

## DIESEL FUEL SYSTEM TREATMENT

Power Up Gen49D™ is Specifically Engineered to:

- Enhance Fuel Economy
- Stabilize Fuel
- Improve Cetane Number
- Protect Against Winter Gelling
- Prevent Rust & Corrosion

If you drive a diesel, Gen49D is a must. Gen49D provides anti-gel protection, lubricating and cleaning power, and improves the cetane number of diesel fuel. There is no need to use multiple products to obtain all the benefits that can be achieved using a single bottle of Gen49D. It has been designed to meet or surpass all the regulatory criteria set forth by both the OEM and legislative groups.

Gen49D is ultra-low sulfur diesel compliant and approved for use in engines with DPF (diesel particulate filter) systems.

### Enhance Fuel Economy

Powerful detergents clean fuel injectors ensuring an ideal spray pattern. Lubricating additives reduce friction throughout the fuel system increasing engine efficiency.

### Stabilize Fuel

High temperature stress on fuels results in degradation and oxidation which can produce particulate solids that have the potential to damage injectors and plug fuel filters. Gen49D provides an outstanding stabilizing package to maintain a premium quality fuel.

### Improve Cetane Number

The cetane number is a measure of diesel fuel's ignition quality. High cetane number fuels start to burn earlier in the compression stroke, and more uniformly, improving the efficiency of engine while simultaneously reducing harmful emissions such as the Nitrogen Oxides (NO<sub>x</sub>).

"Prior to using Gen49D I was getting 4.3 to 4.5mpg. Since I've been using Gen49D I easily obtain 5 to 5.2mpg. I only need to save 7 litres of fuel/day to recover the cost of Gen49D and so far I have seen savings of up to 30 litres/day, depending on conditions. With at least a 15% increase in fuel mileage, I will recommend your products to everyone and only wish that I had learned of your products sooner."

- Mike Thibodeau - Owner Operator, Calgary AB



### Protect Against Winter Gelling

Gen49D fights water and gelling (the leading problem with winter fuel). Diesel cold flow is improved up to an additional 15°C (27°F) by controlling how the fuel gels. This allows the fuel to flow at temperatures it would normally freeze at and improves engine operation in extreme cold.

### Prevent Rust & Corrosion

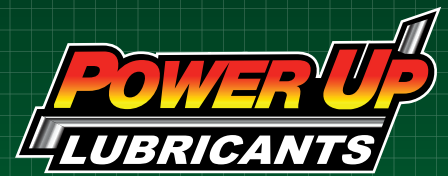
Diesel fuel is corrosive by nature and corrosion products such as iron oxide cause filter plugging and injector damage. Gen49D prevents corrosion and the formation of rust throughout the entire fuel system.

### APPLICATION

Gen49D should be added with each fuel fill at the rate of 0.08%. This is equivalent to 1L of Gen49D to 1250L of diesel fuel (or 1 ounce per 10 gallons of diesel fuel).

### Gen49D is available in the following sizes:

- 355ml bottle (12 oz.)
- 1 Litre bottle (35 oz.)
- 5 Litre Jug (1.4 Gallon)
- 20 Litre Pail (5.5 Gallon)
- 205 Litre Drum (56 Gallon)



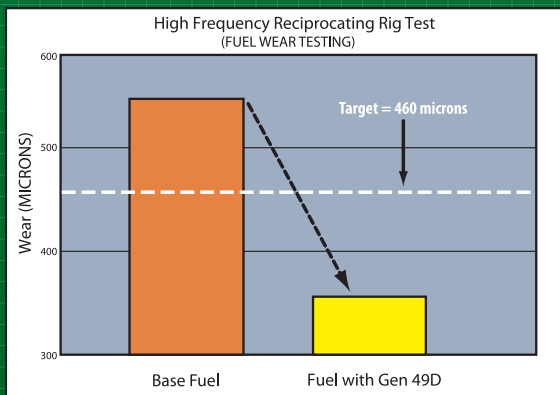
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### COLD STARTING PERFORMANCE

Starting your equipment each day can seem to be the easiest of all tasks, that is, until it won't start. All the proprietary components of Gen49D working together ensure exceptional starting efficiency especially in cold conditions. Gen49D will prevent unnecessary strain on starters and high stress on batteries. One of the first benefits our customers report is how much easier their equipment fires after applying Power Up Gen49D for the first time.

