HVTECK Specifications

**HVTECK AL 3/C 140TRXLPE TS PVC AIA PVC  8KV 133% CSA**

**Product Highlights**
Southwire's 8KV 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 encasement.

**Construction**
- **Conductor**
  - Class B - compact stranded - 8000 Series Aluminum - ACM
  - 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**
  - TR-XLPE - (Tree Retardent Cross Linked Polyethylene)
  - Thickness: 0.14 inches (3.56mm) - 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 = 0.08 inches (2.03mm)
  - No.1 AWG to 500 kcmil = 0.11 inches (2.79mm)
  - 750 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.2 AWG to No.2/0 AWG = 0.06 inches (1.52mm)
  - No.3/0 AWG to 350 kcmil = 0.075 inches (1.91mm)
  - 500 kcmil to 750 kcmil = 0.085 inches (2.16mm)
- **Typical Print Legend**
  - [CSA] SOUTHWIRE (NESC) #P# 3/C [#AWG or #kcmil] CPT AL 140 TRXLPE AIA 8KV 133% INS LEVEL 25% TS SUN RES 105°C FT4 HL (-40°C) LTGG RoHS YEAR [SEQUENTIAL METER MARKS]

**Table 1 - Weights & Measurements**

<table>
<thead>
<tr>
<th>HVTECK Product Code</th>
<th>AWG or Kcmil</th>
<th>Conductor Diameter</th>
<th>Diameter Over Insulation</th>
<th>Diameter Over Insulation Shield</th>
<th>Bonding Cond. Size</th>
<th>Diameter Over Inner Jacket</th>
<th>Diameter Over Armour</th>
<th>Approx. Overall Diameter</th>
<th>Minimum Bend Radius</th>
<th>Approx. Weight of Cable</th>
<th>Max. Real Weight (cable only)</th>
<th>Max. Real Diameter</th>
<th>Max. Real Width</th>
<th>Max. Length of Cable on Reel</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL140B3-002</td>
<td>2(7)</td>
<td>0.268</td>
<td>6.8</td>
<td>0.578</td>
<td>14.7</td>
<td>0.658</td>
<td>16.7</td>
<td>8</td>
<td>1.624</td>
<td>41.3</td>
<td>1.954</td>
<td>49.6</td>
<td>52.7</td>
<td>1678</td>
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<tr>
<td>AL140B3-001</td>
<td>1(19)</td>
<td>0.299</td>
<td>7.6</td>
<td>0.609</td>
<td>15.5</td>
<td>0.688</td>
<td>17.5</td>
<td>6</td>
<td>1.751</td>
<td>44.5</td>
<td>2.081</td>
<td>52.9</td>
<td>55.9</td>
<td>1944</td>
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<tr>
<td>AL140B3-010</td>
<td>1/0(19)</td>
<td>0.336</td>
<td>8.5</td>
<td>0.646</td>
<td>16.4</td>
<td>0.726</td>
<td>18.4</td>
<td>6</td>
<td>1.831</td>
<td>46.5</td>
<td>2.161</td>
<td>54.9</td>
<td>57.9</td>
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<td>AL140B3-020</td>
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<td>0.376</td>
<td>9.6</td>
<td>0.686</td>
<td>17.4</td>
<td>0.766</td>
<td>19.5</td>
<td>6</td>
<td>1.918</td>
<td>48.7</td>
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<td>57.1</td>
<td>60.1</td>
<td>2259</td>
</tr>
<tr>
<td>AL140B3-030</td>
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<td>0.423</td>
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<td>18.6</td>
<td>0.813</td>
<td>20.7</td>
<td>6</td>
<td>2.019</td>
<td>51.3</td>
<td>2.499</td>
<td>63.5</td>
<td>66.3</td>
<td>2614</td>
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<tr>
<td>AL140B3-040</td>
<td>4/0(19)</td>
<td>0.475</td>
<td>12.1</td>
<td>0.785</td>
<td>19.9</td>
<td>0.865</td>
<td>22.0</td>
<td>6</td>
<td>2.132</td>
<td>54.1</td>
<td>2.662</td>
<td>62.5</td>
<td>66.3</td>
<td>2894</td>
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<tr>
<td>AL140B3-050</td>
<td>5/0(37)</td>
<td>0.520</td>
<td>13.2</td>
<td>0.840</td>
<td>21.3</td>
<td>0.920</td>
<td>23.4</td>
<td>4</td>
<td>2.250</td>
<td>57.2</td>
<td>2.980</td>
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<td>68.4</td>
<td>3166</td>
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<tr>
<td>AL140B3-060</td>
<td>250(37)</td>
<td>0.616</td>
<td>15.6</td>
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<td>23.8</td>
<td>1.016</td>
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<td>AL140B3-070</td>
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<td>3</td>
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<td>AL140B3-080</td>
<td>750(61)</td>
<td>0.908</td>
<td>23.1</td>
<td>1.238</td>
<td>31.4</td>
<td>1.318</td>
<td>33.5</td>
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<td>3.170</td>
<td>80.5</td>
<td>3.500</td>
<td>88.9</td>
<td>93.2</td>
<td>5918</td>
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**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.
### Table 2 - Engineering Specifications

