How to Read a Diesel Fuel Analysis Report

Diesel fuel analysis allows you to determine if the diesel fuel you are using is negatively affecting fuel filter life or engine performance. The descriptions below will help you interpret the test results and understand the impact condition monitoring can have on the overall effectiveness of your maintenance reliability program.

**Water and Sediment** in fuel can cause corrosion, wear, bacterial growth and premature fuel filter clogging. The amount of water in fuel should not exceed 500 ppm (0.05%). Sediment should be no greater than 100 ppm (0.01%).

**Flash Point** is the lowest temperature at which the vapors of a combustible liquid will ignite momentarily in air. Low diesel fuel flash points indicate contamination by more volatile fuels such as gasoline. Refer to ASTM guidelines for minimum flash point limits.

**Sulfur content** will affect SOx emissions and can have adverse effects on many NOx and PM emission reduction devices. It is important to determine if the sulfur level in fuel is appropriate for a specific application.

**Cloud Point and Pour Point** are measures for a fuel’s tendency to form waxes at low temperatures. Cloud Point is the temperature at which wax crystals begin to form. Pour Point is the lowest temperature at which the fuel will still pour. Referto ASTM guidelines for acceptable limits.

**Distillation temperature** is the temperature at which 90% of the fuel volume can be distilled off. This temperature is directly related to the fuel’s volatility and therefore its Cetane Index, density, flash point and viscosity as well. A #2 diesel fuel’s minimum distillation temperature is 282°C—maximum is 338°C.

**Metal** concentrations of greater than 10 ppm is an indication that corrosion is occurring somewhere in the system or fuel storage tank, or there has been lube contamination.

**A POLARIS analyst’s Comments and Recommendations** highlight test results of most importance and provide a suggested course of action when needed.

**Cetane Index** is a measure of a diesel fuel’s ignition quality. The limit for a #2 diesel fuel is a Cetane Index of at least 40.

**Viscosity** is the measurement of a fuel’s resistance to flow and is reported in centistokes. When viscosity measures out of spec, the fuel can reduce injector performance.

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**Dates Sampled, Received and Completed** help monitor proper sampling intervals and lab turnaround time. **Miles on Unit** indicates age of the equipment. **Lab Sample Number** indicates the lab location where testing was completed and will expedite answers to questions concerning your samples.

**Data Analyst Initials**

As diesel fuels rise in temperature, they produce “asphaltenes,” tar-like resinsous substances most often responsible for clogging fuel filters, therefore reducing filter life. Fuel with Thermal Stability of 80% or greater should not cause filter clogging. Fuels with values between 60%-80% could have a marginal affect and values less than 60% will significantly affect fuel system performance.

The presence of **Bacteria, Mold or Fungi** is a good indication that fuel storage tanks have not been properly maintained. Water builds up at the bottom of the tank and provides an excellent breeding ground for biological growth.

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