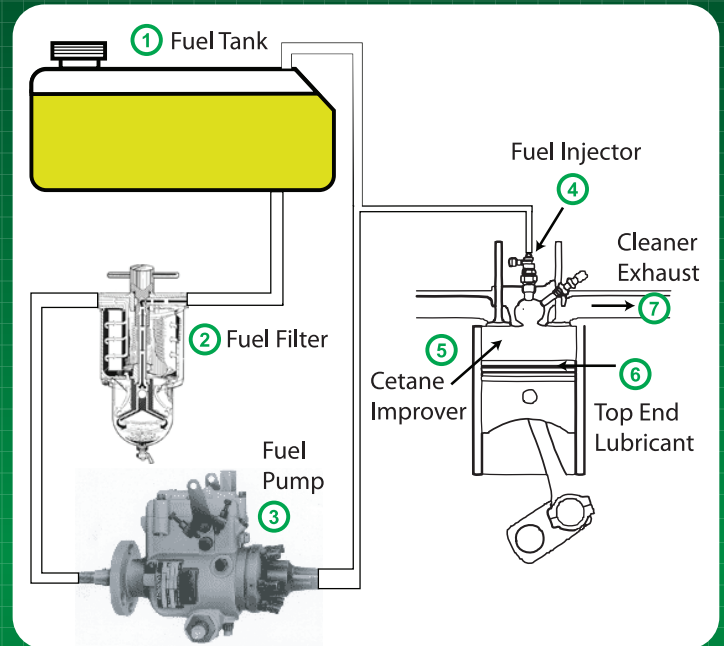
### SYNTHETIC LUBRICATION

Gen49D contains a powerful synthetic lubricant package which reduces friction and wear in the top end of the cylinder, injectors and fuel pump. Poor fuel lubricity can be seen in ultra-low sulphur fuels. Gen49D is approved for and surpasses the new standards for diesel fuel and exhibits wear and friction reduction significantly below typical levels. Poor fuel lubricity results in increased maintenance costs, down time and poor fuel economy. ULSD fuels are required to meet a minimum standard of 460 microns of wear with the standard HFRR test.



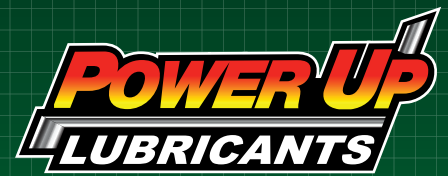
Gen49D protects your fuel pump, the injectors and top end of the engine from premature wear and failure - reducing costs and increases life over straight diesel fuel

The preflame region before fuel enters the combustion chamber is only a small part of the complete lubrication protection offered by Gen49D. It is designed and formulated to lubricate the top end of the combustion chamber where the severe stresses of burning ultra-low sulphur fuels are causing premature wear and poor performance. Fuel injectors, intake and exhaust valves and piston rings are being subjected to more extreme conditions than ever before.



### 7 CRITICAL FUNCTIONS OF GEN49D

- 1. FUEL TANK** - Gen49D begins working in the preflame zone of the fuel system by creating a protective coating inside the fuel tank and lines while stabilizing the fuel and inhibiting rust and corrosion.
- 2. FUEL FILTER** - By cutting down on rust and corrosion, fuel filters last longer. Note: Gen49D may cause fuel filters to become dirty when used for the first time as it will clean the system as it protects. This may require a quick filter change (especially in old or high mileage equipment)
- 3. FUEL PUMP** - The only lubricant in the fuel pump is the fuel itself. Gen49D adds lubricant to the fuel to prevent excessive wear and premature failure of pumps and injectors.
- 4. FUEL INJECTOR** - Gen49D is engineered with an injector cleaner that dissolves carbon and other power robbing deposits from the spray nozzle. This results in better fuel combustion efficiency and reduced emissions.
- 5. CETANE IMPROVER** - Increasing the cetane rating of diesel fuel will cause the fuel to atomize and ignite quicker. This creates a cleaner burn, more power and less smoke. Gen49D is equipped with cetane improvers that will increase the cetane rating of diesel up to 2 numbers.
- 6. TOP END LUBRICANT** - Creating a seal around the top ring is critical in preventing power loss and less blow by of gases into the engine oil. Gen49D creates this lubricating film on the fire side of the piston giving you a better combustion. This results in better fuel economy and improved horsepower.
- 7. CLEANER EXHAUST** - In addition to reducing harmful emissions and engine smoke, Gen49D will lower exhaust temperatures. This is because the fuel is burning up in the cylinder head where it is supposed to and not in the tail pipe.



## DIESEL FUEL SYSTEM TREATMENT

### TESTS SHOW POSITIVE PROOF

New generation diesel fuels are now required to contain less than .05% sulphur and less than 35% aromatic content.

Using modified ASTM D5001 Ball on Cylinder Lubricity Evaluation (BOCLE) the lubricity of diesel fuel can be measured. The test consists of a hardened steel ball bearing wearing against a rotating steel bearing race. Poor diesel fuel lubricity will result in increased wear on the steel ball.



