

# Environment

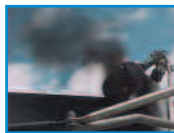
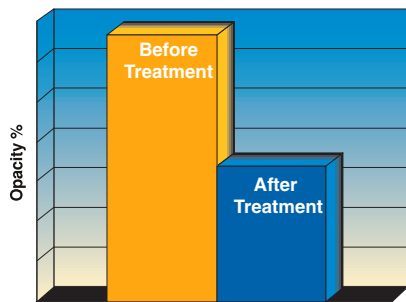
## Benefit the Environment

One of the greatest challenges facing the diesel engine industry is the necessity to reduce particulate (smoke) and other emissions in order to protect the environment.

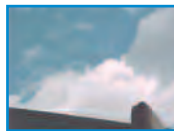
Stanadyne is America's largest independent designer and manufacturer of diesel fuel injection equipment. Our company's innovative technology in fuel injection pump and nozzle design has helped engine manufacturers around the world meet stringent emission standards.

Now we have test evidence that using another Stanadyne product, Performance Formula fuel additive, can also help reduce the amount of particulate (smoke) emissions from diesel engines. Recent "snap test" results, using industry standard smoke test meters, show that using Performance Formula can reduce particulate emissions up to 49%. This could mean the difference between "pass" or "fail" under certain local or national emissions regulations.

### INITIAL SNAP TEST



Before Treatment



After Performance Formula Treatment

Initial 49% reduction in particulate emissions simply by using Stanadyne Performance Formula diesel fuel additive. (Individual results may vary)

## STANADYNE®

### A Leader In Diesel Fuel Management Technology



Stanadyne's complete line of diesel fuel additives: Performance Formula, Performance Formula Junior, Winter 1000, Lubricity Formula and Injector Cleaner for Gasoline (Petrol) Engines. See our brochure #99549 for full details of all Stanadyne fuel additives.

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## STANADYNE®

# Performance Formula® Diesel Fuel Additive



## Proven Protection and Performance for Your Diesel

# Protection

## Protect your Equipment

The heart of the diesel engine is its fuel injection system and a major enemy of this system is poor quality diesel fuel. Through our experience in designing and manufacturing diesel fuel injection systems as well as extensive research and testing, Stanadyne found that variations in diesel fuel quality around the world can play havoc with precision diesel fuel injection systems. Poor quality fuel can wear components, gum up valves and clog filters. To resolve these problems and protect the injection system, Stanadyne developed its own line of diesel fuel additives. Performance Formula®, our premium, multipurpose, all season diesel fuel additive tackles virtually any diesel fuel related problem. No other fuel additive provides all the benefits of Stanadyne's Performance Formula:

- Upgrades and stabilizes fuel by reducing sludge and fuel tank contaminants
- Cleans and protects fuel system components
- Removes varnish and other deposits to prevent plugging
- Increases power & economy with cetane improver
- Protects against ultra low sulfur fuels to reduce wear
- Protects against corrosion with an alcohol free formula
- Helps remove water from fuel
- Provides hot and cold weather protection
- Complies with federal ultra low sulfur content requirements
- Suitable for use with bio diesel (up to B5, or 5% bio content)

Stanadyne's Performance Formula fuel additive eliminates the need for expensive "premium" or blended fuel and is your insurance against poor quality diesel fuel.

## Protection Test

Test Engineers ran two identically prepared fuel pumps for more than 2,000 hours (approximately 125,000 road miles). Both ran on DF-2 diesel fuel, one had Stanadyne Performance Formula added to the fuel at the recommended treatment ratio of 1:500. At the end of the test, the pumps were completely disassembled and inspected. The results, pictured here, show significant differences — parts to left, without additive, are dirty and worn; parts to right, with additive, are clean and protected.

- Stanadyne is a leader in diesel fuel injection equipment technology.
- Diesel fuel quality has a major effect on sensitive injection systems and overall engine performance.
- Poor quality fuel leads to poor performance, low efficiency and expensive repairs.
- Regular use of Stanadyne's specially formulated diesel fuel additives can dramatically improve power, torque and miles per gallon, while reducing smoke and other harmful emissions.
- Only Stanadyne additives are made by a fuel injection equipment manufacturer, approved by engine and vehicle makers and proven to be the best in independent tests.



