## HVTECK SPECIFICATIONS

### HVTECK CU 1/C 345EPR CB PVC AIA PVC 35KV 100% 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. When used in a 3 phase system, the combination of each bond conductor from each single conductor cable provide a 100% bonded system to ground.

### 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
- No-lead EPR (Ethylene Propylene Rubber)
- Thickness: 0.345 inches (8.76mm) - nominal
- Insulation level: 100%
- 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 Full Bond Wire Shield**
- Concentrically applied copper bond / shield wires
- *** Complies with greater than the minimum requirement as per Table 44, CSA Standard C68.10 and Table 16A, Canadian Electrical Code Part 1

**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 500 kcmil = 0.06 inches (1.52mm)
- 750 kcmil to 1000 kcmil = 0.075 inches (1.91mm)

**Typical Print Legend**
- (CSA) SOUTHWIRE (NESC) #P# [#AWG or #kcmil] CU 345 EPR AIA
- 35KV 100% INS LEVEL CB [No. x SIZE] AWG SUN RES 105° 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>Insulation Over Shield Diameter</th>
<th>CB Shield Diameter</th>
<th>Diameter Over Inner Jacket</th>
<th>Diameter Over Armour</th>
<th>Approx. Overall Diameter</th>
<th>Approx. Weight of Cable (lb / 1000ft)</th>
<th>Max. Real Weight (real and cable) **</th>
<th>Max. Real Diameter / Width **</th>
<th>Max. Length of Cable on Reel **</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU345L46-010</td>
<td>1/0 (19)</td>
<td>0.362</td>
<td>9.2</td>
<td>1.082</td>
<td>27.5</td>
<td>1.162</td>
<td>29.5</td>
<td>17X16</td>
<td>1.373 (34.9)</td>
<td>1.693 (43.0)</td>
<td>1.813 (46.0)</td>
<td>0.110 (27.9)</td>
</tr>
<tr>
<td>CU345L46-020</td>
<td>2/0 (19)</td>
<td>0.405</td>
<td>10.3</td>
<td>1.125</td>
<td>28.6</td>
<td>1.205</td>
<td>30.6</td>
<td>17X16</td>
<td>1.416 (36.0)</td>
<td>1.736 (44.1)</td>
<td>1.856 (47.1)</td>
<td>0.120 (30.8)</td>
</tr>
<tr>
<td>CU345L46-030</td>
<td>3/0 (19)</td>
<td>0.456</td>
<td>11.6</td>
<td>1.176</td>
<td>29.9</td>
<td>1.256</td>
<td>31.9</td>
<td>21X16</td>
<td>1.467 (37.3)</td>
<td>1.787 (45.4)</td>
<td>1.997 (48.4)</td>
<td>0.130 (33.8)</td>
</tr>
<tr>
<td>CU345L46-040</td>
<td>4/0 (19)</td>
<td>0.512</td>
<td>13.0</td>
<td>1.232</td>
<td>31.3</td>
<td>1.312</td>
<td>33.3</td>
<td>21X16</td>
<td>1.523 (38.7)</td>
<td>1.853 (47.1)</td>
<td>2.007 (51.5)</td>
<td>0.140 (36.4)</td>
</tr>
<tr>
<td>CU345L46-250</td>
<td>250 (37)</td>
<td>0.768</td>
<td>14.2</td>
<td>1.286</td>
<td>32.7</td>
<td>1.368</td>
<td>34.7</td>
<td>27X16</td>
<td>1.579 (40.1)</td>
<td>1.909 (46.5)</td>
<td>2.029 (51.5)</td>
<td>0.240 (55.8)</td>
</tr>
<tr>
<td>CU345L46-350</td>
<td>350 (37)</td>
<td>0.881</td>
<td>16.8</td>
<td>1.391</td>
<td>35.5</td>
<td>1.471</td>
<td>37.4</td>
<td>21X14</td>
<td>1.756 (44.3)</td>
<td>2.035 (53.0)</td>
<td>2.206 (56.0)</td>
<td>0.265 (59.2)</td>
</tr>
<tr>
<td>CU345L46-500</td>
<td>500 (37)</td>
<td>0.989</td>
<td>18.0</td>
<td>1.519</td>
<td>38.6</td>
<td>1.599</td>
<td>40.6</td>
<td>27X14</td>
<td>1.883 (47.8)</td>
<td>2.213 (56.2)</td>
<td>2.333 (58.3)</td>
<td>0.310 (65.7)</td>
</tr>
<tr>
<td>CU345L46-750</td>
<td>750 (61)</td>
<td>0.988</td>
<td>24.6</td>
<td>1.708</td>
<td>43.4</td>
<td>1.788</td>
<td>45.4</td>
<td>33X14</td>
<td>2.072 (52.6)</td>
<td>2.402 (61.0)</td>
<td>2.552 (64.8)</td>
<td>0.467 (107.2)</td>
</tr>
<tr>
<td>CU345L46-1000</td>
<td>1000 (61)</td>
<td>1.117</td>
<td>28.4</td>
<td>1.857</td>
<td>47.2</td>
<td>1.937</td>
<td>49.2</td>
<td>33X14</td>
<td>2.221 (56.4)</td>
<td>2.551 (64.8)</td>
<td>2.701 (68.6)</td>
<td>0.583 (127.4)</td>
</tr>
</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.

