Water Freezing Prevention

In freezing weather conditions, do not allow the water in the SLED modules to freeze to a solid mass of ice. If the temperature at the SLED site is expected to be at or below the freezing point of water 32° F [ 0°C ], it is recommended that an additive be used to prevent the water in the SLED modules from freezing. See Table 1 on pg 17.

-Common additives used to prevent water freezing currently used in work zone devices under the same category as the SLED Modules.

**SALT (Sodium Chloride)**
20% mixture by weight
- Reduces freezing down to 0° F [-18° C].
- Corrosive to inadequately protected steel components (Galvanizing adequately prevents corrosion)
- Recommended - premix before filling
- Prevent spilling since solution is harmful to vegetation, soils, and wildlife. Draining should be done in an acceptable area.

**CALCIUM CHLORIDE**
35% mixture by weight
- Reduces freezing down to 20° F [-6.6 °C ].
- Corrosive to thin zinc plated components
- Corrosive to inadequately protected steel components (Galvanizing adequately prevents corrosion)
- High tendency to stay on road surface resulting in slick road surface.
- High level of heat created when mixing. It is recommended that pre-mixing is done before filling.
- Prevent spilling since solution is harmful to vegetation, soils, and wildlife. Draining should be done in an acceptable area.

**ETHYLENE/PROPYLENE GLYCOL**
50% mixture by volume
- Reduces water freezing to 0° F [-18° C].
- High tendency to stay on road surface resulting in slick road surface.
- Prevent spilling since solution is harmful to vegetation, soils, and wildlife. Draining should be done in an acceptable area.

**LIQUID CMA (Calcium Magnesium Acetate)**
25% mixture by volume
- Reduces water freezing to 0° F [-18° C].
- Has a low environmental impact.

**LIQUID POTASSIUM ACETATE**
60% mixture by volume
- Reduces water freezing to 20° F [-6.6° C]
- Low corrosive characteristics and has a low environmental impact.
### Table 1- Recommended water freezing prevention chart solution comparison.

<table>
<thead>
<tr>
<th>Additive</th>
<th>Environmental Impact</th>
<th>Cost Rating</th>
<th>Protection Temp</th>
<th>Mix Solution Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt (Sodium Chloride)</td>
<td>Harmful</td>
<td>Low</td>
<td>0 °F [-18 ° C]</td>
<td>20% by weight</td>
</tr>
<tr>
<td>Calcium Chloride</td>
<td>Harmful</td>
<td>Medium</td>
<td>20 °F [-6.6 ° C]</td>
<td>35% by weight</td>
</tr>
<tr>
<td>Ethylene/Propylene Glycol</td>
<td>Dangerous</td>
<td>High</td>
<td>0 °F [-18 ° C]</td>
<td>50% by volume</td>
</tr>
<tr>
<td>Liquid CMA</td>
<td>Non-Toxic</td>
<td>High</td>
<td>0 °F [-18 ° C]</td>
<td>25% by volume</td>
</tr>
<tr>
<td>Liquid Potassium Acetate</td>
<td>Non-Toxic</td>
<td>High</td>
<td>20 °F [-6.6 ° C]</td>
<td>60% by volume</td>
</tr>
</tbody>
</table>