


**CSA TRAY RATED**
**HVTC SPECIFICATIONS**  
**HVTC AL 3/C 420TRXLPE TS PVC 35KV 133% CSA**
**PRODUCT HIGHLIGHTS**

Southwire's 35KV 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**

- TR-XLPE - (Tree Retardent Cross Linked Polyethylene)
- Thickness: 0.42 inches (10.67mm) - nominal
- Insulation level: 133%
- 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**

- Black PVC (optional colours available)
- Nominal Thickness:  
No. 1/0 AWG to 350 kcmil = 0.14 inches (3.56mm)

**Typical Print Legend**

- (CSA) SOUTHWIRE (NESC) #P# 3/C [#AWG or #kcmil] CPT AL 420 TRXLPE 35KV 133% 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		
AL420Q70-010	1/0(19)	0.336	8.5	1.206	30.6	1.286	32.7	6	3.101	78.8	21.7	551	3434	5110	8595	3898	108/70.5	2.74/1.79	2050	625		
AL420Q70-020	2/0(19)	0.376	9.6	1.246	31.6	1.326	33.7	6	3.187	81.0	22.3	567	3647	5427	7755	3518	108/70.5	2.74/1.79	1700	518		
AL420Q70-030	3/0(19)	0.423	10.7	1.293	32.8	1.373	34.9	6	3.289	83.5	23.0	585	3904	5810	7802	3539	108/70.5	2.74/1.79	1600	488		
AL420Q70-040	4/0(19)	0.475	12.1	1.345	34.2	1.425	36.2	6	3.401	86.4	23.8	605	4207	6260	7865	3567	108/70.5	2.74/1.79	1500	457		
AL420Q70-250	250(37)	0.520	13.2	1.400	35.6	1.480	37.6	4	3.520	89.4	24.6	626	4565	6794	8403	3811	108/70.5	2.74/1.79	1500	457		
AL420Q70-350	350(37)	0.616	15.6	1.496	38.0	1.576	40.0	4	3.727	94.7	26.1	663	5185	7716	7258	3292	108/70.5	2.74/1.79	1100	335		

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**

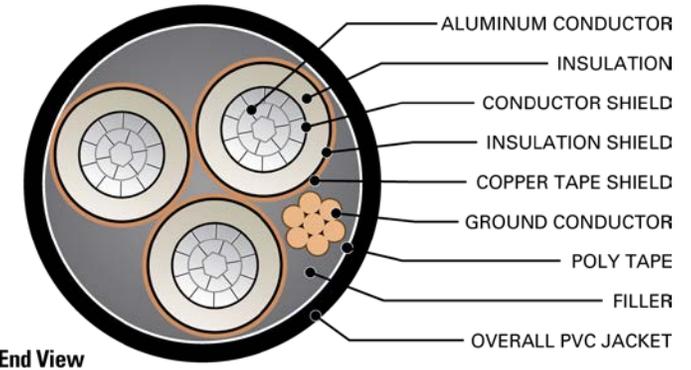
- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 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 <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
AL420Q70-010	1901	8455	0.168	0.551	0.211	0.693	0.1355	0.4445	0.0305	0.1001	0.0511	0.1676	0.0870	0.0265	0.212 + j0.053	0.551 + j0.277	5.0	181	200
AL420Q70-020	2396	10657	0.133	0.436	0.167	0.549	0.1306	0.4286	0.0325	0.1067	0.0492	0.1616	0.0815	0.0249	0.168 + j0.051	0.503 + j0.266	6.3	208	228
AL420Q70-030	3020	13435	0.105	0.345	0.132	0.433	0.1257	0.4124	0.0349	0.1145	0.0474	0.1555	0.0760	0.0232	0.133 + j0.049	0.463 + j0.254	7.9	239	258
AL420Q70-040	3809	16942	0.084	0.274	0.105	0.345	0.1210	0.3971	0.0374	0.1229	0.0456	0.1497	0.0708	0.0216	0.106 + j0.047	0.431 + j0.242	9.9	273	292
AL420Q70-250	4500	20017	0.071	0.232	0.089	0.292	0.1180	0.3870	0.0394	0.1291	0.0445	0.1459	0.0674	0.0205	0.090 + j0.046	0.409 + j0.231	11.8	302	321
AL420Q70-350	6300	28024	0.051	0.166	0.064	0.209	0.1117	0.3664	0.0439	0.1441	0.0421	0.1381	0.0604	0.0184	0.064 + j0.044	0.374 + j0.212	16.5	368	385

\* 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.