*** Concentric 1/3 Bond size values are available on request

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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)
- 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
- ICEA S-93-639 (NEMA WC 74) 5 to 46 kV - Shielded Power Cable
- CSA C68.3 - Shielded & Concentric Neutral Power Cable - 5 to 46 kV
- 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
- 106°C for Emergency Overload Temperature

### TABLE 2 - ENGINEERING SPECIFICATIONS

<table>
<thead>
<tr>
<th>HVTECK Product Code</th>
<th>Maximum Pulling Tension</th>
<th>DC Resistance @ 25°C $R_D$</th>
<th>AC Resistance @ 50°C, 60Hz $R_A$</th>
<th>Inductance $L$</th>
<th>Capacitance $C$</th>
<th>Reactance @ 60Hz $X$</th>
<th>Zero - Sequence Impedance*</th>
<th>Positive - Sequence Impedance*</th>
<th>Short Circuit Current (each phase conductor) @ 60Hz</th>
<th>Allowable Ampacities in Ventilated Cable Tray 1</th>
<th>Allowable Ampacities Directly Buried in Earth 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU345L46-010</td>
<td>845</td>
<td>0.102</td>
<td>0.355</td>
<td>0.128</td>
<td>0.419</td>
<td>0.1243</td>
<td>0.0449</td>
<td>0.0180</td>
<td>0.130 + j0.058</td>
<td>0.349 + j0.119</td>
<td>7.7</td>
</tr>
<tr>
<td>CU345L46-020</td>
<td>1065</td>
<td>0.081</td>
<td>0.266</td>
<td>0.101</td>
<td>0.333</td>
<td>0.1199</td>
<td>0.0481</td>
<td>0.0188</td>
<td>0.104 + j0.056</td>
<td>0.322 + j0.118</td>
<td>9.0</td>
</tr>
<tr>
<td>CU345L46-030</td>
<td>1392</td>
<td>0.064</td>
<td>0.211</td>
<td>0.080</td>
<td>0.264</td>
<td>0.1153</td>
<td>0.0519</td>
<td>0.0156</td>
<td>0.083 + j0.054</td>
<td>0.288 + j0.091</td>
<td>11.4</td>
</tr>
<tr>
<td>CU345L46-040</td>
<td>1693</td>
<td>0.051</td>
<td>0.167</td>
<td>0.084</td>
<td>0.210</td>
<td>0.1111</td>
<td>0.0580</td>
<td>0.0154</td>
<td>0.077 + j0.052</td>
<td>0.251 + j0.089</td>
<td>14.3</td>
</tr>
<tr>
<td>CU345L46-250</td>
<td>2900</td>
<td>0.043</td>
<td>0.141</td>
<td>0.054</td>
<td>0.178</td>
<td>0.1086</td>
<td>0.0598</td>
<td>0.0139</td>
<td>0.058 + j0.051</td>
<td>0.206 + j0.087</td>
<td>16.9</td>
</tr>
<tr>
<td>CU345L46-350</td>
<td>3200</td>
<td>0.031</td>
<td>0.101</td>
<td>0.039</td>
<td>0.128</td>
<td>0.1029</td>
<td>0.0561</td>
<td>0.0127</td>
<td>0.040 + j0.054</td>
<td>0.164 + j0.054</td>
<td>23.7</td>
</tr>
<tr>
<td>CU345L46-500</td>
<td>4000</td>
<td>0.021</td>
<td>0.071</td>
<td>0.061</td>
<td>0.242</td>
<td>0.0975</td>
<td>0.0388</td>
<td>0.0108</td>
<td>0.033 + j0.045</td>
<td>0.127 + j0.042</td>
<td>31.9</td>
</tr>
<tr>
<td>CU345L46-750</td>
<td>6000</td>
<td>0.014</td>
<td>0.047</td>
<td>0.019</td>
<td>0.062</td>
<td>0.0922</td>
<td>0.0305</td>
<td>0.0114</td>
<td>0.025 + j0.042</td>
<td>0.101 + j0.035</td>
<td>50.8</td>
</tr>
<tr>
<td>CU345L46-1000</td>
<td>8000</td>
<td>0.011</td>
<td>0.035</td>
<td>0.015</td>
<td>0.048</td>
<td>0.0886</td>
<td>0.0296</td>
<td>0.0106</td>
<td>0.021 + j0.040</td>
<td>0.097 + j0.033</td>
<td>67.8</td>
</tr>
</tbody>
</table>

* Calculations are based on three cables triplexed / 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 D17M of the 2015 Canadian Electrical Code Part I (40°C Ambient Air Temperature, indoor installation)

2 Ampacities are based on Table D17A of the 2015 Canadian Electrical Code Part I