

## DieselBOOST And DieselMAX Diesel Fuel Upgrade Information

### Comparison to Stanadyne Performance Formula Additive



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As a leading remanufacturer of diesel fuel pumps and injectors DTech sees first hand every day the destructive impact poor diesel fuel quality has on diesel fuel systems. This is why we have introduced the DieselBOOST and DieselMAX Diesel Fuel Upgrade line of products.

DieselBOOST is the base formulation for DTech DieselBOOST and DieselMAX Fuel Upgrade products. It is an OEM approved, alcohol free, organic biodegradable treatment with excellent capabilities for water dispersion, detergency and anti-corrosion. It also includes an OEM approved lubricity component and added Cetane.

Stanadyne Performance Formula is a traditional petroleum distillate mixed with a water demulsifier, lubricity additive, and Cetane and is also OEM approved.

#### **WATER DISPERSION vs. WATER DEMULSIFICATION**

Ultra-low-sulfur diesel (ULSD) and Biodiesel blends have a tendency to absorb water from the ambient environment. It is a natural result of the hydrodesulfurization used to remove sulfur from the fuel. The presence of water is the most dangerous element for diesel fuel injection systems. The presence of water in diesel fuel can lead to corrosion of fuel lines and the fuel tank, reduced lubricity in the fuel system leading to premature wear of fuel pumps and injectors, and can also lead to catastrophic injector and pump failure. In winter climates the presence of water can lead to fuel gelling.

#### **Water in diesel fuel occurs in three forms:**

- 1. Free Water:** This is a situation where the water has completely separated from the diesel fuel and is usually found in the bottom of fuel tanks. Free water is removed through the use of fuel / water separating filters.
- 2. Emulsified Water:** This is a combination of water and diesel fuel, which will appear cloudy or white in color. In this state the water and diesel fuel are still separate entities. In a fuel tank this generally appears in a range between the separated water and diesel fuel. Fuel tank agitation can greatly increase the quantity of emulsified water. This water state can be very harmful to fuel systems because it takes

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longer to separate the water from the fuel and fuel / water separators are not always effective.

**3. Dissolved Water:** Small amounts of water in the fuel. According to ASTM D975 it should be less than 500ppm.

DieselBOOST and DieselMAX are designed to remove emulsified and free water from diesel fuel by means of a chemical reaction called polar bonding. The chemical composition of DieselBOOST and DieselMAX includes a bonding agent which combines the molecules of the diesel fuel, water, and DieselBOOST or DieselMAX into a homogenous state which can pass safely through the fuel system. If you test the resulting mixture with water detecting paste there will be no evidence of water present.

The demulsification process used in Stanadyne Performance Formula is designed to separate the water from fuel, but you will always have water in your fuel tank causing potential corrosion. Plus, the presence of water in the tank will also create emulsified fuel, which can pass through the filter system.

The picture on the right shows two vials of diesel fuel. DieselBOOST Diesel Fuel Upgrade has been added to the right and Stanadyne Performance Formula has been added to the left. Both vials were agitated. The vial on the left with the Stanadyne Performance Formula has evidence of emulsified fuel clearly visible. The vial on the right with the DieselBOOST Diesel Fuel Upgrade is clear with no evidence of fuel and water emulsion.



## Consider:

- Fuel / water separators can remove free water. Emulsified water passes through filters.
- Stanadyne Performance Formula and other demulsifier products will keep water in the bottom of fuel tanks and allow fuel and water emulsion to occur.
- Wouldn't you feel better not having water in your fuel tank and fuel system?
- DieselBOOST and DieselMAX will integrate fuel and water into a homogenous fluid with no harmful effects.

## ANTICORROSIVE PROPERTIES AND DETERGENCY

Detergency is an important goal for fuels. Keeping injectors clean results in improved mileage, less smoke, longer diesel particulate filter (DPF) life, and overall better engine performance.

As a natural process sulfuric acid is formed in diesel fuel by the water and sulfur reaction, creating varnish that affects injector performance. Biodiesel is a very acidic and corrosive fuel. DieselBOOST and DieselMAX contain powerful anticorrosive and detergent agents.

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The picture on the left shows two vials of diesel fuel where sulfuric acid has been added. In the vial on the left Stanadyne Performance Formula has been added while DieselBOOST Diesel Fuel Upgrade has been added to the vial on the right.

