



Shrieve

PROGILINE® FA

Fuel quality programme for gasoline & diesel



**INDUSTRY LEADING, SUSTAINABLE
TECHNOLOGY PARTNERSHIPS
THAT DELIVER TOP-TIER
DIFFERENTIATED SOLUTIONS TO YOU**

PROGILINE® FA enhanced gasoline & diesel performance fuel additives offer exceptional fuel system protection for vehicles.

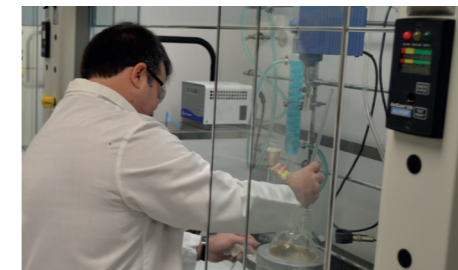
Today's vehicles require modern fuels and lubricants to ensure peak performance.

The demand to reduce the impact on the environment has altered engine designs. They have become more complex, smaller, more powerful and more efficient. As design tolerances have reduced, the stresses and strains placed upon engine hardware have increased.

With advancing engine technology, lubricants have also adapted but base fuels have remained

relatively static. A deposit build-up in the fuel system and combustion process can cause a loss of power, a reduction in fuel economy and an increase in emissions.

Standard or base gasoline and diesel fuels, whilst conforming to regulations, may not have been treated with a fuel additive package designed to maintain or restore engine performance. These 'packages' have been developed by scientists and they can address a number of issues that base fuels do not.



Shrieve has made continuing investment in a portfolio of technology based differentiated solutions into the markets we serve.

OUR HERITAGE

Shrieve offers something quite unique to a range of industries around the world. We make dealing with us an extraordinary experience.

The Shrieve Group are well established in the performance chemicals arena and are well known for exceptionally high service levels within niche industries. The PROGILINE FA range is an evolutionary step in the development of our automotive speciality portfolio and now forms part of this heritage.

The Group has been built upon firm foundations and has grown by developing strong, unifying relationships with customers, suppliers, industry bodies and Original Equipment Manufacturers. Our priority has been to work with customers, large and small, to provide solutions that add real, integrated value to their business.

Our chemistry finds its way into an ever-increasing portfolio of applications and through continued innovation, coupled with exceptional technical and customer service we will extend our reach ever further. Our PROGILINE® FA range complements our existing ZEROL® and ICE automotive air conditioning lubricant and additive product portfolio.

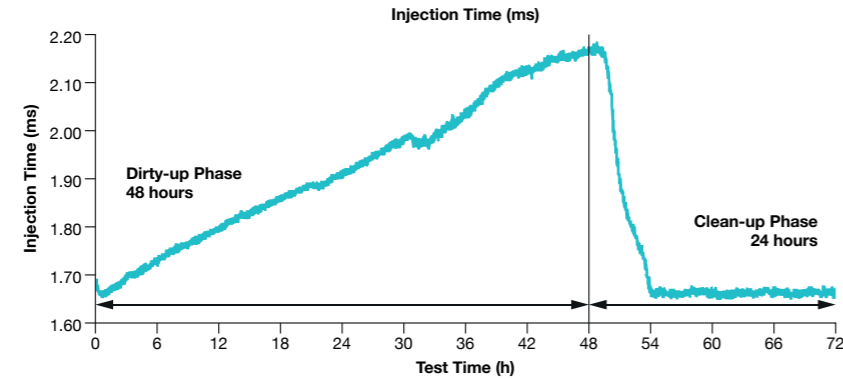
We are a technology led enterprise and we have world class expert application engineers, formulation development specialists and partners that will help keep our customers and Shrieve at the forefront of the markets in which we operate.

PROGILINE® FA-G is a powerful gasoline additive that will combat fuel system deposits in today's most advanced engines.

The requirement for detergency in fuels is not new. Deposit build-up in older carburetted, manifold or port fuel injected gasoline engines will cause a loss of performance.

