DRFUELCLEAN
The Cure for Diesel Engines

Relationship of Diesel Fuel Properties to Composition and Performance

Cetane Index Number – measure of ignition quality – effects cold starting, combustion and emissions. Calculated Cetane Index of Distillate Fuels. D 976 uses the density of the fuel and its mid-distillation temperature to estimate the Cetane number. Minimum number of 40.

Water – ppm testing the presence of water. Presence promotes Bacterial and Microbial growth. Maximum number of 500 ppm.

Water and Sediment – Affects fuel filters and injectors. Water and sediment are contaminants. In this test, a 100 ml sample is centrifuged under specified conditions in a calibrated tube. The amount of sediment and water that settles to the bottom of the tube is read directly using the scale on the tube. Maximum .05% of volume.

API Gravity – Gravity (weight per unit volume) of oils as measured by the API scale. API gravity changes are due to contamination with small amounts of gasoline or diesel somewhere in the delivery chain. Between 31 and 38.5

Distillation – % volume recovery. The distillation profile is a fundamental fuel property. In this test, a 100 ml sample is placed in a round bottom flask and heated to obtain a controlled rate of evaporation. The temperature is recorded when the first drop is collected (the initial boiling point), at recovered volume percentages of 5%, 10%, every subsequent 10% to 90%, 95%, and at the end of the test (end point).

IBP. Initial Boiling Point. In a standard laboratory distillation, the temperature on the distillation thermometer at the moment the first drop of distillate falls from the condenser. Minimum 300 F and 540 to 640 at 90%

Micro Organism – presence of Bacteria, Fungus, and Microbial Growth. Cultured test. Active Presence, positive or negative.

NEW!

The Importance of ISO Cleanliness Codes

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The International Organization for Standardization (ISO) has developed a code system called ISO Cleanliness codes, a universal standard for measuring and reporting particulate contamination levels in fluids. ISO 4406:99 is the newest and most commonly used cleanliness code. It is assigned on the basis of the number of particles per unit volume greater than 4, 6 and 14 microns. The numbers are given in this specific order for consistency in comparison. Each code represents a range of solid particles present in a lubricant.

What are ISO Cleanliness Codes?

First, particle count analysis is conducted on a representative sample of the fluid in a system. The particle count test provides the quantity and micron size of the various solid contaminants in the fluid. The actual particle count and subsequent ISO Cleanliness Code are compared to the target code for the system. If the actual cleanliness level of a system is worse than the desired target, corrective action is recommended.

Different mechanical systems have distinct levels of cleanliness that are required for optimum life and minimum component wear. Contaminants in a system accelerate wear, reduce efficiency, increase operating costs and can cause significant downtime.

Typically, new fluids are not clean fluids. Bulk lubricants from blending plants can range from 19/17/15 to 17/14/13, while sealed drum lubricants can have cleanliness codes as high as 22/21/19. In contrast, highly filtered fluids may have a code of 16/14/11 or lower.

Importance of Code Compliance

High ISO Cleanliness codes indicate high levels of particulate contamination in the oil, which increase wear and shorten the lives of both machinery and lubricants. However, if a company maintains a sophisticated and effective contamination control program, the codes can be used to achieve increased efficiency and reduced downtime.

The codes are also used as a basis for comparison, to understand how equipment performs under specific cleanliness levels. Maintenance personnel typically use the codes to evaluate the need for various levels of contamination protection.