The STEP® Heating Element is constructed of two parallel bus braids embedded in a semi-conductive polymeric heating element. A polymeric dielectric jacket is applied at the time the heating element is manufactured so that the jacket is thermally joined to the heating element. This creates a heating element that features a solid, or homogeneous, construction that will not separate from thermal cycling or physical flexing.

Slots are fabricated into the 9” or wider STEP® Heating Element to increase flexibility. Heating Element to provide even, gentle heating with no burnout as typical of constant wattage heating elements. In addition, this even heat-output allows the STEP® Heating Element to be safely used in conjunction with a wide range of low-temperature materials such as man-made fabrics, vinyl, rubber and wood.

The STEP® Heating Element has the added safety benefit of being a low voltage device. The heaters can operate using a 5V to 30V AC or DC source. The heaters can even operate from a battery pack or a solar or wind power source.

The STEP® Heating Element can easily be incorporated into your OEM application as there are numerous widths and wattage outputs to choose from; the heaters are field cut to length to suit the application; and they can be powered from inexpensive low voltage power sources.
Self-Regulating Heating Elements

Product Specifications...

Heating element type: Positive Temperature Coefficient (PTC) semi-conductive polyethylene

Dimensions:
- Widths available: 3” (7 cm), 6” (15 cm), 9” (23 cm) and 12” (30 cm)
- Thickness: 3/64” (1.2 mm)
- Length: cut to order with a 174 Ft (53 m) maximum shipping spool length
- Weight: 3” Width – 0.08lb/ft (0.12kg/m)
  - 6” Width – 0.13lb/ft (0.20kg/m)
  - 9” Width – 0.18lb/ft (0.27kg/m)
  - 12” Width – 0.23lb/ft (0.34kg/m)

Output wattage: 1.0 W/ft (3 W/m) through 24 W/ft. (80 W/m) @ 68°F (20°C)

Supply voltages: 5V to 30V, AC or DC source

Bus braid: 15 AWG tinned copper flat braid

Dielectric jacket: MEP film, thermally bonded to heating element

Minimum bending radius: 3/32” (2.5mm) @ 32°F (0°C)

Maximum exposure temperature: 176°F (80°C)

Chemical Compatibility: MEP is resistant to water and chemicals.

Approvals / Certifications...

Electro Plastics, Inc. has various approvals and certifications for the finished products it manufacturers such as STEP® Warmfloor or STEP® Marine brand of heating systems. It is the responsibility of the OEM to secure the necessary finished product approvals that are market appropriate and industry required for the finished product they are manufacturing using the STEP® Heating Element.

Model Number Matrix...

<table>
<thead>
<tr>
<th>EP</th>
<th>30</th>
<th>70W</th>
<th>(-XX)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option Code</td>
<td>Supply Voltage</td>
<td>Power Output in Watts/Meter</td>
<td>Element Width in Centimeters</td>
</tr>
</tbody>
</table>

Product Options...

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>No Slots, slots only applicable to the 6” - 9” – 12” wide STEP® Heating Element</td>
</tr>
<tr>
<td>MEP</td>
<td>Electrically insulated and chemically inert</td>
</tr>
</tbody>
</table>

Product Performance...
### STEP Heating Element™ Power Output in Watts per Foot at the Stated Supply Voltage

