Southwire® CANADA

HVTECK SPECIFICATIONS

HVTECK AL 3/C 220EPR TS PVC AIA PVC 15KV 133% CSA

PRODUCT HIGHLIGHTS

Southwire's 15KV 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: 0.22 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

Inner Jacket
- Black PVC
- Thickness:
  No.2 AWG to 250 kcmil = 0.11 inches (2.79mm)
  350 kcmil to 750 kcmil = 0.14 inches (3.56mm)

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

Overall Jacket
- Red PVC (optional colours available)
- Nominal Thickness:
  No.2 AWG to 250 kcmil = 0.075 inches (1.91mm)
  350 kcmil to 750 kcmil = 0.085 inches (2.16mm)

Typical Print Legend
- (CSA) SOUTHWIRE (NESC) #P# 3/C [#AWG or #kcmil] CPT AL 220 EPR AIA 15KV 133% INS LEVEL 25% TS SUN RES 105° FT4 HL (-40°C) LTGG RoHS YEAR [SEQUENTIAL METER MARKS]

TABLE 1 - WEIGHTS & MEASUREMENTS

HVTECK Product Code	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 **	
	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
AL220G83-002	2(7)	0.268	6.8	0.738	18.7	0.818	20.8	8	2.030	51.6	2.360	59.9	2.510	63.8	17.6	446	2512	3738	9217	4181	108/70.5	2.74/1.79	3050	930
AL220G83-001	1(19)	0.299	7.6	0.769	19.5	0.849	21.6	6	2.097	53.3	2.427	61.6	2.577	65.5	18.0	458	2681	3990	9465	4293	108/70.5	2.74/1.79	2950	899
AL220G83-010	1/0(19)	0.336	8.5	0.806	20.5	0.886	22.5	6	2.177	55.3	2.507	63.7	2.657	67.5	18.6	472	2851	4242	9537	4326	108/70.5	2.74/1.79	2800	853
AL220G83-020	2/0(19)	0.376	9.6	0.846	21.5	0.926	23.5	6	2.263	57.5	2.593	65.9	2.743	69.7	19.2	488	3045	4532	10082	4573	108/70.5	2.74/1.79	2800	853
AL220G83-030	3/0(19)	0.423	10.7	0.893	22.7	0.973	24.7	6	2.365	60.1	2.695	68.4	2.845	72.3	19.9	506	3280	4881	9099	4127	108/70.5	2.74/1.79	2300	701
AL220G83-040	4/0(19)	0.475	12.1	0.945	24.0	1.025	26.0	6	2.477	62.9	2.807	71.3	2.957	75.1	20.7	526	3555	5291	9377	4253	108/70.5	2.74/1.79	2200	671
AL220G83-250	250(37)	0.520	13.2	1.000	25.4	1.080	27.4	4	2.596	65.9	2.926	74.3	3.076	78.1	21.5	547	3884	5780	9517	4317	108/70.5	2.74/1.79	2050	625
AL220G83-350	350(37)	0.616	15.6	1.096	27.8	1.176	29.9	4	2.863	72.7	3.193	81.1	3.363	85.4	23.5	598	4696	6988	9068	4113	108/70.5	2.74/1.79	1600	488
AL220G83-500	500(37)	0.736	18.7	1.216	30.9	1.296	32.9	3	3.123	79.3	3.453	87.7	3.623	92.0	25.4	644	5523	8219	7630	3461	108/70.5	2.74/1.79	1100	335
AL220G83-750	750(61)	0.908	23.1	1.398	35.5	1.478	37.5	2	3.516	89.3	3.846	97.7	4.016	102.0	28.1	714	6857	10204	8755	3971	108/70.5	2.74/1.79	1050	320

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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SPS_G83_INDUSTRIAL-E(06/23/2016) Rev: 3.05R

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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

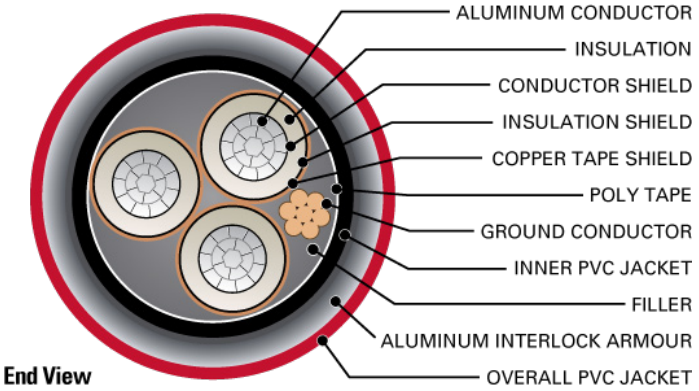
- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 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
AL220G83-002	1194	5313	0.265	0.869	0.333	1.093	0.1193	0.3915	0.0485	0.1592	0.0450	0.1476	0.0547	0.0167	0.333 + j0.048	0.708 + j0.421	2.9	135	157
AL220G83-001	1506	6701	0.211	0.692	0.265	0.870	0.1152	0.3779	0.0520	0.1707	0.0434	0.1424	0.0510	0.0155	0.266 + j0.046	0.639 + j0.406	3.7	154	178
AL220G83-010	1901	8455	0.168	0.551	0.211	0.693	0.1109	0.3639	0.0562	0.1843	0.0418	0.1372	0.0472	0.0144	0.212 + j0.044	0.584 + j0.390	4.7	176	202
AL220G83-020	2396	10657	0.133	0.436	0.167	0.549	0.1070	0.3511	0.0606	0.1988	0.0403	0.1324	0.0438	0.0133	0.168 + j0.043	0.537 + j0.373	5.9	204	229
AL220G83-030	3020	13435	0.105	0.345	0.132	0.433	0.1031	0.3384	0.0658	0.2158	0.0389	0.1276	0.0403	0.0123	0.132 + j0.041	0.499 + j0.354	7.4	234	260
AL220G83-040	3809	16942	0.084	0.274	0.105	0.345	0.0995	0.3265	0.0714	0.2344	0.0375	0.1231	0.0371	0.0113	0.106 + j0.040	0.469 + j0.336	9.4	268	294
AL220G83-250	4500	20017	0.071	0.232	0.089	0.292	0.0974	0.3197	0.0752	0.2466	0.0367	0.1205	0.0353	0.0108	0.089 + j0.039	0.448 + j0.317	11.1	296	323
AL220G83-350	6300	28024	0.051	0.166	0.064	0.209	0.0927	0.3041	0.0853	0.2799	0.0349	0.1147	0.0311	0.0095	0.064 + j0.037	0.414 + j0.288	15.5	363	386
AL220G83-500	9000	40034	0.035	0.116	0.045	0.147	0.0882	0.2893	0.0979	0.3212	0.0332	0.1091	0.0271	0.0083	0.045 + j0.035	0.383 + j0.257	22.2	447	465
AL220G83-750	13500	60051	0.024	0.077	0.030	0.100	0.0839	0.2752	0.1139	0.3736	0.0316	0.1038	0.0233	0.0071	0.031 + j0.033	0.350 + j0.218	33.2	566	563

* 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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SPS_G83_INDUSTRIAL-E(06/23/2016) Rev: 3.05R