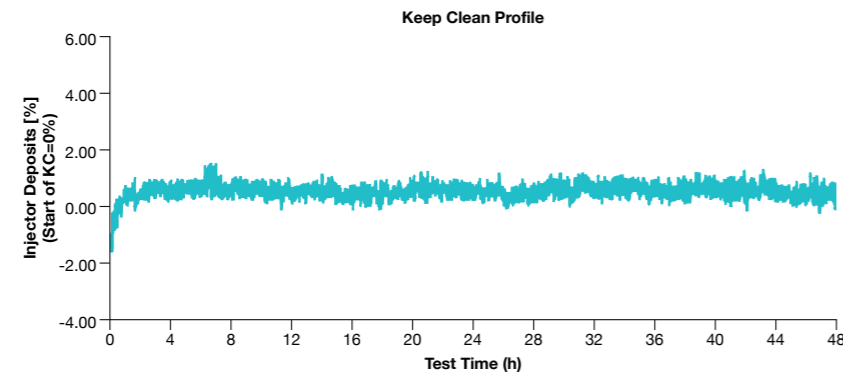
Today's more efficient direct injection spark ignition (DISI) engines are even more susceptible to fuel related deposit fouling and require more sophisticated additive technology to maintain peak performance.

PROGILINE® FA-G EXAMPLE 'CLEAN-UP' PERFORMANCE



This industry test demonstrates that with the addition of PROGILINE FA-G at a treat rate appropriate for 'premium' fuels, deposits are rapidly removed from a modern DISI engine, returning the fuel injection time to its original position.

PROGILINE® FA-G EXAMPLE 'KEEP CLEAN' PERFORMANCE



In the same industry test as shown above, PROGILINE FA-G included in the base fuel at a treat rate appropriate for 'main grade' fuels, excellent 'keep clean' performance is demonstrated from start of the test.

EXAMPLE UNTREATED v TREATED INJECTOR NOZZLES



These images show the injector holes before the dirty-up phase (left), fouled after the dirty-up phase (middle) and the clean-up achieved with PROGILINE FA-G (right).

CLEAN-UP & KEEP CLEAN.

PROGILINE FA-G offers exceptional fuel system cleanliness across an entire range of gasoline engine technologies.

Injector cleanliness is one of the primary concerns within direct injection engines. Over time, deposits can form on the injector nozzle, affecting fuel spray and quantity. This will have a detrimental effect on engine performance and efficiency. The charts and images illustrate the dramatic cleaning effect of PROGILINE FA-G in a modern direct injection gasoline engine, once it has been introduced into the fuel.

In addition, continued use of PROGILINE FA-G will help to ensure that fuel system cleanliness is maintained, allowing the engine to perform as expected.

The PROGILINE FA-G gasoline additive package has been formulated to:

- Remove existing injector deposits
- Prevent injector fouling
- Remove inlet valve deposits in older, carburetted and port-fuel injected vehicles
- Protect against valve stick
- Reduce particle emissions
- Control combustion chamber deposits
- Protect against fuel system corrosion

These features will help to provide the overall benefit of fuel and overall engine efficiency. Recommended PROGILINE FA-G dosing levels and corresponding results based on industry testing can be found within the supporting technical documents.

PROGILINE® FA-D is an advanced diesel additive package that maintains fuel system cleanliness and with it, engine efficiency.

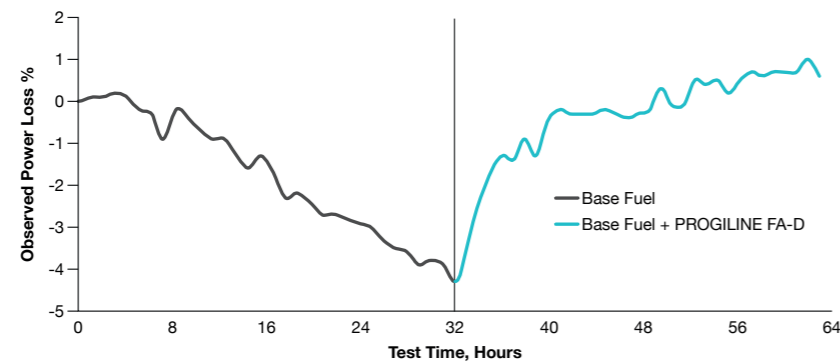
PROGILINE FA-D will help compression ignition diesel engines to run more smoothly and reduce the number of unplanned fuel-related maintenance visits.