<table>
<thead>
<tr>
<th>STEP Heating Element™ Model No.</th>
<th>Heater Width</th>
<th>Ohm/Ft @ 68°F (20°C)</th>
<th>W/ft² @ 68°F (20°C)</th>
<th>Power Output (W/ft) (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>32°F (0°C)</td>
<td>50°F (10°C)</td>
<td>68°F (20°C)</td>
</tr>
<tr>
<td>12VSTEP Heating Element™ with 2 Bus braids (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EP-7-17W-12V</td>
<td>3”</td>
<td>26</td>
<td>22.2</td>
<td>6.3</td>
</tr>
<tr>
<td>EP-7-23W-12V</td>
<td>3”</td>
<td>21</td>
<td>27.4</td>
<td>8.2</td>
</tr>
<tr>
<td>EP-7-40W-12V</td>
<td>3”</td>
<td>12</td>
<td>48.0</td>
<td>14.0</td>
</tr>
<tr>
<td>EP-15-32W-12V</td>
<td>6”</td>
<td>14</td>
<td>20.6</td>
<td>12.2</td>
</tr>
<tr>
<td>24VSTEP Heating Element™ with 2 Bus braids (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EP-7-30W-24V</td>
<td>3”</td>
<td>63</td>
<td>36.4</td>
<td>10.8</td>
</tr>
<tr>
<td>EP-23-22W-24V</td>
<td>9”</td>
<td>85</td>
<td>9.0</td>
<td>8.0</td>
</tr>
<tr>
<td>EP-23-36W-24V</td>
<td>9”</td>
<td>52</td>
<td>14.6</td>
<td>13.0</td>
</tr>
<tr>
<td>EP-23-80W-24V</td>
<td>9”</td>
<td>24</td>
<td>32.0</td>
<td>27.0</td>
</tr>
<tr>
<td>EP-30-25W-24V</td>
<td>12”</td>
<td>74</td>
<td>7.8</td>
<td>9.4</td>
</tr>
<tr>
<td>EP-30-29W-24V</td>
<td>12”</td>
<td>64</td>
<td>9.0</td>
<td>10.7</td>
</tr>
<tr>
<td>EP-30-36W-24V</td>
<td>12”</td>
<td>52</td>
<td>11.0</td>
<td>13.0</td>
</tr>
<tr>
<td>EP-30-70W-24V</td>
<td>12”</td>
<td>27</td>
<td>21.3</td>
<td>24.0</td>
</tr>
</tbody>
</table>

Notes:
1. To determine a power output in Watts per Meter, multiply the Watts per Foot power output by 3.28.
2. Power outputs listed above are based upon the stated supply voltages. The use of other supply voltages will provide a variation in the power output. Consult the factory for your application specific values.
3. Power outputs at temperatures other than those listed above can be estimated by extrapolating between the listed values. Consult the factory for temperatures that are higher or lower than listed above.

Product Availability:
Electro Plastics, Inc. maintains an inventory only of selected heating elements. Available quantities of those standard inventoried elements will vary with production schedules and receipt of orders. Elements marked with (*) are not inventoried and will be manufactured only upon demand. A minimum 5,000 ft. (1,500 m) order is required for production of those elements.
STEP Heating Element™ OEM Application Suggestions by Market…

**Automotive**
- Seat heater
- Floor board heater
- Exterior mirror heater

**Aviation**
- Cabin radiant heat
- Cockpit heel plate comfort heat
- Jet way snow melting
- Helicopter deck snow-melting
- Air craft de-icing

**Marine**
- Ship deck anti-icing
- Ship superstructure de-icing
- Living/work space radiant heat

**Trucking**
- Shipping container heat
- Loading dock snow melting
- Truck trailer heat
- Truck comfort cab radiant heat
- Seat heater
- Floor board heater
- Exterior mirror heater
- Dump truck bed heater

**Petrochemical**
- Oil rig deck and walkway anti-icing
- Tank heater
- Living/work space radiant heat

**Medical**
- Hospital bed heater
- Operating table heater
- IV Fluid heater
- Body wrap for localized heat
- Ambulance radiant heat
- Ambulance pharmaceutical storage heat

**Military**
- Casualty warmer
- Torso warmer
- Gurney heater
- IV Fluid heater

**Recreation Vehicle**
- Radiant heat
- Tank frost prevention

**Communications**
- Satellite dish anti-icing and snow melting
- Battery box heaters for transmitters

**Consumer products**
- Heating pads and foot heaters
- Under rug heater
- Under desk foot heater
- Heated bedding

**Food Service**
- Heated food transport containers for caterers (bags, cases, trays)
- Heated pizza delivery bags
- Freezer frost heave prevention

**Sports**
- Stadium bench/seat heat
- Portable cushion heat
- Sleeping bag heat
- Body comfort heat

**Horticulture**
- All weather starting bed heater
- Green house tables and nursery
- Vine tank fermentation heater

**Veterinary & Pet care**
- Aquarium heater
- Reptile cage heater
- Heated blankets
- Transport trailer radiant heat
- Dog house radiant heat
- Operating table heater
- Animal pen comfort heat

**Research**
- Telemetry box heater
- Electronics heater
- Laboratory heater
- Product curing heater

**Residential / Commercial Construction**
- Radiant heat and floor warming
- Walkway snow-melting
- Stair and step snow-melting
- Roof and gutter snow-melting
- Pool heat
- Work station comfort heat
- Septic tank heater

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