# HVTECK SPECIFICATIONS

**HVTECK CU 3/C 140EPR 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 encaseable.

## 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: 0.14 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

**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-hygrosopic

**Inner Jacket**
- Black PVC

**Thickness:**
- No.2 AWG = 0.08 inches (2.03mm)
- No.1 AWG to 350 kcmil = 0.11 inches (2.79mm)
- 500 kcmil to 750 kcmil = 0.14 inches (3.56mm)

## TABLE 1 - WEIGHTS & MEASUREMENTS

<table>
<thead>
<tr>
<th>HVTECK Product Code</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 (reel and cable) **</th>
<th>Max. Real Diameter / Width **</th>
<th>Max. Real Length of Cable on Reel **</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU140H23-002</td>
<td>1/2  (7A)</td>
<td>0.593</td>
<td>15.1</td>
<td>0.073</td>
<td>17.1</td>
<td>6</td>
<td>1.657</td>
<td>42.1</td>
<td>1.987</td>
<td>50.5</td>
<td>2.107</td>
<td>35.3</td>
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<tr>
<td>CU140H23-001</td>
<td>1/4  (19)</td>
<td>0.532</td>
<td>16.1</td>
<td>0.072</td>
<td>18.1</td>
<td>6</td>
<td>1.801</td>
<td>45.7</td>
<td>2.131</td>
<td>54.1</td>
<td>2.251</td>
<td>57.2</td>
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<tr>
<td>CU140H23-010</td>
<td>1/0     (19)</td>
<td>0.562</td>
<td>17.1</td>
<td>0.075</td>
<td>19.1</td>
<td>6</td>
<td>1.888</td>
<td>47.9</td>
<td>2.218</td>
<td>56.3</td>
<td>2.338</td>
<td>59.4</td>
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<tr>
<td>CU140H23-020</td>
<td>2/0     (19)</td>
<td>0.605</td>
<td>18.2</td>
<td>0.076</td>
<td>20.2</td>
<td>6</td>
<td>1.980</td>
<td>50.3</td>
<td>2.310</td>
<td>58.7</td>
<td>2.480</td>
<td>62.5</td>
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<td>CU140H23-030</td>
<td>3/0     (19)</td>
<td>0.546</td>
<td>19.5</td>
<td>0.086</td>
<td>21.5</td>
<td>4</td>
<td>2.091</td>
<td>53.1</td>
<td>2.421</td>
<td>61.5</td>
<td>2.571</td>
<td>65.3</td>
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<tr>
<td>CU140H23-040</td>
<td>4/0     (19)</td>
<td>0.512</td>
<td>20.9</td>
<td>0.092</td>
<td>22.9</td>
<td>4</td>
<td>2.212</td>
<td>56.2</td>
<td>2.542</td>
<td>64.6</td>
<td>2.692</td>
<td>68.4</td>
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<tr>
<td>CU140H23-050</td>
<td>5/0     (19)</td>
<td>0.488</td>
<td>22.3</td>
<td>0.098</td>
<td>24.3</td>
<td>4</td>
<td>2.332</td>
<td>59.2</td>
<td>2.682</td>
<td>67.6</td>
<td>2.812</td>
<td>71.4</td>
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<tr>
<td>CU140H23-060</td>
<td>6/0     (19)</td>
<td>0.461</td>
<td>24.9</td>
<td>0.101</td>
<td>26.9</td>
<td>3</td>
<td>2.555</td>
<td>64.9</td>
<td>2.885</td>
<td>73.3</td>
<td>3.035</td>
<td>77.1</td>
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<td>CU140H23-070</td>
<td>7/0     (19)</td>
<td>0.440</td>
<td>27.2</td>
<td>0.110</td>
<td>30.2</td>
<td>2</td>
<td>2.819</td>
<td>73.4</td>
<td>3.221</td>
<td>81.8</td>
<td>3.391</td>
<td>88.1</td>
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<td>CU140H23-080</td>
<td>8/0     (19)</td>
<td>0.415</td>
<td>29.9</td>
<td>0.118</td>
<td>32.9</td>
<td>2</td>
<td>3.200</td>
<td>83.8</td>
<td>3.630</td>
<td>92.2</td>
<td>3.800</td>
<td>96.5</td>
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</tbody>
</table>

**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)

Operating Temperatures:
- -40°C - CSA Cold Bend and Impact Temperature
- -25°C - Min. Installation Temperature
- 105°C - Max. Continuous Operating Temperature
- 250°C for Short Circuit Temperature

