



Additives Keep Fuel Flowing When Temps Drop

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THE WINTER SEASON IS HERE, AND FOR most fuel dealers in the Northeast, that means kerosene blending to keep your customers' fleets running smoothly.

Let's face it, a big part of our reputation rides on how well our winter products perform during the coldest days of the year. For winter blends, our company primarily relies on kerosene blending along with pour point depressants. We deliver higher kero blends as you go further North, including 50:50 blends or more in Maine.

WHERE KERO IS KING

From Boston to Portland, most terminals offer kerosene-blended winter diesel. Kerosene blending is old reliable, tried and true. For every 10 percent of kerosene blended with diesel fuel, the cloud point is lower by about three degrees. In extreme cold weather, higher kero blends are available at the rack, and you can get a winter diesel with a cloud point down to zero or below.

As a point of reference, winterized diesels treated with additives at the rack should have similar cold weather properties as a 30 percent blend of kero. While additives can significantly reduce the fuel's CFPP, the ratios vary in effectiveness with different diesel stocks.

TO BE FAIR

Additive suppliers often use low numbers for winter kero blends, simply averaging the kerosene and diesel from the ASTM D975 specs. To be fair, most of our diesel in New England is from Canadian sources whose diesel standards are much tougher than ours. We always get much better numbers from the fuel analysis.

Kerosene blends don't actually reduce cetane numbers in winter blends. A common error, kerosene actually raises the cetane number. What happens is the *calculated*

cetane drops. It's an equation issue, as folks don't do an expensive cetane number test, but use an algorithm to calculate.

Kerosene does have a lower BTU content than diesel, which results in a decrease in engine power and fuel economy. You lose roughly about two percent in a 50:50 winter blend. Even with all of its shortfalls, however, kerosene is the benchmark that all winter additives hang their hat on.

GRAB YOUR SHOPPING CART

Now let's take a quick look at some of the cold weather fuel treatments and house-keeping additives you might need.

Water Treatments – Maintaining a year-round moisture control program to minimize moisture problems makes sense for both you and your customers. Glycol ethers treatments can really help to reduce water accumulation, enhance a fuel's ability to hold water in solution, and help remove moisture from the entire system. Many engine manufacturers also recommend glycol ethers for more reliable winter operation.

The fuel system itself creates water via condensation, as warm fuel returns from the engine back into the cold saddle tanks. That's why all fleets top-off their saddle tanks more often in the winter. It's also still very important to regularly drain water from saddle tank bottoms.

Deicers – We all know that *icing* is one of the major causes of cold temperature fuel-related problems. As the weather gets colder, ice crystals begin to form in diesel fuel that contains about 500 ppm of water.

In a pinch, you can use isopropyl alcohol (not methanol) for moisture control. It also lowers the freeze point of water down to 10 degrees below zero. Better quality additives use a glycol-based, non-alcohol, jet fuel

type that can lower the freeze point of water all the way down to -50 degrees, keeping fuel filters free of ice.

Pour Point Depressants and Antigels – Diesel fuel is prone to *gelling* or *waxing* in cold weather. Both are terms describing the solidification of diesel fuel into a partially crystalline state. These solidified waxes thicken the fuel, and then clog the fuel filters until a point that the fuel can't reach the engine, causing it to stop running.

Additives can help reduce wax crystals to microscopic size to allow them to flow through filters. This helps prevent filter plugging even at sub zero temperatures. Wax crystals in untreated diesel fuel can reach 200 to 500 micron, which would cause filter plugging. Conventional additives can reduce the size of wax crystals to about 30 to 50 micron. Better quality antigel additives can reduce the size of wax crystals down below 10 micron.

Anti-static agents – Treating your fuel increases the electrical conductivity of the fuel, helping dissipate static charges to mitigate the risk of explosions or fires.

Detergents and anti-sludge additives – Keeping your tanks, fuel system, and injectors clean with detergents dramatically improves engine performance. Anti-sludge agents dissolve asphaltics and asphaltenes that settle out of the fuel and then accumulate at the bottom of the tank.

Biocides – Fast acting and effective shock treatment to kill bacteria, algae and other bio-contamination in the tank.

Did you figure out what you need? Take the time to research additive vendors, check analysis data, and talk to your fuel supplier. Do your homework, and you'll sleep better at night. ☒