

Fuel Additives Supplement

Challenges & Solutions with Petroleum Fuel Additives

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Fuel Additive Evolution

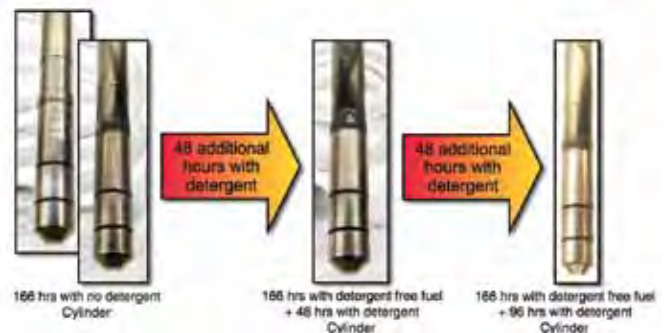
By Phil Hamilton

Ever since June 1, 2006, fuel additives have become a necessity in order to protect vital engine parts from the harmful effects of Ultra Low Sulfur Diesel. During that time, Schaeffer Fuel Additives has remained a leader, providing innovative solutions to fuel suppliers before their fuel became a problem. Schaeffer's dedication protected the jobber's reputation when many others were faced with numerous headaches.

To that end, Schaeffer never stops trying to improve. Recently, Schaeffer Fuel Additives developed a product that can reverse many of the harmful effects of ULSD. CarbonTreat™ Premium is a multifunctional middle distillate fuel additive that includes a performance enhanced High Pressure Fuel Injector Antifoulant. It's formulated to prevent and control the formation of asphaltene and other unstable components that can lead to the formation of carbon deposits that can plug fuel filters and foul injectors due to the extreme pressures and temperatures encountered in today's common rail fuel injector systems. Although CarbonTreat™ was developed for new model vehicles, it can be used in any diesel powered vehicle and in all types of diesel fuel, including ultra low sulfur diesel fuel and biodiesels blends. The benefits are plentiful:

- Prevents formation of black sludge
- Prevents filter plugging caused by thermal stressing within the engine
- Restores lost horsepower
- Reduces exhaust emissions
- Provides thermal and oxidative stability
- Cleans and prevents deposits formed in high pressure fuel injection systems
- Cleans and prevents injector deposits resulting from ULSD
- Improves and maintains power
- Improves and maintains fuel economy
- Excellent low temperature additive handling
- Increases Cetane up to 2 pts. (6-8 pts with Extra Cetane)

In a performance demonstration, we observed and photographed Bosch Injector cylinders that had 166 hours of use with no detergent. We added CarbonTreat™ to the fuel and ran the equipment an additional 48 hours, then compared the injectors. There was a notable improvement to the cleanliness of their appearance. We continued our demonstration by subjecting the cylinders to an additional 48 hours with CarbonTreat™ and documented a final comparison. The cylinder at 166 hours with detergent-free fuel plus 96 hours with CarbonTreat™ looked new. This demonstration, among others, proved that CarbonTreat™ is a highly effective solution to sludge and plugging issues.



To protect today's diesel engines from fuel system related wear, Schaeffer Fuel Additives has further blended into the CarbonTreat™ line a proprietary lubricity additive called Synshield™. Synshield™ is a new lubricity additive that not only surpasses industry standards for diesel fuel lubricity but also exceeds the EPA's new standard by being the only lubricity additive that does not contain sulfur or sulfur compounds. Synshield™ prevents fuel system wear and injector scoring by forming a protective layer on the metal surfaces on the fuel system and injectors that provide boundary lubrication between metallic parts in critical fuel systems components. This protective boundary lubrication field not only reduces friction and wear between the fuel system surfaces that are in relative motion but also increases fuel system component life, thus leading to less downtime and longer equipment life.

