CSA TRAY RATED

HVTC SPECIFICATIONS

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

Southwire® CANADA

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 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: 0.09 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.1/0 AWG = 0.08 inches (2.03mm)
  No.2/0 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] CU 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

	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 **	
HVTC Product Code	AWG or Kcmil	inches	mm	inches	mm	inches	mm	AWG	inches	mm	inches	mm	lb / 1000ft	kg/km	lbs	kg	inches	m	feet	m
CU90U78-002	2(7)	0.283	7.2	0.493	12.5	0.573	14.6	6	1.441	36.6	10.1	256	1421	2115	7855	3563	78/54	1.98/1.37	5000	1524
CU90U78-001	1(19)	0.322	8.2	0.532	13.5	0.612	15.5	6	1.525	38.7	10.7	271	1643	2445	9374	4252	96/54.5	2.44/1.38	5000	1524
CU90U78-010	1/0(19)	0.362	9.2	0.572	14.5	0.652	16.6	6	1.612	40.9	11.3	287	1909	2841	10704	4855	96/54.5	2.44/1.38	5000	1524
CU90U78-020	2/0(19)	0.405	10.3	0.615	15.6	0.695	17.7	6	1.764	44.8	12.4	314	2331	3469	12998	5896	104/56.5	2.64/1.44	5000	1524
CU90U78-030	3/0(19)	0.456	11.6	0.666	16.9	0.746	18.9	4	1.875	47.6	13.1	333	2791	4153	15296	6938	104/56.5	2.64/1.44	5000	1524
CU90U78-040	4/0(19)	0.512	13.0	0.722	18.3	0.802	20.4	4	1.996	50.7	14.0	355	3297	4907	16392	7435	108/70.5	2.74/1.79	4500	1372
CU90U78-250	250(37)	0.558	14.2	0.778	19.8	0.858	21.8	4	2.116	53.8	14.8	376	3588	5340	16447	7460	108/70.5	2.74/1.79	4150	1265
CU90U78-350	350(37)	0.661	16.8	0.881	22.4	0.961	24.4	3	2.339	59.4	16.4	416	4925	7329	16329	7407	108/70.5	2.74/1.79	3000	914
CU90U78-500	500(37)	0.789	20.0	1.009	25.6	1.089	27.7	3	2.615	66.4	18.3	465	6565	9770	16326	7406	108/70.5	2.74/1.79	2250	686
CU90U78-750	750(61)	0.968	24.6	1.198	30.4	1.278	32.5	2	3.084	78.3	21.6	548	9505	14145	16288	7388	108/70.5	2.74/1.79	1550	472
CU90U78-1000	1000(61)	1.117	28.4	1.347	34.2	1.427	36.2	1	3.406	86.5	23.8	606	12216	18179	16214	7355	108/70.5	2.74/1.79	1200	366

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

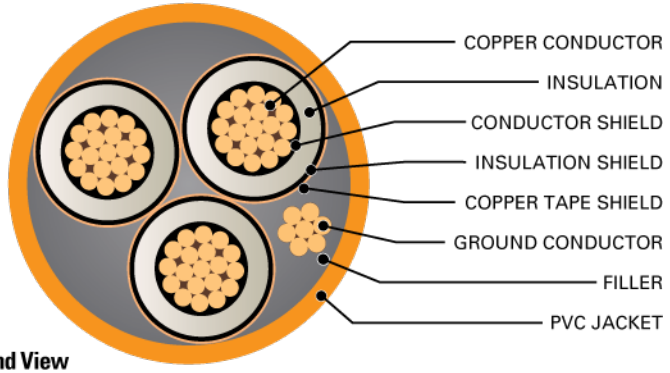
- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 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_{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 Buries 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
CU90U78-002	1593	7084	0.162	0.532	0.203	0.665	0.0914	0.2999	0.0885	0.2905	0.0345	0.1131	0.0300	0.0091	0.203 + j0.039	0.569 + j0.533	4.5	172	201
CU90U78-001	2009	8935	0.129	0.423	0.161	0.530	0.0882	0.2893	0.0979	0.3212	0.0332	0.1091	0.0271	0.0083	0.162 + j0.037	0.532 + j0.510	5.7	197	228
CU90U78-010	2534	11274	0.102	0.335	0.128	0.419	0.0855	0.2804	0.1074	0.3525	0.0322	0.1057	0.0247	0.0075	0.128 + j0.036	0.501 + j0.487	7.2	225	257
CU90U78-020	3194	14209	0.081	0.266	0.102	0.333	0.0830	0.2724	0.1176	0.3860	0.0313	0.1027	0.0225	0.0069	0.102 + j0.035	0.477 + j0.464	9.0	260	292
CU90U78-030	4027	17914	0.064	0.211	0.081	0.265	0.0807	0.2647	0.1297	0.4257	0.0304	0.0998	0.0204	0.0062	0.081 + j0.034	0.456 + j0.439	11.4	297	330
CU90U78-040	5078	22590	0.051	0.167	0.064	0.211	0.0785	0.2576	0.1430	0.4692	0.0296	0.0971	0.0186	0.0057	0.065 + j0.033	0.440 + j0.412	14.3	342	372
CU90U78-250	6000	26689	0.043	0.141	0.054	0.179	0.0778	0.2554	0.1479	0.4852	0.0293	0.0963	0.0179	0.0055	0.055 + j0.032	0.428 + j0.388	16.9	376	410
CU90U78-350	8400	37365	0.031	0.101	0.039	0.129	0.0751	0.2463	0.1711	0.5613	0.0283	0.0929	0.0155	0.0047	0.040 + j0.031	0.407 + j0.348	23.7	460	487
CU90U78-500	12000	53379	0.022	0.071	0.028	0.093	0.0726	0.2381	0.1998	0.6556	0.0274	0.0898	0.0133	0.0040	0.029 + j0.029	0.386 + j0.305	33.9	556	573
CU90U78-750	18000	80068	0.014	0.047	0.020	0.065	0.0706	0.2315	0.2305	0.7564	0.0266	0.0873	0.0115	0.0035	0.020 + j0.028	0.360 + j0.254	50.8	678	668
CU90U78-1000	24000	106757	0.011	0.035	0.016	0.053	0.0690	0.2263	0.2625	0.8612	0.0260	0.0853	0.0101	0.0031	0.017 + j0.028	0.341 + j0.222	67.8	798	772

* 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.

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