



**CSA TRAY RATED**

**HVTC SPECIFICATIONS**

# HVTC CU 3/C 420EPR 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 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: 0.42 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] CU 420 EPR 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	inches	mm	lb/1000ft	kg/km	lbs	kg	inches	m	feet	m
CU420P51-010	1/0(19)	0.362	9.2	1.232	31.3	1.312	33.3	6	3.157	80.2	22.1	561	4496	6690	9197	4172	108/70.5	2.74/1.79	1700	518		
CU420P51-020	2/0(19)	0.405	10.3	1.275	32.4	1.355	34.4	6	3.250	82.6	22.8	578	4912	7311	9415	4271	108/70.5	2.74/1.79	1600	488		
CU420P51-030	3/0(19)	0.456	11.6	1.326	33.7	1.406	35.7	4	3.360	85.3	23.5	597	5475	8148	10315	4679	108/70.5	2.74/1.79	1600	488		
CU420P51-040	4/0(19)	0.512	13.0	1.382	35.1	1.462	37.1	4	3.481	88.4	24.4	619	6094	9069	10697	4852	108/70.5	2.74/1.79	1500	457		
CU420P51-250	250(37)	0.558	14.2	1.438	36.5	1.518	38.6	4	3.602	91.5	25.2	640	6499	9671	8704	3948	108/70.5	2.74/1.79	1100	335		
CU420P51-350	350(37)	0.661	16.8	1.541	39.1	1.621	41.2	3	3.825	97.1	26.8	680	8043	11969	10000	4536	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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## 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

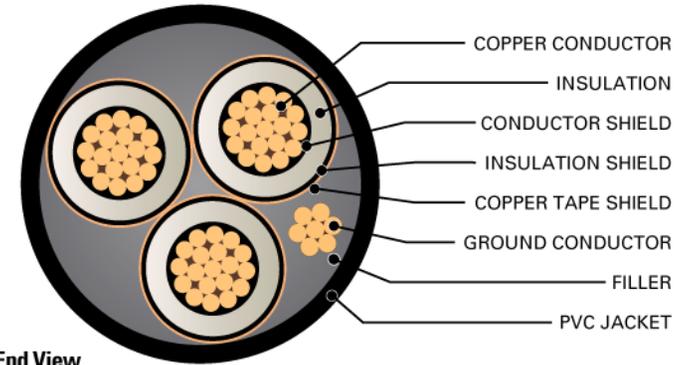
- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000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



End View

**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
CU420P51-010	2534	11274	0.102	0.335	0.128	0.419	0.1322	0.4339	0.0401	0.1317	0.0499	0.1636	0.0661	0.0201	0.128 + j0.052	0.464 + j0.270	7.2	231	256
CU420P51-020	3194	14209	0.081	0.266	0.101	0.333	0.1275	0.4183	0.0429	0.1406	0.0481	0.1577	0.0619	0.0189	0.102 + j0.050	0.434 + j0.259	9.0	265	290
CU420P51-030	4027	17914	0.064	0.211	0.080	0.264	0.1227	0.4024	0.0460	0.1511	0.0462	0.1517	0.0576	0.0176	0.081 + j0.048	0.408 + j0.246	11.4	303	327
CU420P51-040	5078	22590	0.051	0.167	0.064	0.210	0.1181	0.3875	0.0495	0.1624	0.0445	0.1461	0.0536	0.0163	0.065 + j0.046	0.386 + j0.234	14.3	348	369
CU420P51-250	6000	26689	0.043	0.141	0.054	0.178	0.1153	0.3783	0.0519	0.1703	0.0435	0.1426	0.0511	0.0156	0.055 + j0.045	0.370 + j0.223	16.9	384	408
CU420P51-350	8400	37365	0.031	0.101	0.039	0.128	0.1092	0.3582	0.0581	0.1905	0.0412	0.1350	0.0457	0.0139	0.040 + j0.043	0.345 + j0.204	23.7	468	485

\* 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.