<table>
<thead>
<tr>
<th>HVTECK Product Code</th>
<th>Maximum Pulling Tension (lb)</th>
<th>DC Resistance @ 25°C $R_{dc}$ (Ω/km)</th>
<th>AC Resistance @ 90°C-60 Hz (triplex formation) $R_{ac}$ (Ω/km)</th>
<th>Inductance L (mH/1000 ft)</th>
<th>Capacitance C (µF/1000 ft)</th>
<th>Inductive Reactance @ 60Hz (triplexed) $X_L$</th>
<th>Capacitive Reactance @ 60Hz (triplexed) $X_C$</th>
<th>Positive - Sequence Impedance*</th>
<th>Zero - Sequence Impedance*</th>
<th>Short Circuit Current (each phase conductor) @ 60Hz</th>
<th>Allowable Ampacities in Ventilated Cable Tray †</th>
<th>Allowable Ampacities Directly Buried in Earth ‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL140B83-002</td>
<td>1194</td>
<td>0.265</td>
<td>0.869</td>
<td>0.1044</td>
<td>0.3426</td>
<td>0.0507</td>
<td>0.1664</td>
<td>0.0394</td>
<td>0.1252</td>
<td>0.0523</td>
<td>0.0159</td>
<td>0.333 + j0.043</td>
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<tr>
<td>AL140B83-001</td>
<td>1506</td>
<td>0.211</td>
<td>0.692</td>
<td>0.1009</td>
<td>0.3312</td>
<td>0.0516</td>
<td>0.1798</td>
<td>0.0381</td>
<td>0.1249</td>
<td>0.0484</td>
<td>0.0148</td>
<td>0.333 + j0.043</td>
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<tr>
<td>AL140B83-010</td>
<td>1901</td>
<td>0.168</td>
<td>0.551</td>
<td>0.0974</td>
<td>0.3196</td>
<td>0.0524</td>
<td>0.1956</td>
<td>0.0367</td>
<td>0.1205</td>
<td>0.0445</td>
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<tr>
<td>AL140B83-020</td>
<td>2396</td>
<td>0.133</td>
<td>0.436</td>
<td>0.0942</td>
<td>0.3092</td>
<td>0.0648</td>
<td>0.2127</td>
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<td>3020</td>
<td>0.105</td>
<td>0.345</td>
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<td>0.1205</td>
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<td>AL140B83-040</td>
<td>3809</td>
<td>0.091</td>
<td>0.274</td>
<td>0.0882</td>
<td>0.2589</td>
<td>0.0776</td>
<td>0.2546</td>
<td>0.0332</td>
<td>0.1081</td>
<td>0.0342</td>
<td>0.0104</td>
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<tr>
<td>AL140B83-050</td>
<td>4500</td>
<td>0.071</td>
<td>0.223</td>
<td>0.0899</td>
<td>0.2848</td>
<td>0.0813</td>
<td>0.2687</td>
<td>0.0327</td>
<td>0.1074</td>
<td>0.0326</td>
<td>0.0099</td>
<td>0.333 + j0.043</td>
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<tr>
<td>AL140B83-060</td>
<td>6300</td>
<td>0.054</td>
<td>0.166</td>
<td>0.0932</td>
<td>0.2087</td>
<td>0.0923</td>
<td>0.3057</td>
<td>0.0313</td>
<td>0.1206</td>
<td>0.0265</td>
<td>0.0087</td>
<td>0.333 + j0.043</td>
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<tr>
<td>AL140B83-070</td>
<td>9000</td>
<td>0.035</td>
<td>0.116</td>
<td>0.0976</td>
<td>0.2561</td>
<td>0.1080</td>
<td>0.3542</td>
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<td>0.0075</td>
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<tr>
<td>AL140B83-080</td>
<td>13500</td>
<td>0.024</td>
<td>0.077</td>
<td>0.0765</td>
<td>0.2509</td>
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<td>0.4125</td>
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<td>0.0946</td>
<td>0.0211</td>
<td>0.0084</td>
<td>0.333 + j0.043</td>
</tr>
</tbody>
</table>

* Calculations are based on 5 mil 25% overlap 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

### Design Qualification Standards
- CSA C68.10 - Shielded Power Cables for Commercial and Industrial Applications - 5 to 45 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.)

### 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

### Product Ratings
- CSA C22.2 No. 2568 & No. 0.3 - Wire and Cable Test Methods
- CSA LTG5 (-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

### Relevant 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
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- 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)
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  - IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
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  - ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 BTU/Hr.)

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