SINCE 1839
Schaeffer's
SPECIALIZED LUBRICANTS

TECHNICAL DATA

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ISO 9001 CERTIFIED

138 APA-400 DIESEL TREAT

APA-400 Diesel Treat is a multifunctional, ultra low sulfur compliant diesel fuel additive specifically formulated to provide maximum cold temperature protection against fuel gelling, waxing, and fuel line freeze-up, improved fuel efficiency, increased power, increased fuel lubricity, improved injector cleanliness and improved fuel stability. APA-400 Diesel Treat provides clean-up and keep clean performance throughout the entire fuel system, as shown by the Peugeot XUD9 DW-10 Injector Depositing Tests.

APA-400 Diesel Treat can be used in all types of diesel fuel including ultra low, low sulfur diesel fuel and biodiesel blends.

Features and Benefits

APA-400 Diesel Treat contains a highly concentrated multi-functional additive package, which provides the following performance benefits when used at the recommended treatment ratio.

- Improvement of the fuel's cetane rating up to 3 to 5 points.
- Easier cold weather starting and reduced misfiring at lower air inlet temperatures.
- Faster warm-up.
- Clean-up & Keep clean performance proven in the Peugeot XUD9 DW-10 Injector Depositing Tests
- Cummins L-10 Injector Depositing Test and Cummins N-14 Injector Corrosion Test Performance.
- Dispersion of insoluble gums and varnish present in low quality fuels.
- Excellent deposit control for light duty and medium duty direct injected diesel engines.
- Improved combustion of the fuel by completely vaporizing the fuel into smaller particles to provide better fuel economy and prevent a significant loss in engine power.
- Improves fuel economy up to 3%.
- Modification of existing injector deposits, allowing for their removal and safe passage into the combustion chamber where they can be burned.
- Reduced emissions exhaust smoke, particulates and black smoke.
- Excellent anti-wear protection for injectors and fuel pumps.
- Supplemental ring and valve-train anti-wear protection.
- Lubrication of the upper cylinders, fuel pumps and injectors.
- Increased fuel thermal stability to resist thermal degradation.
- Inhibition of oxidation during storage which extends storage stability.
- Rust and corrosion protection to the entire fuel system.

Improved Low Temperature Operability

Changes in the refining process of middle distillates to make ultra-low sulfur diesel fuel have resulted in chemical changes that can significantly impact the fuel's low temperature operability. These chemical changes cause an increase in the amount of total wax (n-paraffins) and wax-to-wax ratios present in the fuel. As the temperature of the ultra-low sulfur diesel fuel drops, the concentrated wax molecules can begin to rapidly precipitate out of the fuel and form large flat or irregular crystals that can quickly plug fuel lines and filters.

APA-400 Diesel Treat contains a proprietary wax crystal modifier, cold flow improver, heavy wax modifier polymeric type additive system that when added to the diesel fuel before the fuel has reached its cloud point helps to prevent the formation of wax crystals. This proprietary additive system encapsulates and

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disperses the individual wax crystals to drastically reduce the size of the wax crystals and also allow them to flow through the fuel filters and lines and into the combustion chamber with the fuel.

APA-400 Diesel Treat can significantly improve the gelling point and low temperature operability of the fuel**. Improvement in low temperature operability is dependent upon the refining process used to make the ultra-low sulfur diesel fuel and its response to the additive**.

Prevention of Settling of Wax Crystals at Low Temperatures

The wax crystals forming in a fuel normally have a slightly higher density than the liquid fuel portion resulting in these wax crystals settling at the bottom of the vehicle fuel tanks and the fuel storage tanks.

APA-400 Diesel Treat contains a proprietary wax anti-settling agent (WASA) that is designed to prevent the paraffins and other waxy components, which can plug and clog filters and other fuel system components, from dropping out of the fuel and settling out over extended periods of time. This increases the diesel fuel's cold weather operability which reduces downtime and maintenance costs.

Coupled with the WASA is a non-alcohol jet fuel deicer/water dispersant, HydroShield, which eliminates the problems associated with entrained and/or dissolved water present in the fuel by dispersing the water into tiny droplets. These tiny droplets are suspended in the fuel so they can be carried with the fuel in controlled amounts through the fuel filters, fuel lines, and into the combustion chamber to be burned with the fuel. Because the remaining water is dispersed and suspended in the fuel, APA-400 Diesel Treat prevents the formation of stable fuel-water emulsions.

HydroShield is moisture removal additive technology that contains twice the industry standard for moisture elimination. This technology combined with Schaeffer's Patented WASA (a superior wax anti-settling agent) exceeds industry standards for subfreezing protection.

Increased Lubricity Protection with SynShield®

Today's diesel powered vehicles feature low emission engines that are more susceptible than ever to diesel fuel related wear. Diesel engine designs are employing the use of higher fuel injection pressures, hotter fuel return temperatures, higher operating temperatures and complex engine geometry to control emissions. All of these factors result in increased fuel system wear and can shorten engine life.

APA-400 Diesel Treat utilizes Schaeffer Fuel Additives' SynShield® technology to incorporate a proprietary, ester based, neutral chemistry specifically formulated for superior lubricity performance, unlike mono and other acidic based lubricity type chemistries. SynShield® provides the following benefits to distillate fuels:

- Non-acidic fully synthetic ester chemistry
- Reduces pump and injector wear
- Passes all lubricant interaction tests
- Non-metallic
- Phosphorus free
- Ashless
- Protects all diesel fuel injection

Bulk Treatment Ratio

One gallon of APA-400 Diesel Treat to 1,500 gallons of diesel fuel.

For hard to treat or unresponsive Ultra Low Sulfur Diesel Fuels use one gallon of APA-400 Diesel Treat to 750 gallons of diesel fuel.

Storage Requirements

It is recommended that this product be stored 15 degrees above its pour point.

APA-400 Diesel Treat is registered for use and meets the US EPA requirements for blending into low sulfur and ultra low sulfur diesel fuels. When used at the recommended treatment ratio, APA-400 Diesel Treat will not have any measurable effect on the cetane index or aromatic and sulfur content of the diesel fuel.

THIS DIESEL FUEL ADDITIVE CONTAINS LESS THAN 15PPM OF SULFUR AND COMPLIES WITH THE FEDERAL LOW SULFUR CONTENT REQUIREMENTS FOR USE IN DIESEL MOTOR VEHICLES AND NON-ROAD ENGINES.

THIS DIESEL FUEL ADDITIVE IS COMPATIBLE AND APPROVED FOR USE WITH DIESEL FUELS THAT MEET ASTM D975 AND BIODIESEL THAT MEETS ASTM D6751 AND BIODIESEL THAT MEETS EN 14214.

TYPICAL PROPERTIES

Specific Gravity	0.9271-0.9299
Flash Point °F/°C PMCC (ASTM D-93)	131º-136º/55º-58°
Pour Point °F/°C (ASTM D-97)	-30°/-34.4°
Ash Content %wt. (ASTM D-482)	0
Copper Strip Corrosion Test (ASTM D-130)	1a
Sulfur Content ASTM D-7039	<15 ppm