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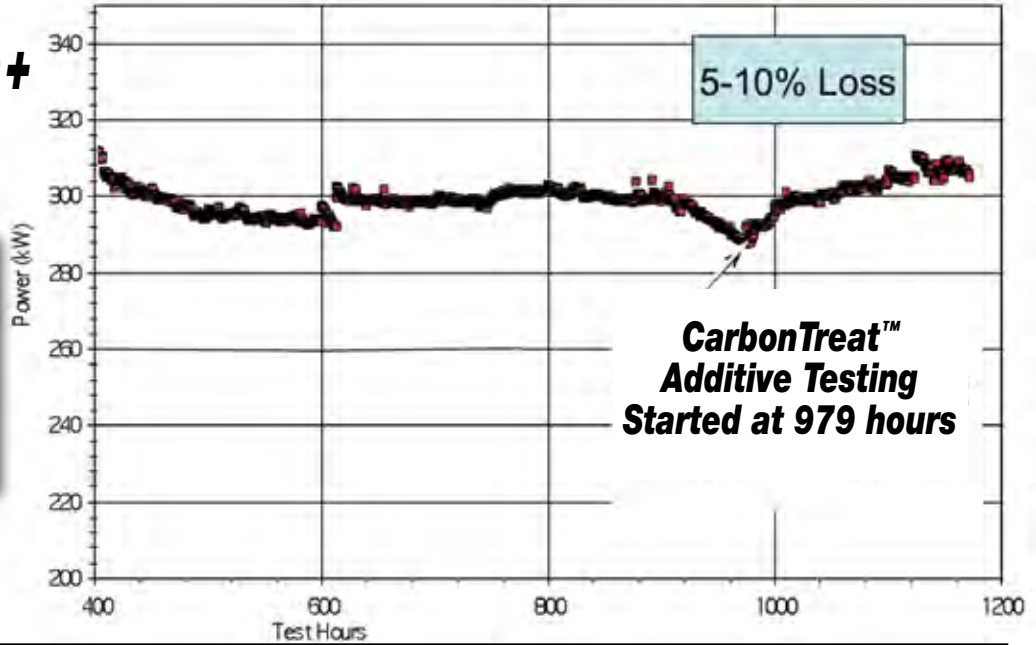
**Specifically
designed for 2010+
EPA engines.**



Fuel filter casing before CarbonTreat™ Premium.



Same fuel filter casing after 5 weeks with CarbonTreat™ Premium in the fuel system.



As shown, after almost 900 hours, this engine is beginning to lose power based on the dyno. After using Schaeffer's CarbonTreat™, the engine effectively gained 5-10% horsepower.

Prevent Carbon Buildup In The First Place.

CarbonTreat™ is the solution to your sludge and plugging issues with ULSD.

ULSD is better for the environment, but costly on an unprotected engine. Carbon buildup creates a sticky sludge that plugs fuel injectors and chokes filters. The remedy used to be 'Repair and Replace.' Thanks to Schaeffer's new CarbonTreat™ Premium diesel additive, the cure is prevention. Adding CarbonTreat™ shows your customers that you're on their team. You can provide them with a solution that will reduce their downtime and overhead. With regular use of CarbonTreat™, your customers will clean up their existing problem and prevent it from happening in the future. You can see the results. Find out more about CarbonTreat™ online at www.schaefferoil.com/carbon_treat or call Phil Hamilton to arrange an appointment.



Good people. Great products

CarbonTreat™ Premium is available in four formulas: Summer, Winter, Summer with Extra Cetane and Winter with Extra Cetane.

CarbonTreat™ Premium Summer Formula also contains a combination of additive systems to provide improved fuel efficiency, increased power, increased fuel lubricity, corrosion inhibition and emission control and improved fuel stability.

Coupled with this multifunctional additive package is an on-alcohol jet fuel deicer/water dispersant to eliminate 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 distributed in controlled amounts through the fuel filters, fuel lines, and into the combustion chamber to be burned with the fuel.

CarbonTreat™ Premium Winter Formula also includes an additive system to provide maximum cold temperature protection against fuel gelling, waxing, and fuel line freeze-up, in addition to the benefits offered in the Summer formula.

Winter Formula also includes a combination of wax modifiers and wax anti-settling agents to improve low temperature operability.

CarbonTreat™ Premium Formulas with Extra Cetane have the same benefits as the regular seasonal formulas

but contain 6-8 points of extra cetane. Higher Cetane mean less delay time between the start of the injection and combustion. This means a more efficient combustion and ultimately better gas mileage.

Schaeffer's CarbonTreat™ Premium Additives have taken the best of all technologies and blended them together seasonally to create the perfectly crafted additive package in a single additive product.



Phil Hamilton, National Fuel Additive Sales Manager, Schaeffer Manufacturing Company

Phil Hamilton, CLS, is the National Fuel Additive Sales Manager for Schaeffer Manufacturing Company, a \$100 million, St. Louis based manufacturer of oils, greases and fuel additives.

Mr. Hamilton has been with Schaeffer since 1997 where he worked in sales and marketing. He was instrumental in developing Schaeffer's racing program, retail marketing program, Triple 7 Oil Change program and the reformulation of all of Schaeffer's fuel additives for ULSD, ie. CarbonTreat™ Premium, Diesel Treat 2000™ Premium Diesel.

Phil earned his degrees in economics and chemistry at Southern Illinois University/Edwardsville.

Schaeffer Manufacturing Company was founded in 1839 making it the oldest lubricant company in North America. A complete list of products and company history can be found on their websites. Visit www.schaefferoil.com for more information. Or call Phil at 1-800-325-9962.