Southwire® CANADA

HVTECK SPECIFICATIONS

HVTECK AL 3/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
- 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

Inner Jacket
- Black PVC
- Thickness: No.1/0 AWG to 350 kcmil = 0.14 inches (3.56mm)

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 = 0.085 inches (2.16mm)

Typical Print Legend
- (CSA) SOUTHWIRE (NESC) #P# 3/C [#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		Bonding Cond. Size	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	AWG	inches	mm	inches	mm	inches	mm	inches	mm	lb / 1000ft	kg/km	lbs	kg	inches	m	feet	m
AL420S45-010	1/0(19)	0.336	8.5	1.206	30.6	1.286	32.7	6	3.101	78.8	3.431	87.1	3.601	91.5	25.2	640	4781	7114	6814	3091	108/70.5	2.74/1.79	1100	335
AL420S45-020	2/0(19)	0.376	9.6	1.246	31.6	1.326	33.7	6	3.187	81.0	3.517	89.3	3.687	93.7	25.8	656	5019	7469	7076	3209	108/70.5	2.74/1.79	1100	335
AL420S45-030	3/0(19)	0.423	10.7	1.293	32.8	1.373	34.9	6	3.289	83.5	3.619	91.9	3.789	96.2	26.5	674	5304	7894	7390	3352	108/70.5	2.74/1.79	1100	335
AL420S45-040	4/0(19)	0.475	12.1	1.345	34.2	1.425	36.2	6	3.401	86.4	3.731	94.8	3.901	99.1	27.3	694	5636	8388	7473	3390	108/70.5	2.74/1.79	1050	320
AL420S45-250	250(37)	0.520	13.2	1.400	35.6	1.480	37.6	4	3.520	89.4	3.850	97.8	4.020	102.1	28.1	715	6024	8965	7881	3575	108/70.5	2.74/1.79	1050	320
AL420S45-350	350(37)	0.616	15.6	1.496	38.0	1.576	40.0	4	3.727	94.7	4.057	103.1	4.227	107.4	29.6	752	6692	9959	6240	2830	108/70.5	2.74/1.79	700	213

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. 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

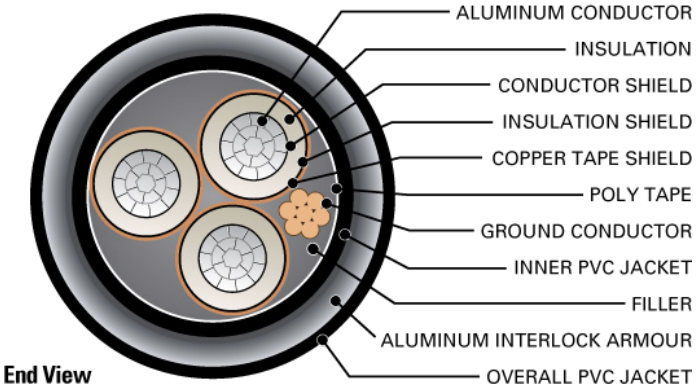
- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 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
AL420S45-010	1901	8455	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 + j0.053	0.551 + j0.277	4.7	181	200
AL420S45-020	2396	10657	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 + j0.051	0.503 + j0.266	5.9	208	228
AL420S45-030	3020	13435	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 + j0.049	0.463 + j0.254	7.4	239	258
AL420S45-040	3809	16942	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 + j0.047	0.431 + j0.242	9.4	273	292
AL420S45-250	4500	20017	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 + j0.046	0.409 + j0.231	11.1	302	321
AL420S45-350	6300	28024	0.051	0.166	0.064	0.209	0.1117	0.3664	0.0554	0.1817	0.0421	0.1381	0.0479	0.0146	0.064 + j0.044	0.374 + j0.212	15.5	368	385

* 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

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