### Table 2 - Engineering Specifications

<table>
<thead>
<tr>
<th>HVTECK Product Code</th>
<th>Maximum Pulling Tension</th>
<th>DC Resistance @ 25°C Rdc</th>
<th>AC Resistance @ 90°C-60 Hz (triplex formation) Rac</th>
<th>Inductance L</th>
<th>Capacitance C</th>
<th>Inductive Reactance @ 60Hz (impedance) XL</th>
<th>Capacitive Reactance @ 60Hz (impedance) XC</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 in Directly Buried in Earth</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU140H23-002</td>
<td>1583</td>
<td>0.162</td>
<td>0.532</td>
<td>0.203</td>
<td>0.065</td>
<td>0.1027</td>
<td>0.0369</td>
<td>0.0122</td>
<td>0.203 + j0.042</td>
<td>0.557 + j0.483</td>
<td>4.5</td>
<td>172</td>
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<tr>
<td>CU140H23-001</td>
<td>2009</td>
<td>0.129</td>
<td>0.423</td>
<td>0.161</td>
<td>0.530</td>
<td>0.0687</td>
<td>0.0338</td>
<td>0.0111</td>
<td>0.162 + j0.041</td>
<td>0.537 + j0.462</td>
<td>5.7</td>
<td>197</td>
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<tr>
<td>CU140H23-010</td>
<td>2534</td>
<td>0.102</td>
<td>0.335</td>
<td>0.128</td>
<td>0.419</td>
<td>0.0953</td>
<td>0.0316</td>
<td>0.0102</td>
<td>0.128 + j0.039</td>
<td>0.504 + j0.441</td>
<td>7.2</td>
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<td>CU140H23-020</td>
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<td>0.081</td>
<td>0.266</td>
<td>0.101</td>
<td>0.333</td>
<td>0.0922</td>
<td>0.0306</td>
<td>0.0094</td>
<td>0.102 + j0.038</td>
<td>0.477 + j0.421</td>
<td>9.0</td>
<td>260</td>
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<tr>
<td>CU140H23-030</td>
<td>4027</td>
<td>0.064</td>
<td>0.211</td>
<td>0.081</td>
<td>0.264</td>
<td>0.0892</td>
<td>0.0296</td>
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<td>0.081 + j0.036</td>
<td>0.450 + j0.386</td>
<td>11.4</td>
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<td>CU140H23-040</td>
<td>5078</td>
<td>0.051</td>
<td>0.167</td>
<td>0.084</td>
<td>0.211</td>
<td>0.0864</td>
<td>0.0286</td>
<td>0.0078</td>
<td>0.065 + j0.035</td>
<td>0.430 + j0.374</td>
<td>14.3</td>
<td>342</td>
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<td>CU140H23-050</td>
<td>6000</td>
<td>0.043</td>
<td>0.141</td>
<td>0.054</td>
<td>0.178</td>
<td>0.0852</td>
<td>0.0276</td>
<td>0.0057</td>
<td>0.065 + j0.035</td>
<td>0.423 + j0.352</td>
<td>16.9</td>
<td>376</td>
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<tr>
<td>CU140H23-060</td>
<td>7436</td>
<td>0.031</td>
<td>0.102</td>
<td>0.039</td>
<td>0.129</td>
<td>0.0816</td>
<td>0.0269</td>
<td>0.0048</td>
<td>0.029 + j0.031</td>
<td>0.377 + j0.279</td>
<td>33.9</td>
<td>556</td>
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<tr>
<td>CU140H23-070</td>
<td>9200</td>
<td>0.022</td>
<td>0.071</td>
<td>0.028</td>
<td>0.082</td>
<td>0.0783</td>
<td>0.0250</td>
<td>0.0037</td>
<td>0.029 + j0.031</td>
<td>0.377 + j0.279</td>
<td>50.8</td>
<td>678</td>
</tr>
</tbody>
</table>

* Calculations are based on 5 mil 25 % overlapping copper tape shield / Conductor temperature of 90°C / Shield temperature of 45°C / Earth resistivity of 100 ohms-meter

1. Ampacities are based on Table D17E of the 2015 Canadian Electrical Code Part I (40°C Ambient Air Temperature, indoor installation)
2. Ampacities are based on Table D17N of the 2015 Canadian Electrical Code Part I (40°C Ambient Air Temperature, indoor installation)