# HVTECK SPECIFICATIONS

**HVTECK AL 1/C 140EPR TS LSZH AIA LSZH SOLONON® 8KV 133% CSA**

## PRODUCT HIGHLIGHTS
Southwire’s 8KV HVTECK Solonon® low smoke zero halogen jacketed cable is a CSA armoured cable for industrial and commercial medium voltage applications. Rated FT4-ST1, -25°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 encasable.

## CONSTRUCTION

### Conductor
- **Class B** - compact stranded -8000 Series Aluminum -ACM
- **Class B** compact stranded copper
- **B** compressed stranded copper
- **Strand** blocking technology
- **Timing** on copper conductors

### Insulation Shield
- Extruded Semi-conducting thermosetting polymeric layer
- **No-lead EPR** (Ethylene Propylene Rubber)
- **1768**

### Options
- **Class B** compact stranded copper
- **Class B** compressed stranded copper
- **Strand blocking technology**
- **Timing** on copper conductors

### Insulation
- **No-lead EPR** (Ethylene Propylene Rubber)
- **Thickness**: 0.14 inches (3.56mm) - nominal
- **Insulation level**: 133%
- **105°C** rated

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

### Overall Jacket
- **Black - Low Smoke Zero Halogen XLPE Solonon jacket**
- **Nominal Thickness**: No.2 AWG to 250 kcmil = 0.05 inches (1.27mm)
- **350 kcmil** to 1000 kcmil = 0.06 inches (1.52mm)

### Copper Tape Shield
- Helically wrapped 5 mil copper tape with 25% overlap
- A separate bonding/grounding conductor may be required

### Inner Jacket
- **Black**. PVC
- **Thickness**: No.2 AWG = 0.06 inches (1.52mm)

**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)

**Typical Print Legend**
- **(CSA) SOUTHWIRE [ICEA]** #[AWG or kcmil] CPT AL 140 EPR AIA 8KV 133% INS LEVEL 25% TS SUN RES 105° FT4-ST1 LSZH SOLONON HL (-25°C) LTDD 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>Insulation Over Diameter</th>
<th>Insulation Over Insulation Shield</th>
<th>Insulation Over Inner Jacket</th>
<th>Diameter Over Armour</th>
<th>Approx. Overall Diameter</th>
<th>Approx. Overall Bend Radius</th>
<th>Approx. Overall Weight of Cable</th>
<th>Max. Real Weight of Cable</th>
<th>Max. Real Length</th>
<th>Max. Real Weight/Len **</th>
<th>Max. Real Length of Cable on Reel **</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL140C02-002</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>0.433</td>
<td>23.0</td>
<td>No.2 AWG = 0.06 inches (1.52mm)</td>
