RED LINE DIESEL FUEL CATALYST™ is designed to improve fuel combustion and prolong the life of the fuel system. Red Line Diesel Fuel Catalyst contains powerful thermally-stable detergents which clean fuel injectors and the compression ring area which can become filled with partially-burned combustion products. Lubricity additives lubricate fuel pumps and injectors and leave a coating in the upper cylinder, reducing friction at the critical point where the rings change direction - providing increased power. A cetane booster is incorporated which will improve cold-weather starting and reduce knocking and smoke.

**BENEFIT SUMMARY**

- Cleans injectors
- Cleans high-temperature deposits
- Lubricates injectors, pumps, and cylinder walls
- Reduces detonation
- Improves power and fuel efficiency
- Helps condition seals in the fuel system
- Provides easier cold starting
- Reduces operating costs
- Stabilizes fuel
- Prevents rust
- Disperses water in fuel
- Winterized version reduces fuel pour-point
- EPA registered for use in diesel fuels

CLEANS INJECTORS and REDUCES EMISSIONS

Powerful detergents contained in Red Line Diesel Fuel Catalyst clean injectors and keep them clean, even when using low-quality diesel fuel. Figures 1, 2, 3, and 4 show how Red Line Diesel Fuel Catalyst can restore injector flow, providing perfect spray patterns which will provide optimal power and economy while reducing engine noise, smoke, and other emissions dramatically. Small amounts of Diesel Fuel Catalyst can be very effective in clean-up of fouled injectors and regular use can prevent injector deposits.

**IMPROVES POWER AND EFFICIENCY**

The ability of Red Line Diesel Fuel Catalyst to improve power and efficiency was demonstrated in a field test using ten 85+ cleanup treatments of Diesel Fuel Catalyst and ten vehicles operating on untreated fuel. Both sets of trucks were operated on the same fuel and

![Figure 1: Powerful detergents clean injectors providing perfect spray patterns and optimal combustion.](image1)

![Figure 2: Pollutant emissions reductions as measured in a Federal Test procedure after 1200 miles using 4 ounces Diesel Fuel Catalyst in 33 gallons.](image2)

![Figure 3: Particulate (smoke) reductions as measured in a Federal Test procedure (warmed-up) and Cold Start/Warm-up Test after 4 ounces Catalyst in 33 gallons.](image3)

![Figure 4: One 12 ounce bottle of Diesel Fuel Catalyst restored the injector flow to normal, renewing performance and reducing knock.](image4)

![Figure 5: Red Line Diesel Fuel Catalyst improved the fleet fuel efficiency greater than 5%.](image5)

![Figure 6: Red Line Diesel Fuel Catalyst improved the average power output of the fleet greater than 5%.](image6)

![Figure 7: Diesel Fuel Catalyst can reduce friction and wear in diesel fuels to levels below high-sulfur fuels.](image7)
much wear in untreated low-sulfur fuel as in the fuel treated with Diesel Fuel Catalyst (Figure 7). This reduced friction and wear means an improvement in fuel efficiency and an increase in fuel component durability. Red Line Catalyst will not increase the sulfur content of diesel fuels and is EPA registered for use in diesel fuel.

**Seal Conditioning**

With the EPA requirement of 500 ppm Sulfur in diesel fuels comes another unexpected consequence. Most desulfurization processes also reduce the aromatic content of diesel fuels. In California, this has been mandated that aromatic contents be reduced from a typical 30% to a maximum of 10%. The seals in the fuel system rely on aromatics in the fuels to provide a certain degree of seal swell. Removing these aromatics will cause the seals to shrink. If the seals shrink too much, leakage of the pump and injection system can occur, resulting in a costly repair bill. Red Line Diesel Fuel Catalyst contains materials which can swell seals, but the degree of seal swell is reduced to a large tank of fuel is minor. However, we have found a significant ability to swell the seals enough to stop the leakage in some vehicles and reduce it in others. In many borderline cases, Diesel Fuel Catalyst can have an effect on the leakage of seals. To determine whether Diesel Fuel Catalyst will swell the seals enough to stop leakage, first try one bottle in a full tank and allow this to contact the seals for several days. If leakage is stopped, then try reduced dosages, down to as little as 12 ounces per 100 gallons. Regular usage will probably be required to keep the seals from leaking again.

