



CSA TRAY RATED

HVTC SPECIFICATIONS

HVTC CU 1/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
- Meets requirement of ICEA but built to CSA standards

Copper Tape Shield

- Helically wrapped 5 mil copper tape with 25% overlap
- Not designed to carry ground fault current
- A separate bonding/grounding conductor may be required

Overall Jacket

- Red PVC (optional colours available)
- Nominal Thickness:
No.2 AWG to 500 kcmil = 0.08 inches (2.03mm)
750 kcmil to 1000 kcmil = 0.11 inches (2.79mm)

Typical Print Legend

- (CSA) SOUTHWIRE (NESC) #P# [#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		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	lb / 1000ft	kg/km	lbs	kg	inches	m	feet	m
CU220R77-002	2(7)	0.283	7.2	0.753	19.1	0.833	21.2	1.013	25.7	12.2	309	646	962	4079	1850	72/42	1.83/1.07	6000	1829
CU220R77-001	1(19)	0.322	8.2	0.792	20.1	0.872	22.1	1.052	26.7	12.6	321	725	1080	5103	2314	78/54	1.98/1.37	6000	1829
CU220R77-010	1/0(19)	0.362	9.2	0.832	21.1	0.912	23.2	1.092	27.7	13.1	333	819	1219	5663	2569	78/54	1.98/1.37	6000	1829
CU220R77-020	2/0(19)	0.405	10.3	0.875	22.2	0.955	24.3	1.135	28.8	13.6	346	932	1387	6342	2877	78/54	1.98/1.37	6000	1829
CU220R77-030	3/0(19)	0.456	11.6	0.926	23.5	1.006	25.6	1.186	30.1	14.2	361	1072	1596	7185	3259	78/54	1.98/1.37	6000	1829
CU220R77-040	4/0(19)	0.512	13.0	0.982	24.9	1.062	27.0	1.242	31.5	14.9	379	1244	1852	8215	3726	78/54	1.98/1.37	6000	1829
CU220R77-250	250(37)	0.558	14.2	1.038	26.4	1.118	28.4	1.298	33.0	15.6	396	1344	2000	8812	3997	78/54	1.98/1.37	6000	1829
CU220R77-350	350(37)	0.661	16.8	1.141	29.0	1.221	31.0	1.401	35.6	16.8	427	1781	2650	11843	5372	96/54.5	2.44/1.38	6000	1829
CU220R77-500	500(37)	0.789	20.0	1.269	32.2	1.349	34.3	1.529	38.8	18.3	466	2328	3465	15311	6945	104/56.5	2.64/1.44	6000	1829
CU220R77-750	750(61)	0.968	24.6	1.458	37.0	1.538	39.1	1.778	45.2	21.3	542	3330	4956	16542	7503	108/70.5	2.74/1.79	4500	1372
CU220R77-1000	1000(61)	1.117	28.4	1.607	40.8	1.687	42.8	1.927	48.9	23.1	587	4210	6265	16501	7485	108/70.5	2.74/1.79	3550	1082

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

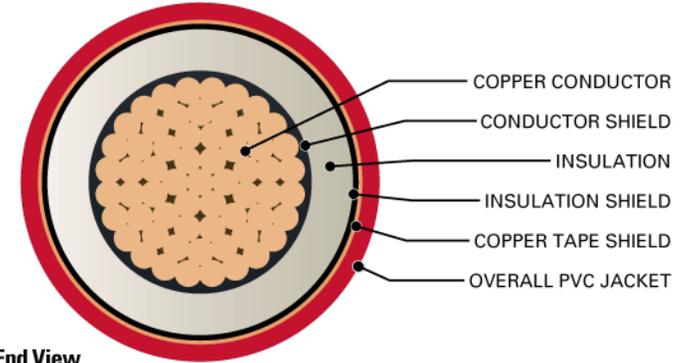
- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 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 (marked TC for No. 1/0 AWG and larger)***

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 _{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
CU220R77-002	531	2361	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 + j0.051	0.573 + j0.413	4.5	215	221
CU220R77-001	670	2978	0.129	0.423	0.161	0.529	0.1124	0.3689	0.0546	0.1792	0.0424	0.1391	0.0486	0.0148	0.162 + j0.049	0.531 + j0.395	5.7	245	247
CU220R77-010	845	3758	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 + j0.047	0.495 + j0.378	7.2	278	275
CU220R77-020	1065	4736	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 + j0.045	0.467 + j0.361	9.0	317	306
CU220R77-030	1342	5971	0.064	0.211	0.080	0.264	0.1008	0.3306	0.0694	0.2276	0.0380	0.1246	0.0382	0.0117	0.081 + j0.044	0.442 + j0.342	11.4	357	335
CU220R77-040	1693	7530	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 + j0.042	0.422 + j0.323	14.3	404	369
CU220R77-250	2000	8896	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 + j0.041	0.407 + j0.306	16.9	456	412
CU220R77-350	2800	12455	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 + j0.039	0.383 + j0.276	23.7	537	456
CU220R77-500	4000	17793	0.022	0.071	0.028	0.091	0.0865	0.2839	0.1034	0.3393	0.0326	0.1070	0.0256	0.0078	0.029 + j0.037	0.359 + j0.245	33.9	616	497
CU220R77-750	6000	26689	0.014	0.047	0.019	0.063	0.0825	0.2708	0.1200	0.3937	0.0311	0.1021	0.0221	0.0067	0.020 + j0.036	0.332 + j0.208	50.8	706	551
CU220R77-1000	8000	35586	0.011	0.035	0.015	0.050	0.0797	0.2616	0.1351	0.4433	0.0301	0.0986	0.0196	0.0060	0.016 + j0.034	0.313 + j0.184	67.8	813	596

* Calculations are based on three cables triplexed / 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 D17M of the 2015 Canadian Electrical Code Part I (40°C Ambient Air Temperature, indoor installation)

‡ Ampacities are based on Table D17A 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.

