

What You Need To Know About ULSD, Bio-Diesel and Long Term Fuel Storage

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Ultralow Sulfur Diesel Fuel

Monitoring of diesel fuel quality in the past few years has become more important than ever with the changes in fuel formulations. With the decrease of sulfur content in modern diesel fuel new challenges have been presented to both suppliers and users. Ultralow sulfur diesel fuel possesses lower lubricating properties (lubricity) without the use of additives from the fuel suppliers. ULSD also tends to have a lower cetane and energy content. Storage stability of modern fuels may not perform as well as in the past since sulfur tended to act as a natural antioxidant in petroleum products.

The refining process of ULSD to remove the sulfur, can also increase the paraffin wax content, which enables the fuel to retain more dissolved water. This also affects the cold temperature performance of the fuel due to increased temperatures for fuel gelling and filter plugging due to wax crystals.

Diesel-powered engines and vehicles for 2007 and later model year vehicles are designed to operate only with ultralow sulfur diesel fuel. Improper fuel use will reduce the efficiency and durability of engines, permanently damaging many advanced emission control systems, as well as reduce fuel economy.

The changes in fuel formulation and the challenges they present are now affecting locomotive, marine and non-road engines. The change in the maximum sulfur content for fuel has been reduced to 500 ppm in these types of engines. By June 2010, the ULSD fuel standard of 15 ppm sulfur will apply to non-road diesel fuel production.

Bio-Diesel

Bio-diesel is also becoming more common in the market place. To ensure proper quality, consumers should use only biodiesel-ULSD fuel blends that are properly mixed by a qualified biodiesel blender.

Bio-diesel presents its own unique challenges for the end-user. Most engine manufacturers require a limit of 5% to 20% maximum blends. Biodiesel reacts poorly with water and has a lower level of tolerance for water contaminations. These fuels are more susceptible to microbial growth problems, especially when water is present. Diesel fuels created from non-petroleum sources have a shorter storage stability life. These fuels do not perform as well as mineral oil refined diesel fuel in cold temperatures and have a higher gelling point. Biodiesel fuels can also contribute to varnishing of fuel systems.

Biodiesel performs comparably to regular diesel, with slightly less energy per gallon when blended into petroleum diesel fuel. However, it does show excellent lubricity.

Long-Term Storage

Cleanliness for diesel fuel, whether it originated from petroleum stock or bio-blends, is always a primary concern, especially for storage conditions and standby power. Dirt and water can plug fuel filters in an engine and cause severe damage to fuel injection system because of the close tolerances within fuel pumps and injectors. Water can cause injector nozzle and pump corrosion, microorganism growth and fuel filter plugging with materials resulting from the corrosion or microbial growth. Common problems occur from water ingestion and/or varnishing of fuel system components. Monitoring of fuel cleanliness, storage stability and integrity of modern fuels has become ever more important over the past few years.

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