## Consider:

- DieselBOOST and DieselMAX have excellent injector cleaning and anti-corrosive properties.
- Biodiesel blends have a higher tendency to create corrosion. Using DieselBOOST or DieselMAX will protect your fuel injection system.

## LUBRICITY

The refining process for ultra-low-sulfur diesel (ULSD) fuel and Biodiesel results in significantly lower levels of lubricity than predecessor fuels. With the tight tolerances and high operating pressures of common rail fuel systems a diesel fuel with poor lubricity can lead to premature fuel system failure.

DieselBOOST uses a lubricity package to compensate for the poor lubricity in untreated ULSD and Biodiesel. Lubricity is measured using a High Frequency Reciprocating Rig (HFRR). The measurement standard in the US for lubricity is 520 microns under ASTM D975. In Europe the standard under EN590 is 460 microns, with a lower value reflecting higher lubricity. Samples of untreated diesel fuel in the US have found HFRR measurements as high as 725 microns. Using DieselBOOST can increase lubricity to 350 microns or less, depending on the untreated fuel.

## PERFORMANCE

Cetane is the recognized measure of diesel fuel ignition quality. The Cetane number is a measure of a fuel's ignition delay, the time period between the start of injection and the first identifiable pressure increase during combustion of the fuel. The higher the Cetane number the easier fuel will combust under pressure in a diesel engine. Proper ignition during the combustion cycle is essential to optimum operation, economics, and durability. DieselMAX Diesel Fuel Upgrade will increase Cetane by up to 8 points while DieselBOOST will increase Cetane by up to 3 points.

The purpose of DieselBOOST and DieselMAX Diesel Fuel Upgrade or diesel fuel additives is to improve overall fuel system performance. Smoke reduction should be one of the goals. To the right is a picture of DieselBOOST on the left and Stanadyne Performance Formula on the right. Qtips were dipped in the respective products then lit. Because it is a petroleum base product the Stanadyne additive burns with less efficiency (the flame size) and generates a significant amount of smoke when compared to DieselBOOST Diesel Fuel Upgrade.



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## WINTER FORMULAS

DieselBOOST and DieselMAX Winter Diesel Fuel Upgrade are unique and comprehensive formulas. Both winter formulas include all of the properties found in the regular formulas plus protection against fuel gelling and ice formation. In addition, the DieselMAX Winter formula increases Cetane by up to 7 to 8 points while the DieselBOOST Winter formula increases Cetane by up to 3 points. The added Cetane helps with engine starting in cold weather and also provides for additional power and response. You would need to use two Stanadyne additive products to get the same protection as you get from DieselBOOST Winter formula. Plus, two Stanadyne additive products do not match the Cetane improvement found in either DieselMAX or DieselBOOST Winter formulas.

## IMPORTANT POINTS

DieselBOOST is approved and / or sold by the following OEMs:

- Mercedes-Benz
- Nissan
- Chrysler / Ram / Dodge / Jeep
- Fiat
- Renault
- Peugeot
- CNH (Case New Holland)
- Massey Ferguson
- Volvo

DieselMAX is built on the experience of the DieselBOOST product and is exclusive to DTech. One bottle will protect and treat 30 gallons of diesel fuel in temperatures down to -32°F

DieselBOOST has been produced for 15 years and is based on proven chemical technology. The product has a stable shelf life of 8 to 10 years. It is a super concentrated formula. 2 ounces will effectively protect and treat 30 gallons of diesel fuel in temperatures down to 10°F; 4 oz. will protect 30 gallons in temperatures down to 0°F; 16 oz. will protect 30 gallons in temperatures down to -32°F.

DieselMAX provides all the properties of DieselBOOST plus a maximum amount of Cetane improver. All in a convenient OneShot bottle. The DieselMAX 8 oz. bottle is designed for customer convenience as it can be directly inserted into the fuel tank opening and left there while it quickly pours into the tank. 8 oz. bottles from other additive suppliers require you to hold the bottle and pour it into the tank from outside the tank opening; increasing the chance of spilling the contents.

**Upgrade your diesel fuel with DieselBOOST and DieselMAX Diesel Fuel Upgrade.**

*All manufacturer names and product identification are for reference purposes only.*

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