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.

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