<td>76/54</td>
<td>19.6/13.7</td>
<td>6000</td>
</tr>
<tr>
<td>AL140C02-001</td>
<td>1(19)</td>
<td>0.299</td>
<td>7.6</td>
<td>0.609</td>
<td>15.5</td>
<td>0.689</td>
<td>17.5</td>
<td>0.465</td>
<td>22.1</td>
<td>No.1 AWG to 1000 kcmil = 0.08 inches (2.03mm)</td>
<td>78/54</td>
<td>19.6/13.7</td>
<td>6000</td>
</tr>
<tr>
<td>AL140C02-000</td>
<td>1(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>0.506</td>
<td>23.0</td>
<td>No.1 AWG to 1000 kcmil = 0.08 inches (2.03mm)</td>
<td>76/54</td>
<td>19.6/13.7</td>
<td>6000</td>
</tr>
<tr>
<td>AL140C02-000</td>
<td>2(19)</td>
<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>0.546</td>
<td>24.0</td>
<td>No.1 AWG to 1000 kcmil = 0.08 inches (2.03mm)</td>
<td>78/54</td>
<td>19.6/13.7</td>
<td>6000</td>
</tr>
<tr>
<td>AL140C02-000</td>
<td>3(19)</td>
<td>0.423</td>
<td>10.7</td>
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<td>18.6</td>
<td>0.813</td>
<td>20.7</td>
<td>0.693</td>
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<td>No.1 AWG to 1000 kcmil = 0.08 inches (2.03mm)</td>
<td>78/54</td>
<td>19.6/13.7</td>
<td>6000</td>
</tr>
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<td>AL140C02-000</td>
<td>4(19)</td>
<td>0.475</td>
<td>12.1</td>
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<td>19.9</td>
<td>0.865</td>
<td>22.0</td>
<td>0.775</td>
<td>26.5</td>
<td>No.1 AWG to 1000 kcmil = 0.08 inches (2.03mm)</td>
<td>78/54</td>
<td>19.6/13.7</td>
<td>6000</td>
</tr>
<tr>
<td>AL140C02-000</td>
<td>5(19)</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>0.893</td>
<td>27.9</td>
<td>No.1 AWG to 1000 kcmil = 0.08 inches (2.03mm)</td>
<td>78/54</td>
<td>19.6/13.7</td>
<td>6000</td>
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<tr>
<td>AL140C02-000</td>
<td>6(19)</td>
<td>0.561</td>
<td>14.5</td>
<td>0.936</td>
<td>23.8</td>
<td>1.016</td>
<td>25.8</td>
<td>0.963</td>
<td>31.2</td>
<td>No.1 AWG to 1000 kcmil = 0.08 inches (2.03mm)</td>
<td>78/54</td>
<td>19.6/13.7</td>
<td>6000</td>
</tr>
<tr>
<td>AL140C02-000</td>
<td>7(19)</td>
<td>0.601</td>
<td>15.6</td>
<td>0.936</td>
<td>23.8</td>
<td>1.016</td>
<td>25.8</td>
<td>0.963</td>
<td>31.2</td>
<td>No.1 AWG to 1000 kcmil = 0.08 inches (2.03mm)</td>
<td>78/54</td>
<td>19.6/13.7</td>
<td>6000</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)

