

# Technical Bulletin



## 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.

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.

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

Data Analyst Initials

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

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.

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.

The Current Sample is listed first. As many as three preceding samples may also be included.

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.

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%).

UNIT ID: 1 - DAY TANK DF										COMPANY INFORMATION									
SEAKITS										SEAKITS									
ACCOUNT NUMBER										OVERALL SEVERITY OF REPORT									
DATE SAMPLED										0 1 2 3 4									
DATE RECEIVED										NORMAL AB NORMAL CRITICAL									
DATE COMPLETED										LAB # 368116 LOCATION 1 ANALYST RNF									
TRACKING #:										FLUID ANALYSIS REPORT - 877-458-3314									
MANUFACTURER/MODEL:										COMMENTS									
LUBE TYPE - GRADE:										Sulfur content exceeds ASTM #2 on-highway diesel specification; FUELS having THERMAL STABILITY values between 60%-80% are marginal fuels and could affect fuel filter life; SUGGEST the use of an ASPHALTINE CONDITIONER to boost THERMAL STABILITY; BACTERIA COUNT = 100,000 colonies per milliliter of sample; SUGGEST the use of a MICROBIOCIDE or ANTIFUNGAL treatment be considered; Your note was taken into consideration; Water and sediment test is now being performed by ASTM D2709;									
MILION RATING:										WEAR METALS PPM									
FILTIR TYPE:										CONTAMINANT METALS - PPM									
SUMP CAPACITY:										MULTI-SOURCE METALS - PPM									
HYD SYSTEM PRESSURE:										ADDITIVE METALS PPM									
FLUID ADDED:										SAMP #									
										DATE SAMPLED									
										DATE RECEIVED									
										SULFUR PPM									
										WATER & SEDI									
										FLASH PT CCC									
										API GRAVIT									
										CETANE INDEX									
										DISTIL INT BP									
										DISTIL 10 %									
										DISTIL 50 %									
										DISTIL 90 %									
										DISTIL END PT									
										CLOUD PT (C)									
										POUR PT (C)									
										THERM STABIL									
										BACT-ERIA									
										WATER KF %									
										1									
										03/23/07									
										03/27/07									
										U									
										U									
										2.00									
										2983									
										0.005									
										66									
										32.3									
										43.4									
										168.70									
										219.92									
										269.70									
										324.51									
										349.11									
										-11									
										-21									
										76.3									
										B3F0M0									
										0.028									

API Gravity is the measure of a diesel fuel's density, or weight per volume. The higher the API gravity, the less dense the fuel. API gravity provides useful information about a fuel's composition and performance characteristics such as power economy, low temperature properties and smoking tendencies.

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.

As diesel fuels rise in temperature, they produce "asphaltenes," tar-like resinous 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

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

Water % by Karl Fischer measures the amount of water present in the fuel.

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. Refer to ASTM guidelines for acceptable limits.

Comments are advisory only and are based on the assumption that the sample and data submitted are valid. Missing data or unit time limits the evaluation. No warranty is expressed or implied.