

## GET MORE OUT OF YOUR FUEL™



### *If a car stalls at my station, does that mean my fuel is Phase Separated?*

**Not necessarily!** There are many reasons why a car would stall. Some of the reasons are beyond the scope of this paper, so let's first assume that the stall is fuel-related. The largest number of fuel-related stalls can be attributed to one root cause: water in the fuel. If you are dispensing E10 or another ethanol blend, it does not necessarily mean *all* of the fuel in your underground storage tank is 'phase separated'.

#### *Understanding Phase Separation*

You should first have a basic understanding of how phase separation occurs in an ethanol-blended fuel. There are many variables that contribute to the occurrence of phase separation: the amount of ethanol in the blend, the amount of water and temperature and the amount of aromatics in the fuel. **As the amount of ethanol in the fuel is reduced, the less water tolerance the fuel will have.** A 5% blend will hold less water than a 10% blend before phase separation occurs. **A warm fuel will hold more water than a cold fuel.** This is a very important fact, one worth remembering.

Ethanol is hygroscopic, meaning it will seek out and attract water from any available source. That source could be the humidity in the air or it could be condensation on the inside of the tank. It does not mean your fuel was delivered containing too much water.

#### *An Example*

In real life, how does this happen? In this example, we'll make some assumptions for the sake of clarity. We will assume that the fuel is E10, that the temperature in the underground storage tank (UST) is constant at 65° F, and that the phase separation point (water tolerance) at this temperature is 0.50% water, and that the fuel actually has 0.45% water in it. Since the water content is below the phase separation point, it is acceptable and should pass harmlessly through an engine. Now let's assume the outside temperature is 35° F. At 35°, the phase separation point (water tolerance) might drop to 0.40% water. If you are following this example, you can guess what might happen! The perfectly fine 65° fuel is pumped through the dispenser and Alcohol Monitor and then hits the cold 35° fuel tank in a car...within seconds it phase separates, because the phase separation point drops to 0.40% water at this temperature. ***The fuel in the UST was fine and the Alcohol Monitor worked fine.*** It was actually the temperature of the car's fuel tank that caused phase separation. ***See it happen with your own eyes!*** To see a visual demonstration of this phenomenon, visit the link: [http://www.youtube.com/watch?v=rO3x5o0W7-M&feature=channel\\_page](http://www.youtube.com/watch?v=rO3x5o0W7-M&feature=channel_page)

#### *What if the fuel in my UST is phase separated?*

That could be the case. BUT, if you install genuine Bio-Tek® Alcohol Monitors, they will sense the phase separated fuel passing through the dispenser and slow the flow significantly, signaling that there is a problem. Until now, a UST filled with phase separated fuel could be a huge, costly problem. Let Cim-Tek help you reverse the phase separation and restore your fuel.

#### *What? REVERSE PHASE SEPARATION?*

Yes, that's right! Cim-Tek's Research and Development™ team has developed a new product, Hydroburn™ that will effectively reverse phase separation, restoring your fuel to the same amount of ethanol and octane level. See it for yourself, visit <http://www.youtube.com/watch?v=XljQdR-avdM> or better yet order a case today and try it! No more stalled cars...no more phase separated fuel problems.

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