



**CSA TRAY RATED**

## HVTC SPECIFICATIONS

# HVTC CU 3/C 220EPR TS PVC 15KV 133% CSA



### PRODUCT HIGHLIGHTS

Southwire's 15KV 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: 0.22 inches (5.59mm) - 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

- Red PVC (optional colours available)
- Nominal Thickness:  
No.2 AWG to 250 kcmil = 0.11 inches (2.79mm)  
350 kcmil to 750 kcmil = 0.14 inches (3.56mm)

#### Typical Print Legend

- (CSA) SOUTHWIRE (NESC) #P# 3/C [#AWG or #kcmil] CU 220 EPR 15KV 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	inches	mm	inches	mm	inches	mm	lb / 1000ft	kg/km	lbs	kg	inches	m	feet	m
CU220F70-002	2(7)	0.283	7.2	0.753	19.1	0.833	21.2	6	2.062	52.4	14.4	367	2209	3287	12598	5714	108/70.5	2.74/1.79	5000	1524	
CU220F70-001	1(19)	0.322	8.2	0.792	20.1	0.872	22.1	6	2.147	54.5	15.0	382	2464	3667	13014	5903	108/70.5	2.74/1.79	4650	1417	
CU220F70-010	1/0(19)	0.362	9.2	0.832	21.1	0.912	23.2	6	2.233	56.7	15.6	397	2765	4115	13998	6349	108/70.5	2.74/1.79	4500	1372	
CU220F70-020	2/0(19)	0.405	10.3	0.875	22.2	0.955	24.3	6	2.326	59.1	16.3	414	3127	4654	13596	6167	108/70.5	2.74/1.79	3850	1173	
CU220F70-030	3/0(19)	0.456	11.6	0.926	23.5	1.006	25.6	4	2.436	61.9	17.1	433	3625	5395	14424	6543	108/70.5	2.74/1.79	3550	1082	
CU220F70-040	4/0(19)	0.512	13.0	0.982	24.9	1.062	27.0	4	2.557	65.0	17.9	455	4173	6211	13866	6290	108/70.5	2.74/1.79	2950	899	
CU220F70-250	250(37)	0.558	14.2	1.038	26.4	1.118	28.4	4	2.678	68.0	18.7	476	4507	6707	14173	6429	108/70.5	2.74/1.79	2800	853	
CU220F70-350	350(37)	0.661	16.8	1.141	29.0	1.221	31.0	3	2.961	75.2	20.7	526	6084	9054	14940	6777	108/70.5	2.74/1.79	2200	671	
CU220F70-500	500(37)	0.789	20.0	1.269	32.2	1.349	34.3	3	3.237	82.2	22.7	576	7836	11661	14092	6392	108/70.5	2.74/1.79	1600	488	
CU220F70-750	750(61)	0.968	24.6	1.458	37.0	1.538	39.1	2	3.645	92.6	25.5	648	10769	16025	13401	6078	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

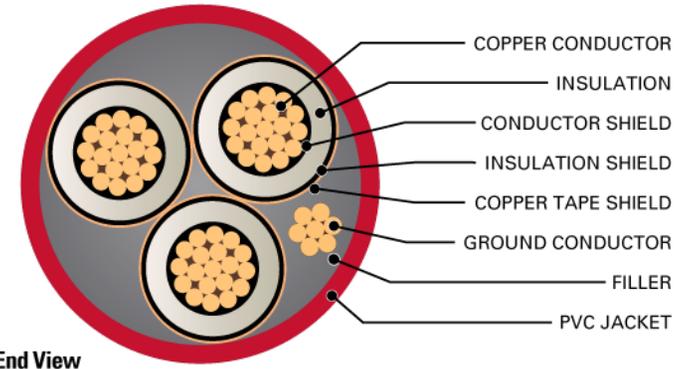
- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 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					
CU220F70-002	1593	7084	0.162	0.532	0.203	0.665	0.1172	0.3847	0.0502	0.1648	0.0442	0.1450	0.0528	0.0161	0.203 + j0.047	0.577 + j0.414	4.5	172	201
CU220F70-001	2009	8935	0.129	0.423	0.161	0.530	0.1124	0.3689	0.0546	0.1792	0.0424	0.1391	0.0486	0.0148	0.162 + j0.045	0.534 + j0.396	5.7	197	228
CU220F70-010	2534	11274	0.102	0.335	0.128	0.419	0.1083	0.3554	0.0591	0.1938	0.0408	0.1340	0.0449	0.0137	0.128 + j0.043	0.499 + j0.379	7.2	225	257
CU220F70-020	3194	14209	0.081	0.266	0.101	0.333	0.1045	0.3430	0.0638	0.2093	0.0394	0.1293	0.0416	0.0127	0.102 + j0.042	0.470 + j0.361	9.0	260	292
CU220F70-030	4027	17914	0.064	0.211	0.081	0.264	0.1008	0.3306	0.0694	0.2276	0.0380	0.1246	0.0382	0.0117	0.081 + j0.040	0.445 + j0.342	11.4	297	330
CU220F70-040	5078	22590	0.051	0.167	0.064	0.210	0.0973	0.3192	0.0755	0.2476	0.0367	0.1203	0.0352	0.0107	0.065 + j0.039	0.424 + j0.323	14.3	342	372
CU220F70-250	6000	26689	0.043	0.141	0.054	0.178	0.0954	0.3130	0.0792	0.2598	0.0360	0.1180	0.0335	0.0102	0.055 + j0.038	0.410 + j0.305	16.9	376	410
CU220F70-350	8400	37365	0.031	0.101	0.039	0.128	0.0909	0.2981	0.0900	0.2954	0.0343	0.1124	0.0295	0.0090	0.040 + j0.036	0.385 + j0.276	23.7	460	487
CU220F70-500	12000	53379	0.022	0.071	0.028	0.092	0.0865	0.2839	0.1034	0.3393	0.0326	0.1070	0.0256	0.0078	0.028 + j0.034	0.361 + j0.244	33.9	556	573
CU220F70-750	18000	80068	0.014	0.047	0.020	0.064	0.0825	0.2708	0.1200	0.3937	0.0311	0.1021	0.0221	0.0067	0.020 + j0.033	0.333 + j0.207	50.8	678	668

\* 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.