# Performance

## Performance with Savings

As well as protecting your engine, Performance Formula®, as its name implies, also improves engine performance. It achieves this by ensuring clean pumps and injectors, reducing wear on components and restoring lubricity. In addition, the cetane improver in Performance Formula results in easier starting, less smoke and more complete combustion. The net result is more horsepower, torque and miles per gallon. Consequently, a significant cost savings to you. Regular use of Stanadyne's Performance Formula will more than pay for itself — by savings at the filling station, from repairs and by extending maintenance intervals.



## Performance Test

Independent test engineers ran transient and steady state tests over time on school buses, using a Mustang dynamometer to obtain torque and horsepower ratings before and after the use of Performance Formula. According to the test engineers, the improvements after adding Stanadyne Performance Formula were dramatic and impressive, as shown on the torque and horsepower graphs.

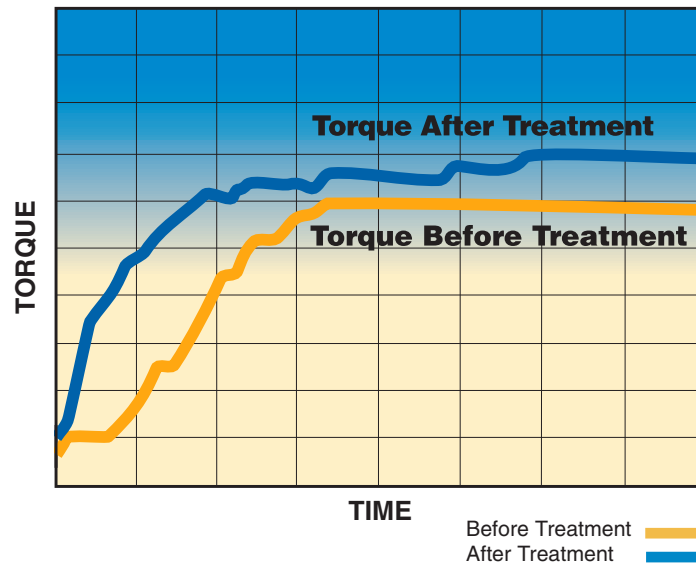
## AVERAGE % IMPROVEMENT

After using Performance Formula

<b>Horsepower</b>	<b>+7.5 %</b>
<b>Torque</b>	<b>+9.8 %</b>
<b>Miles Per Gallon</b>	<b>+9.6 %</b>