**Length** 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 & Constrictor Neutral Power Cable - 5 to 46 kV
- CSA C22.2 No. 174 - Cables in Hazardous Locations
- IEEE 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. - Vertical Wire Flame Test)
- FT4 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- IEEE T-29-520 - Vertical Cable Tray Flame Test - (210,000 BTU/Hr.)
- CSA ST1 Smoke Test - marked FT4-ST1

**Product Ratings**
- CSA C22.2 No. 2568 & No. 0.3. - Wire and Cable Test Methods
- CSA LTDD - (25°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**
- -25°C - CSA Cold Bend and Impact Temperature
- -10°C - Min. Installation Temperature
- 105°C - Max. Continuous Operating Temperature
- 140°C for Emergency Overload 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</th>
<th>AC Resistance @ 50°C/60 Hz (triplex formation)</th>
<th>Inductance L</th>
<th>Capacitance C</th>
<th>Inductive Reactance @ 60Hz (triplexed)</th>
<th>Capacitive Reactance @ 60Hz (triplexed)</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>AL140028-002</td>
<td>398</td>
<td>0.265</td>
<td>0.699</td>
<td>0.333</td>
<td>1.093</td>
<td>0.0044</td>
<td>0.0209</td>
<td>0.0394</td>
<td>0.0209</td>
<td>0.334 + j0.056</td>
<td>0.691 + j0.485</td>
<td>9.3163</td>
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<tr>
<td>AL140028-001</td>
<td>502</td>
<td>0.211</td>
<td>0.692</td>
<td>0.265</td>
<td>0.670</td>
<td>0.0109</td>
<td>0.0312</td>
<td>0.0691</td>
<td>0.0124</td>
<td>0.0384 + j0.0117</td>
<td>0.266 + j0.055</td>
<td>3.9621</td>
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<td>AL140028-010</td>
<td>634</td>
<td>0.168</td>
<td>0.551</td>
<td>0.211</td>
<td>0.693</td>
<td>0.0074</td>
<td>0.0316</td>
<td>0.0752</td>
<td>0.0108</td>
<td>0.212 + j0.053</td>
<td>0.572 + j0.450</td>
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<td>AL140028-020</td>
<td>799</td>
<td>0.133</td>
<td>0.436</td>
<td>0.167</td>
<td>0.549</td>
<td>0.0942</td>
<td>0.0302</td>
<td>0.0817</td>
<td>0.0116</td>
<td>0.0325 + j0.009</td>
<td>0.529 + j0.431</td>
<td>5.964</td>
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<td>AL140028-030</td>
<td>1007</td>
<td>0.105</td>
<td>0.345</td>
<td>0.132</td>
<td>0.433</td>
<td>0.0911</td>
<td>0.0298</td>
<td>0.0894</td>
<td>0.0112</td>
<td>0.0297 + j0.009</td>
<td>0.494 + j0.410</td>
<td>7.4576</td>
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<td>AL140028-040</td>
<td>1270</td>
<td>0.084</td>
<td>0.345</td>
<td>0.105</td>
<td>0.345</td>
<td>0.0882</td>
<td>0.0284</td>
<td>0.0978</td>
<td>0.0109</td>
<td>0.0271 + j0.008</td>
<td>0.467 + j0.388</td>
<td>9.4776</td>
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<tr>
<td>AL140028-050</td>
<td>1500</td>
<td>0.071</td>
<td>0.232</td>
<td>0.089</td>
<td>0.292</td>
<td>0.0886</td>
<td>0.0286</td>
<td>0.0981</td>
<td>0.0103</td>
<td>0.0202 + j0.007</td>
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<td>AL140028-060</td>
<td>1720</td>
<td>0.061</td>
<td>0.168</td>
<td>0.084</td>
<td>0.209</td>
<td>0.0831</td>
<td>0.0276</td>
<td>0.1175</td>
<td>0.0102</td>
<td>0.0222 + j0.006</td>
<td>0.419 + j0.332</td>
<td>15.5976</td>
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<td>AL140028-070</td>
<td>2001</td>
<td>0.051</td>
<td>0.168</td>
<td>0.084</td>
<td>0.209</td>
<td>0.0831</td>
<td>0.0276</td>
<td>0.1175</td>
<td>0.0102</td>
<td>0.0222 + j0.006</td>
<td>0.419 + j0.332</td>
<td>15.5976</td>
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<td>AL140028-080</td>
<td>2550</td>
<td>0.051</td>
<td>0.168</td>
<td>0.084</td>
<td>0.209</td>
<td>0.0831</td>
<td>0.0276</td>
<td>0.1175</td>
<td>0.0102</td>
<td>0.0222 + j0.006</td>
<td>0.419 + j0.332</td>
<td>15.5976</td>
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<td>AL140028-090</td>
<td>3000</td>
<td>0.051</td>
<td>0.168</td>
<td>0.084</td>
<td>0.209</td>
<td>0.0831</td>
<td>0.0276</td>
<td>0.1175</td>
<td>0.0102</td>
<td>0.0222 + j0.006</td>
<td>0.419 + j0.332</td>
<td>15.5976</td>
</tr>
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<td>AL140028-100</td>
<td>3500</td>
<td>0.051</td>
<td>0.168</td>
<td>0.084</td>
<td>0.209</td>
<td>0.0831</td>
<td>0.0276</td>
<td>0.1175</td>
<td>0.0102</td>
<td>0.0222 + j0.006</td>
<td>0.419 + j0.332</td>
<td>15.5976</td>
</tr>
</tbody>
</table>

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

‡ Ampacities are based on Table D17A of the 2015 Canadian Electrical Code Part I (40°C Ambient Air Temperature, indoor installation)