Figure 1 - .63 mm



Figure 2 - .36 mm

Figure 1 is a magnified picture of the wear scar left when only low sulphur diesel fuel is lubricating the wearing surfaces. The actual size of this scar is 0.63mm across.

Figure 2 shows the wear spot on the ball bearing when 0.1% Gen49D is added to the same low sulphur diesel fuel. The fuel's lubricity is improved dramatically. The wear spot with Gen49D is only 0.36mm across. The area of the scar is more than three times smaller than with diesel fuel alone. It is also obvious that there is a lot less scoring of the worn area!

Gen49D protects your investment, prevents fuel system component wear, and improves your equipment's performance, and service life!

Gen 49D Diesel Lubrication Blend Ratio	
Application Rate 1 oz to 10 Gallons (1250:1)	
Fuel	ml of Gen49D = Litres of Fuel x 0.08
40 Liters (10 Gallons)	30 Milliliter (1 ounces)
450 Liters (120 Gallons)	350 Milliliter (12 ounces)
1250 Liters (330 Gallons)	1 Liter (35 ounces)
6,250 Liters (1,650 Gallons)	5 Liters (175 ounces)
12,500 Liters (3,300 Gallons)	10 Liters (350 ounces)
25,000 Liters (6,600 Gallons)	20 Liters (700 ounces)
256,250 Liters (67,650 Gallons)	205 Liters (7,175 ounces)



Equipment - 946 Versatile

**2006:** A total of 2,601 gallons (1,1808 L) of diesel fuel used. An average of 9 gallons/hour was used. No Gen49D used in the fuel during 2006.

**2007: With Gen49D** a total of 2,196 gallons (9,970 L) of diesel fuel used. 404.6 gallons (1,837 L) less diesel fuel used compared to 2006.

An average of **7.6 gallons/hour** was used.



Equipment - 876 Versatile

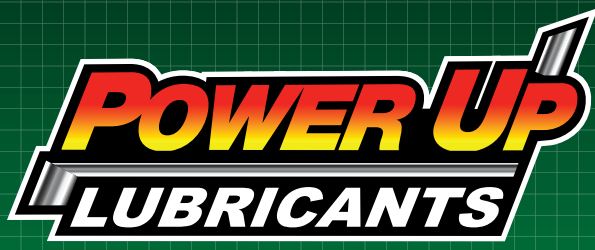
**2006:** Averaged 7.5 gallons/hour. No Gen49D was used. 2,168 gallons (9,843 L) of fuel used.

**2007:** 1,965 gallons (8,921 L) of fuel used.

Averaged **6.8 gallons/hour with Gen49D.**

Both pieces of equipment were used for approximately 289 hrs. Calculations were also based on a 24 hour day.

*Milden Colony - Rosetown, SK*



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## TECHNICAL INFORMATION

### Product Description

- All Season Diesel Fuel Treatment
- Can increase the cetane content of diesel fuel by 1-2 numbers for more efficient engine operation
- Engineered to reduce fuel consumption and improve cold start performance
- Formulated to improve lubricity reducing pump and injector wear
- Provides cold temperature antigel protection by up to an additional 15°C(27°F)
- Developed to improve power and reduce emissions
- Contains rust and corrosion inhibitors to protect the fuel tank and entire system from corrosion
- Controls injector deposits (fuel injector cleaner)
- Contains stability additives to help prevent the formation of particulates from stressed fuel
- Superior clean-up performance resulting in lower overall maintenance
- Alcohol free, separates water
- Add 0.08% to fuel (1L to 1250L fuel or 30mL (1oz) to 40L (10 gal US))
- Suitable for Ultra-Low Sulphur Diesel fuels and DPF (Diesel Particulate Filter) systems

### Typical Properties

Properties	Method	Results
Appearance		Clear, Amber Liquid
Color	ASTM D1500	3.5
Viscosity @ 40°C	ASTM D455	5.8 cSt
Density @ 20°C	ASTM D941	0.939 g/mL
Pour Point	ASTM D97	-33°C
Flash Point (COC)	ASTM D92	66°C
Fire Point (COC)	ASTM D92	72°C
Copper Strip Corrosion	ASTM D130	1a

### Test Data

Property	Method	Results
BOCLE Fuel Lubricity - Neat #2 Diesel - Diesel & 800ppmGEN 49D	ASTM D5001	0.615mm 0.475mm
HFRF Fuel Lubricity - Neat #2 Diesel - Diesel & 800ppmGEN 49D	ASTM D6079	0.573mm 0.279mm
Rust Prevention - Neat #2 Diesel - Diesel & 800ppmGEN 49D	ASTM D665	50% Surface Rust 0% Surface Rust
Pour Point - Neat #2 Diesel - Diesel & 800ppm GEN 49D	ASTM D97	-21°C -34°C