Diesel Exhaust Fluid (DEF) is a water-based solution and will begin to crystallize at 12 degrees F. When using DEF in extreme winter conditions, take precautions as DEF will become a ‘slush’ before it ultimately freezes into a solid state. The process of freezing DEF has no effects on its quality or performance.

- **Leave room for expansion.** DEF expands upon freezing by upward of 7%. When storing equipment overnight or for longer time periods in temperatures that could result in DEF freezing, it’s important to make sure the DEF tank on the equipment is not completely full. This will allow for expansion and allow the fluid to return to its usable state.
- **Store indoors or in heated outdoor tanks.** DEF packages and bulk storage should be kept indoors in temperature-controlled environments, or in heated sheds or tanks if required to be stored outside.
- **Check the expiration.** Urea is vulnerable to degradation from sunlight and extreme temperatures making DEF’s storage life variable. In favorable storage conditions (proper container, away from direct sunlight, temperatures between 12 and 86 degrees F), DEF can maintain its qualities for about 12 months.
- **Handle it like fuel.** Per EPA guidelines, vehicles using DEF must include sensors to continually analyze the quality of the DEF being consumed. These sensors will trigger a fault code whenever an imbalance is detected. Most commonly, this results from a higher percentage of water as a result of foreign matter, condensation or rainwater in the DEF storage container or during transfer.

**Wintertime Preparation Procedures**

1. **Activate and Test Heaters:** Turn on the thermostat and verify the heaters are operable, then test the fluid temperature to ensure the heaters are working properly. Do not overheat the fluid. If able, set the thermostat to 40-45 degrees F.
2. **DEF Not Dispensing in Cold Conditions:** If DEF will not dispense due to cold weather conditions, dip dispensing nozzle in clean warm water, allowing any dry urea to dissolve (melt) allowing you to dispense fluid into the truck.
3. **Top-Off Tanks in Extreme Winter Conditions:** DEF will freeze in smaller volumes easier than it will in larger bulk volumes. Use common sense and don’t overfill tanks (allowing at least 7% headspace for expansion), but during extreme conditions make sure truck and supply tanks are topped off.
4. **Do Not Add Anti-Gel Agent or Freeze Inhibitors to DEF:** DEF has to maintain specific properties to eliminate NOx from a trucks exhaust stream. Adding anything to the fluid will impede its functionality and result in damaging the trucks SCR system. If DEF freezes in the truck’s tank, there are heaters to defrost the product.
5. **Bring it Inside:** Bringing a DEF tote, drum or jugs indoors is the easiest method to prevent extreme winter conditions from freezing the fluid. Put DEF in your shop and overtime it will defrost to a liquid state.