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 0° F [-18° 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 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>