**Boosts Cetane**

The cetane rating of diesel fuel is a measure of the lag time between injection and combustion - the higher the cetane rating, the quicker the combustion. The cetane quality of the fuel determines the intensity of detonation and also the ease of starting in cold weather. The cetane quality of diesel fuels has deteriorated in recent years. The US average has declined from a cetane average of 50 during the beginning of the 70's to an average of 44.5 for 1985, with many dropping below 40. A good cetane quality for passenger car diesels is 50. The minimum allowable cetane for Mercedes-Benz diesels is 45. Red Line Diesel Fuel Catalyst contains a cetane booster which can raise the cetane rating 3 to 9 cetane numbers when used at 12 ounces per 30 gallons and 1 to 4 cetane numbers when used at 12 ounces per 100 gallons.

**Prevents Rust and Absorbs Water**

The major problem with water in diesel fuel is the rusting of the fuel system which will occur. Even the slightest rust on the injection metering valves can mean a new injection pump or injectors. The use of small amounts of alcohols does not significantly dissolve water into the fuel, but only adds to the volume of the water phase and makes the water phase more corrosive. Red Line Diesel Fuel Catalyst will disperse 25% of its volume of water (12 ounces disperses 3 ounces) without the use of alcohol and will safely carry condensation water through the fuel system, while preventing rust even in the presence of larger quantities of water as shown in Figure 8.

**Stabilizes Fuel**

There are two areas of concern regarding fuel stability. One is the tendency for the fuel to degrade on storage, forming insoluble deposits. The other is that a portion of the fuel which reaches the injectors is recirculated in order to cool the injectors and fuel pump. Heat-stressing causes accelerated thermal degradation and oxidation of the diesel fuel, causing deposits to form, resulting in fuel system sludge and filter plugging. Red Line Diesel Fuel Catalyst significantly increases the stability of diesel fuel by inhibiting oxidation, thus providing greater filter life and a cleaner fuel system. Red Line Diesel Fuel Catalyst is excellent to stabilize diesel fuel or heating oil for long-term storage.

**Pour Point Reduction - Winterized**

Winterized Red Line Diesel Fuel Catalyst contains a wax crystallizer modifier which improves the cold-weather flow properties of diesel fuel. This wax crystallizer modifier interrupts the interlocking structure of paraffin wax, causing the formation of much smaller crystals which pass through the filter, and reduces the temperature at which the fuel will gel. The winterized version reduces the pour point of an average fuel by 25°F. A water crystal inhibitor will reduce the freezing point of condensation water in the fuel (180ppm) approximately 25°F. The reduction in operability temperature depends on fuel system design and filter porosity.

**Designed for Performance**

Red Line Synthetic Oil Corporation is the leader in lubricant and fuel system chemistry. Red Line sets the standards for equipment durability and increased performance. Red Line manufactures a full line of automotive products which are designed to provide noticeable improvements in performance.

- WaterWetter® SuperCoolant
- 85 Plus Diesel Fuel Additive
- Diesel Fuel Biostat - Antimicrobial Agent
- SI-1 Gasoline Injector & Valve Detergent
- Fuel System Water Remover and Antifreeze
- Lead Substitute
- Motor Oils - 5W30, 10W30, 10W40, 15W50, 20W50
- Race Oils - SAE 20, 30, 40, 50, 60
- High-Performance Two-cycle Lubricants
- Gear Oils - 75W90, 75W90NS, 80W140, 75W140NS
- ATF - Synthetic Dexron IIIE/Mercon, High-Temp ATF
- CV-2 CV-Joint and Wheel Bearing Grease

For further information please contact:

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