KeeVac Industries, Inc.
866-789-9440

Winter Servicing

Protecting Units from Freezing

The following are several options for cold weather servicing. We suggest using rock salt, methanol or a combination of these two ingredients to protect chemical toilets from freezing. Other salts and anti-freezes will perform well; however, because of their prohibitive costs we have found them to be impractical for every day use. Below are listed the amounts of salt, methanol or salt and methanol combined, necessary to protect water from freezing at various temperatures.

SALT

½ pound per gallon of water protects to 28°F. 1 pound per gallon of water protects to 19°F.
1 – ½ pounds per gallon of water protects to 11°F. 2 pounds per gallon of water protects to 0°F.
Two pounds of salt is the maximum amount that can be dissolved in one gallon of water.

METHANOL

5% or 6.4 ounces per gallon of water protects to 28° F. 10% or 12.8 ounces per gallon of water protects to 22°F. 15% or 19.2 ounces per gallon of water protects to 17°F. 20% or 25.6 ounces per gallon of water protects to 11°F. 25% or 32 ounces per gallon of water protects to 4°F. 30% or 38.4 ounces per gallon of water protects to -4°F.

Caution: Methanol becomes flammable if used in quantities exceeding 33%. Be very careful not to exceed that percentage.

SALT AND METHANOL COMBINED

The amounts of methanol listed below are added to previously mixed solution containing 2 pounds pf salt per one gallon of water:

5% or 6.4 ounces per gallon of water protects to -6°F. 10% or 12.8 ounces per gallon of water protects to -11°F. 15% or 19.2 ounces per gallon of water protects to -17°F. 20% or 25.6 ounces per gallon of water protects to -21°F. 25% or 32 ounces per gallon of water protects to -30° F. 30% or 38.4 ounces per gallon of water protects to -40°F.

MAKING A BRINE SOLUTION

One of the most common methods of making brine solution is to purchase rock salt by the bag or in bulk. Purchase a 300-gallon stock tank (cattle feeding). Take a 55-gallon drum and cut out one end. Place the 55-gallon drum in the stock tank with the open end up. Put a pipe in the 55-gallon drum. Empty salt pellets into the drum. Run water into the pipe so that the water comes up through the salt, overflowing the top of the barrel as a brine solution. Pump brine into the truck for service work. It may also be helpful to put rock salt in the urinals so that you do not dilute the mixture.

CAUTION: Do not wash units with brine solution as you will have a white salt residue which comes off on clothing. Use a little methanol in your washing solution for scrubbing and cleaning.

Some firms use a combination of methanol and brine. Never use more than 30% methanol in the mixture. Methanol can become flammable. It burns very hot and you cannot see the flame. If a heater is put in the units, do not allow any methanol to be splashed into a ribbon heater. Methanol on a ribbon heater produces a deadly gas. The only acceptable heater is a calrod heater. The element is about the thickness of a pencil.

Check with local disposal site facilities when using salt or methanol.

ROCK SALT AND CALCIUM CHORIDE

1. Use a 200 gallon (approx.) tank for mixing.
2. Fill the tank with water.
3. Add 100 pounds crystal rock salt.
4. Add 100 pounds calcium chloride.
5. Mix well (an electric drill with a paint mixer works).
6. Pump mixture into truck using a small pump.
7. After filling tank, run at least three (3) gallons of fresh water through the pump to be sure that all brine is washed out.

This mix will be used when the temperature begins to average around 30° F in the mornings. Increase the calcium chloride to 200 pounds (still to be used with 100 pounds of crystal rock salt) when the temperature begins to remain below freezing throughout the day. The timetable for cold weather servicing must, of course, be worked out according to temperature changes in your particular area. You will need to monitor this procedure carefully; your drivers should let you know every few days how the mixture is working.

ANTIFREEZE

An alternate method for winterizing units is the use of antifreeze. Before using antifreeze you must check with your local waste water treatment plant to determine if they will accept it into their system.

What you need to use is ethylene glycol if possible, the main chemical in antifreeze on the market. All you are looking for is the ethylene glycol, not the other additives that raise the price.

Two (2) ounces of deodorizer should be used with the antifreeze for the purpose of a slight mask.

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Below is a chart for percentage of antifreeze to use with water according to given temperatures. Numbers are based on a five (5) gallon charge.

Temperature (°F)	%	Antifreeze	Water	Total
31-35	10	½ gal	4 ½ gal	5 gal
26-30	15	¾ gal	4 ¼ gal	5 gal
21-35	20	1 gal	4 gal	5 gal
16-20	20	1 gal	4 gal	5 gal
11-15	25	1 ¼ gal	3 ¾ gal	5 gal
6-10	30	1 ½ gal	3 ½ gal	5 gal
0-5	35	1 ¾ gal	3 ¼ gal	5 gal