524
AL90X77-030	3/0(19)	0.423	10.7	0.633	16.1	0.713	18.1	6	1.803	45.8	12.6	321	1602	2384	9351	4241	104/56.5	2.64/1.44	5000	1524
AL90X77-040	4/0(19)	0.475	12.1	0.685	17.4	0.765	19.4	6	1.916	48.7	13.4	341	1818	2705	10644	4828	108/70.5	2.74/1.79	5000	1524
AL90X77-250	250(37)	0.520	13.2	0.740	18.8	0.820	20.8	4	2.034	51.7	14.2	362	2085	3103	11980	5434	108/70.5	2.74/1.79	5000	1524
AL90X77-350	350(37)	0.616	15.6	0.836	21.2	0.916	23.3	4	2.242	56.9	15.7	399	2546	3789	13011	5902	108/70.5	2.74/1.79	4500	1372
AL90X77-500	500(37)	0.736	18.7	0.956	24.3	1.036	26.3	3	2.501	63.5	17.5	445	3233	4811	11415	5178	108/70.5	2.74/1.79	3050	930
AL90X77-750	750(61)	0.908	23.1	1.138	28.9	1.218	30.9	2	2.954	75.0	20.7	525	4533	6745	11527	5229	108/70.5	2.74/1.79	2200	671
AL90X77-1000	1000(61)	1.060	26.9	1.290	32.8	1.370	34.8	2	3.282	83.4	23.0	584	5577	8299	10478	4753	108/70.5	2.74/1.79	1600	488

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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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. 230 - Tray Cables
- 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 FT4 - for Flame Retardancy rating
- CSA SUN RES - for Sunlight Resistant rating
- CSA TC-ER ***

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

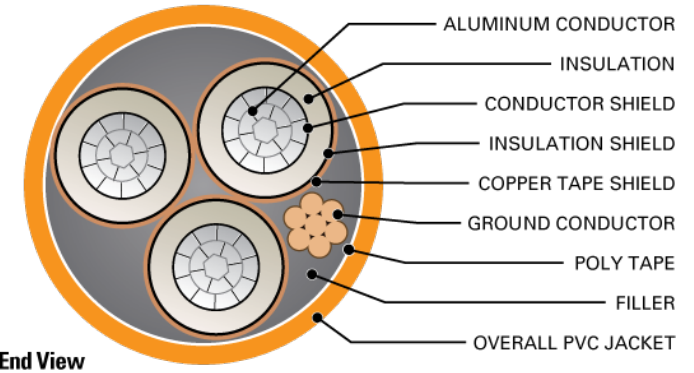


TABLE 2 - ENGINEERING SPECIFICATIONS

HVTC Product Code	Maximum Pulling Tension		DC Resistance @ 25°C R _{DC}		AC Resistance @ 90°C 60 Hz (triplex formation) R _{AC}		Inductance L		Capacitance C		Inductive Reactance @ 60Hz (triplexed) X _L		Capacitive Reactance @ 60Hz (triplexed) X _C		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
AL90X77-002	1194	5313	0.265	0.869	0.333	1.093	0.0928	0.3046	0.0849	0.2787	0.0350	0.1148	0.0312	0.0095	0.333 + j0.039	0.698 + j0.543	2.9	135	157
AL90X77-001	1506	6701	0.211	0.692	0.265	0.870	0.0900	0.2953	0.0924	0.3031	0.0339	0.1113	0.0287	0.0088	0.265 + j0.038	0.634 + j0.524	3.7	154	178
AL90X77-010	1901	8455	0.168	0.551	0.211	0.693	0.0872	0.2860	0.1012	0.3321	0.0329	0.1078	0.0262	0.0080	0.211 + j0.037	0.583 + j0.502	4.7	176	202
AL90X77-020	2396	10657	0.133	0.436	0.167	0.549	0.0846	0.2776	0.1108	0.3634	0.0319	0.1047	0.0239	0.0073	0.168 + j0.035	0.541 + j0.480	5.9	204	229
AL90X77-030	3020	13435	0.105	0.345	0.132	0.433	0.0821	0.2695	0.1219	0.4000	0.0310	0.1016	0.0218	0.0066	0.132 + j0.034	0.508 + j0.455	7.4	234	260
AL90X77-040	3809	16942	0.084	0.274	0.105	0.345	0.0799	0.2621	0.1342	0.4404	0.0301	0.0988	0.0198	0.0060	0.106 + j0.033	0.481 + j0.430	9.4	268	294
AL90X77-250	4500	20017	0.071	0.232	0.089	0.292	0.0791	0.2595	0.1393	0.4570	0.0298	0.0978	0.0190	0.0058	0.089 + j0.033	0.464 + j0.405	11.1	296	323
AL90X77-350	6300	28024	0.051	0.166	0.064	0.210	0.0762	0.2500	0.1609	0.5280	0.0287	0.0942	0.0165	0.0050	0.064 + j0.031	0.435 + j0.365	15.5	363	386
AL90X77-500	9000	40034	0.035	0.116	0.045	0.148	0.0735	0.2412	0.1879	0.6166	0.0277	0.0909	0.0141	0.0043	0.045 + j0.030	0.408 + j0.322	22.2	447	465
AL90X77-750	13500	60051	0.024	0.077	0.031	0.100	0.0713	0.2340	0.2177	0.7142	0.0269	0.0882	0.0122	0.0037	0.031 + j0.029	0.377 + j0.269	33.2	566	563
AL90X77-1000	18000	80068	0.018	0.058	0.024	0.077	0.0695	0.2282	0.2503	0.8211	0.0262	0.0860	0.0106	0.0032	0.024 + j0.028	0.354 + j0.234	44.3	661	638

* 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

*** For use in cable trays, exposed run and hazardous locations as per the limitations in the Canadian Electrical Code Part I, particularly Table 19.