Shrieve has gathered together technology to bring to market a diesel additive that is capable of:

- Restoring lost power
- Maintaining peak engine performance
- Retaining both fuel consumption and emissions at optimum levels

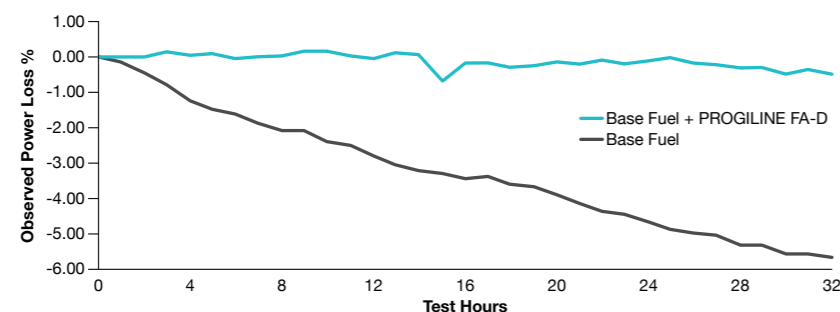
With the introduction in recent years of Direct Fuel Injected engines your vehicle is more sensitive to fuel quality than before. The tolerance in the injectors is now so slight that the build-up of harmful deposits will slowly reduce the power your engine can deliver, cause it to run poorly and can eventually cause the engine to fail if the injectors become stuck. Fuel consumption and emissions increase, costing both you and the environment.

PROGILINE® FA-D EXAMPLE 'CLEAN-UP' PERFORMANCE



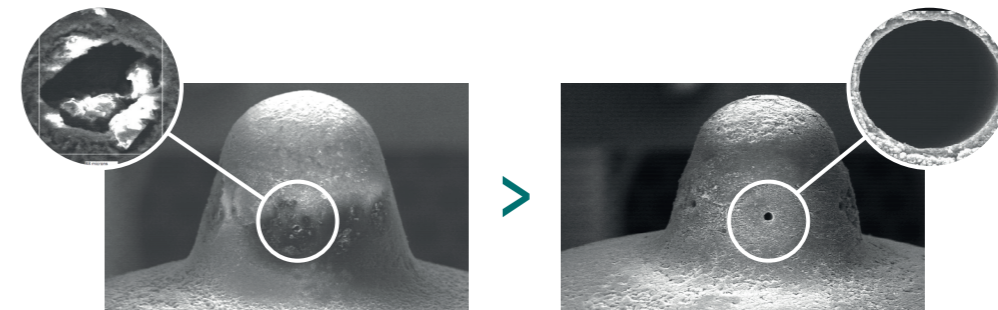
This industry test demonstrates that with the addition of PROGILINE FA-D at a treat rate appropriate for 'premium' fuels, power loss recovery is rapidly observed.

PROGILINE® FA-D EXAMPLE 'KEEP CLEAN' PERFORMANCE



In the same industry test as shown above, PROGILINE FA-D included in the base fuel at a treat rate appropriate for 'main grade' fuels, minimum power loss is observed from the start of the test.

EXAMPLE UNTREATED v TREATED INJECTOR NOZZLES



These images show fuel injector nozzles fouled at the 'dirty-up' phase (left) and subsequent 'clean-up' achieved in industry tests with PROGILINE FA-D (right).

CLEAN-UP & KEEP CLEAN.

PROGILINE FA-D offers the ability to clean-up diesel engine fuel systems, helping restore and maintain optimum engine performance.

Diesel engine technology has seen significant development in recent years in a similar way to that of the gasoline engine. This has led to vastly increased fuel injection pressures through common rail systems and with it better fuel atomisation, giving improved ignition and combustion processes, leading to better overall efficiency.

Within these harsher environments the use of non-treated base fuels can quickly lead to a build-up of deposits – both within the injector and at the nozzle tip - that will adversely affect engine performance until ultimately injectors and other components may require costly replacement.

From initial 'clean-up' to ongoing deposit prevention and 'keep-clean', PROGILINE FA-D will combat harmful deposit build-up.

PROGILINE FA-D not only prevents fouling it helps to allow the engine to run as it should, helping to maintain 'optimum' power, fuel consumption and emissions performance levels. In addition, your engine and fuel system will benefit from:

- Protection against oxidation and corrosion in both the fuel tank and the fuel system
- Fuel handling as foaming is reduced, resulting in fewer spillages
- Protection against fuel/water emulsions
- Increase in fuel cetane number
- Improved cold-start performance

PROGILINE FA-D can provide similar performance benefits with older indirect diesel injection systems as well as the latest generation common rail systems. Recommended PROGILINE FA-G dosing levels and corresponding results based on industry testing can be found within the supporting technical documents.

WORKING WITH YOU

We shall be pleased to discuss our PROGILINE® FA range or any other products within our portfolio with you. Shrieve supports its customers from locations around the world. For more information, including regional product availability and safety data information, please visit our website at shrieve.com or contact your regional office:

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Performance enhancements described in this publication are based upon industry testing. Actual benefits may vary depending upon vehicle type, driving style and conditions, vehicle and other conditions, including atmospheric and types of base fuels treated. As such, no performance guarantees can be provided.

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