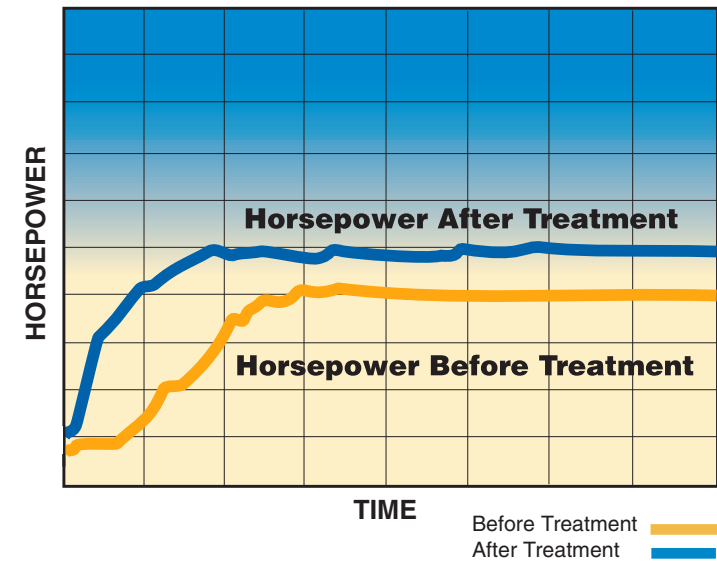
### TORQUE

Effect of using Performance Formula



### HORSEPOWER

Effect of using Performance Formula



# Proven

## Proven by Independent Testing

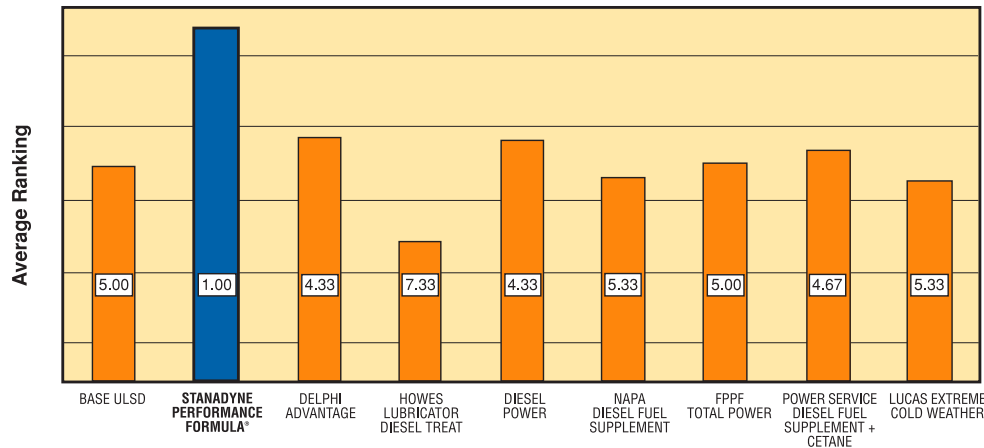
Eight major brands of diesel fuel additives as well as a base ultra low sulfur fuel were tested by a leading independent laboratory in three key areas:

- Cetane number (affects ease of starting, noise, power output and emissions)
- Lubricity (critical with today's ultra low sulfur fuels)
- Cold weather protection (against waxing or gelling diesel fuel)

The results shown in the charts are clear — **Stanadyne Performance Formula is the best in all three tests.**

### OVERALL AVERAGE RANKING

Average Ranking number in box (1 is Best, 9 is Worst)



## Approved by Engine and Vehicle Manufacturers

Stanadyne diesel fuel additives have been recommended by engine and vehicle manufacturers including Ford, General Motors, Volkswagen, Navistar, John Deere, Caterpillar, AM General and others since 1993. Stanadyne's Performance Formula is safe for use with today's new technology fuel systems such as: High Pressure Common Rail, HUEI and MUEI fuel systems, unit injectors, as well as conventional rotary distributor and in-line injection pumps. Stanadyne additives are also compatible with the latest generation of catalytic converters, urea injection systems, particulate filters and other exhaust treatment technologies. Engine warranties should not be affected.

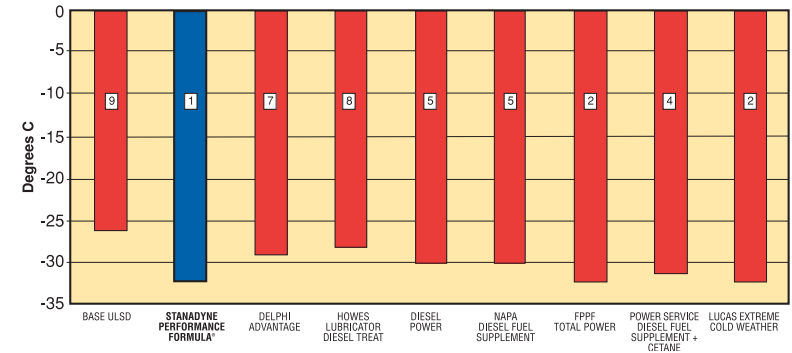
## Only Stanadyne diesel fuel additives are:

- Made by a fuel injection equipment manufacturer
- Approved by diesel engine and vehicle makers
- Proven to perform best in independent tests

### COLD FILTER PLUG POINT REDUCTION

The lower the CFPF temperature, the better.

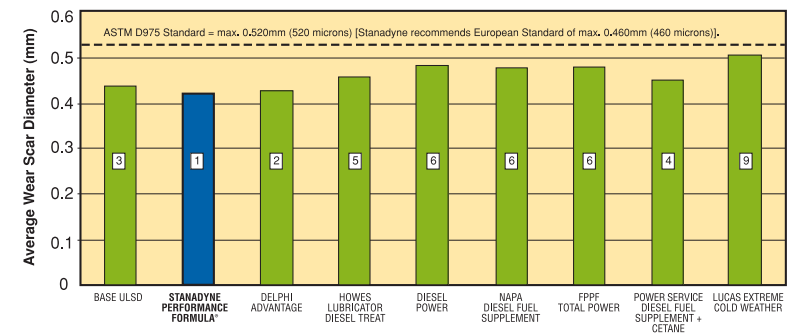
Ranking number in box (1 is Best, 9 is Worst)



### AVERAGE WEAR SCAR (HFRR TEST)

The lower the wear scar diameter, the better (less wear)

Ranking number in box (1 is Best, 9 is Worst)



### CETANE NUMBER CHANGE

The higher the cetane number, the better.

Ranking number in box (1 is Best, 9 is Worst)

