Southwire® CANADA

HVTECK SPECIFICATIONS

HVTECK AL 1/C 420EPR TS PVC AIA PVC 35KV 133% CSA

PRODUCT HIGHLIGHTS

Southwire's 35KV HVTECK is a CSA armoured cable for industrial and commercial medium voltage applications. Rated FT4, -40°C, Hazardous Locations (HL) and 105°C for use in harsh Canadian environments. For installation in cable trays, duct banks, direct burial, troughs, continuous rigid cable supports and concrete encaseable.

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
- 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
- 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

Inner Jacket
- Black PVC
- Thickness:
  No.1/0 AWG to 250 kcmil = 0.08 inches (2.03mm)
  350 kcmil to 1000 kcmil = 0.11 inches (2.79mm)

Armour
- Aluminum Interlocked Armour (AIA)
- Optional Galvanized Steel Interlocked Armour (GSIA)

Overall Jacket
- Black PVC (optional colours available)
- Nominal Thickness:
  No.1/0 AWG to 350 kcmil = 0.06 inches (1.52mm)
  500 kcmil to 1000 kcmil = 0.075 inches (1.91mm)

Typical Print Legend
- (CSA) SOUTHWIRE (NESC) #P# [#AWG or #kcmil] CPT AL 420 EPR AIA 35KV 133% INS LEVEL 25% TS SUN RES 105° FT4 HL (-40°C) LTGG RoHS YEAR [SEQUENTIAL METER MARKS]

TABLE 1 - WEIGHTS & MEASUREMENTS

	Conductor Size *	Conductor Diameter		Diameter Over Insulation		Diameter Over Insulation Shield		Diameter Over Inner Jacket		Diameter Over Armour		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 **	
HVTECK Product Code	AWG or Kcmil	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	lb / 1000ft	kg/km	lbs	kg	inches	m	feet	m
AL420U79-010	1/0(19)	0.336	8.5	1.206	30.6	1.286	32.7	1.466	37.2	1.786	45.4	1.906	48.4	22.9	581	1563	2326	10932	4959	108/70.5	2.74/1.79	6000	1829
AL420U79-020	2/0(19)	0.376	9.6	1.246	31.6	1.326	33.7	1.506	38.3	1.836	46.6	1.956	49.7	23.5	596	1709	2544	11469	5202	108/70.5	2.74/1.79	5800	1768
AL420U79-030	3/0(19)	0.423	10.7	1.293	32.8	1.373	34.9	1.553	39.4	1.883	47.8	2.003	50.9	24.0	611	1805	2686	11572	5249	108/70.5	2.74/1.79	5550	1692
AL420U79-040	4/0(19)	0.475	12.1	1.345	34.2	1.425	36.2	1.605	40.8	1.935	49.1	2.055	52.2	24.7	626	1916	2851	11804	5354	108/70.5	2.74/1.79	5350	1631
AL420U79-250	250(37)	0.520	13.2	1.400	35.6	1.480	37.6	1.660	42.2	1.990	50.5	2.110	53.6	25.3	643	2030	3020	10992	4986	108/70.5	2.74/1.79	4650	1417
AL420U79-350	350(37)	0.616	15.6	1.496	38.0	1.576	40.0	1.816	46.1	2.146	54.5	2.266	57.6	27.2	691	2376	3535	11889	5393	108/70.5	2.74/1.79	4350	1326
AL420U79-500	500(37)	0.736	18.7	1.616	41.0	1.696	43.1	1.936	49.2	2.266	57.6	2.416	61.4	29.0	736	2752	4096	11738	5324	108/70.5	2.74/1.79	3700	1128
AL420U79-750	750(61)	0.908	23.1	1.798	45.7	1.878	47.7	2.118	53.8	2.448	62.2	2.598	66.0	31.2	792	3340	4971	11409	5175	108/70.5	2.74/1.79	2950	899
AL420U79-1000	1000(61)	1.060	26.9	1.950	49.5	2.030	51.6	2.270	57.7	2.600	66.0	2.750	69.9	33.0	838	3799	5653	12192	5530	108/70.5	2.74/1.79	2800	853

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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HVTECK SPECIFICATIONS

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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. 174 - Cables in Hazardous Locations
- ICEA S-93-639 (NEMA WC 74) 5 to 46 kV - Shielded Power Cable
- AEIC CS-8 - Qualification Testing Requirements

Flame Test Ratings

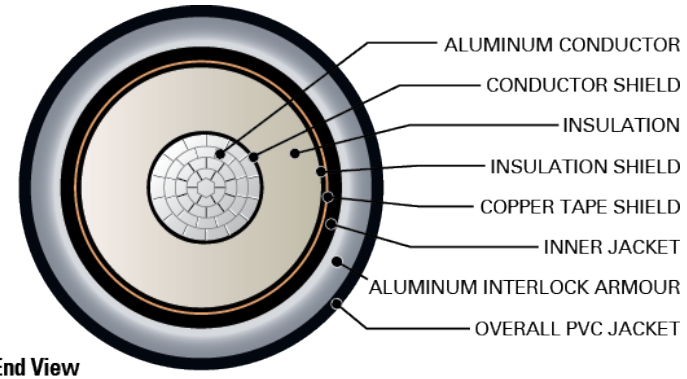
- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 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 HL - for Hazardous Locations rating
- CSA FT4 - for Flame Retardancy rating
- CSA SUN RES - for Sunlight Resistant rating

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

HVTECK 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
AL420U79-010	634	2818	0.168	0.551	0.211	0.693	0.1355	0.4445	0.0385	0.1262	0.0511	0.1676	0.0690	0.0210	0.212 + j0.061	0.545 + j0.278	4.7	221	219
AL420U79-020	799	3552	0.133	0.436	0.167	0.549	0.1306	0.4286	0.0410	0.1346	0.0492	0.1616	0.0647	0.0197	0.168 + j0.059	0.497 + j0.267	5.9	253	246
AL420U79-030	1007	4478	0.105	0.345	0.132	0.433	0.1257	0.4124	0.0440	0.1443	0.0474	0.1555	0.0603	0.0184	0.133 + j0.057	0.458 + j0.255	7.4	288	275
AL420U79-040	1270	5647	0.084	0.274	0.105	0.345	0.1210	0.3971	0.0472	0.1549	0.0456	0.1497	0.0562	0.0171	0.106 + j0.055	0.426 + j0.243	9.4	327	305
AL420U79-250	1500	6672	0.071	0.232	0.089	0.292	0.1180	0.3870	0.0496	0.1628	0.0445	0.1459	0.0535	0.0163	0.090 + j0.054	0.404 + j0.232	11.1	367	343
AL420U79-350	2100	9341	0.051	0.166	0.064	0.209	0.1117	0.3664	0.0554	0.1817	0.0421	0.1381	0.0479	0.0146	0.065 + j0.052	0.370 + j0.213	15.5	443	399
AL420U79-500	3000	13345	0.035	0.116	0.045	0.147	0.1055	0.3462	0.0625	0.2050	0.0398	0.1305	0.0424	0.0129	0.046 + j0.049	0.340 + j0.193	22.2	529	451
AL420U79-750	4500	20017	0.024	0.077	0.030	0.099	0.0992	0.3255	0.0719	0.2360	0.0374	0.1227	0.0369	0.0112	0.032 + j0.046	0.309 + j0.168	33.2	633	505
AL420U79-1000	6000	26689	0.018	0.058	0.023	0.075	0.0947	0.3108	0.0806	0.2645	0.0357	0.1172	0.0329	0.0100	0.024 + j0.043	0.289 + j0.150	44.3	711	544

* 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

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