AUTOMOTIVE TECHNOLOGIES

distribution & marketing (pty) ltd

www.atdm.co.za

PHEV COMPATIBLE

Advanced Total Fuel Treatment

- Absorbs and removes water from fuel tank and fuel lines
- Helps fuel burn cleaner
- Cleans Injectors
- Suitable for Petrol and Diesel engines

ATFT provides complete fuel system maintenance to give improved engine performance and economy.

ATFT is suitable for use in leaded, unleaded & high octane petrol, diesel, heating kerosene and bunker fuels.

ATFT is used at only 1 litre per 400 litres of fuel and is extremely cost effective.

ATFT removes water from fuel and fuel lines and retards fungal growth.

ATFT neutralizes the harmful effects of acids formed in aged, water – contaminated or high sulphur fuels, and reduces the formation of gum and varnish deposits that can result from this. Not only are these acids corrosive, but they can also catalyse oxidation and premature fuel aging.

ATFT allows fuel to burn cleanly and efficiently, and helps keep injectors and combustion chambers clean.

ATFT contains dispersants to reduce the aggregation of wax particles, as well as high detergency to keep injectors clean and promote improved fuel combustion. This leads to reduced levels of unburnt hydrocarbons and carbon monoxide in the exhaust gases.

ATFT is manufactured to the requirements of International Quality Standard ISO9001.

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ADVANCED TOTAL FUEL TREATMENT

AUTOMOTIVE TECHNOLOGIES
MADE IN SOUTH AFRICA SINCE 2008
TRUSTED SUPPLIER TO THE MOTOR INDUSTRY

COMBUSTION

Combustion is an exothermic (heat releasing) reaction between fuel and the oxygen in the air. Incomplete combustion occurs when the fuel is not sufficiently atomized prior to ignition or when the oxygen supply is insufficient to allow full combustion. During complete combustion, fuel hydrocarbons oxidize to oxides of carbon and hydrogen, via a multi - step reaction:

Hydrocarbon + O_2 ➡ CO + OH (fast reaction)

CO + OH ➡ CO_2 H_2O (slow reaction)

Incomplete combustion increases the release of carbon monoxide, sulphur dioxide and nitrous oxide emissions. The build up of the carbon monoxide (CO) can saturate the combustion chamber and retard the continued oxidation process and result in smoking, sooting and other problems. Soot and ash build up can cause pre – ignition, oil system contamination and exhaust system fouling.

ATFT contains additives that radically speed up the slow oxidation reaction of carbon monoxide to carbon dioxide:

CO + OH + ATFT reactive intermediate (fast reaction)

Reactive intermediate CO_2 + H_2O (fast reaction)

Thus the **ATFT** allows the more complete oxidation of the fuel. This is not only more energy – efficient. But also reduces carbon monoxide and unburnt hydrocarbon exhaust emissions, and reduces the amount of carbonaceous deposits in the combustion chambers and exhaust system.

ACIDS

Sulphur in fuel may be present in many forms, such as elemental sulphur, hydrogen sulphide, mercaptans, thiophenes and polysulfides. During the combustion process, oxidation occurs.

In simplistic terms: $S + O_2 \rightarrow SO_2$

A small proportion of the sulphur can further oxidize to sulphur trioxide. This may be catalyzed by trace impurities in the fuel.
$SO_2 + O_2 \rightarrow SO_3$

And in the presence of water, sulphuric acid may be formed.
$SO_3 + H_2O \rightarrow H_2SO_4$

Such acids can catalyse oxidation and premature aging of fuel during storage and are corrosive to both the fuel and exhaust systems.

Some of the additives in **ATFT** react with both the sulphur trioxide and the sulphuric acid to form, for example, organic sulfonates which provide additional detergent / dispersant activity.

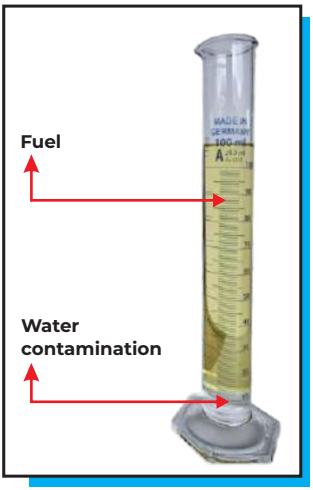
$SO_3 + R_1R_2R_3OH \rightarrow R_1R_2R_3SO_3H$

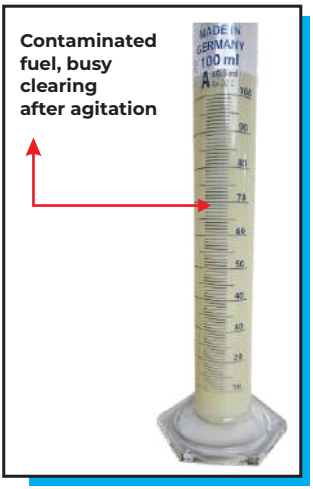
So not only does **ATFT** directly neutralise the corrosive effects of the sulphur acids, it also reduces the formation of unwanted harmful byproducts within the combustion chambers and exhaust system.

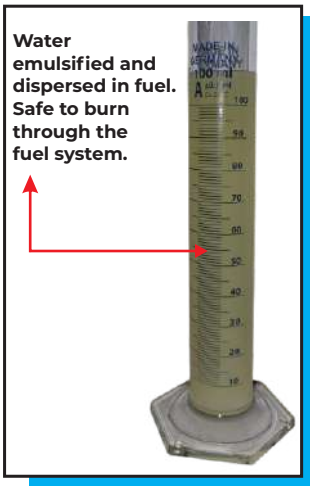
WATER

The presence of water from condensation, seal leakage, etc can accelerate the degradation of the fuel, especially if high sulphur levels are present. In diesel, water allows microbial such as Cladisporum (Hormoconsis) resinae to proliferate. This ”diesel bug” feeds on the fuel, but propagates in the water and causes fuel degradation and filter and injector blockages.

ATFT contains dispersants to reduce the aggregation of wax particles and counteract the problems associated with sludging, as well as high detergency to keep injectors clean and promote improved fuel atomisation and combustion. This leads to reduced levels of unburnt hydrocarbons and carbon monoxide in the exhaust gases.







ATFT successfully removes moisture through its powerful solvent and dispersant properties, thus ensuring that "diesel bug" cannot survive.

ATFT exhibits good biocidal activity, as shown by independent testing on diesel fuel with a gross infestation of Cladosporium resinae:

Time	Dilution Rate	Total Fuel Treatment	Competitor
2 Days	1 : 2000	No growth	Bacterial colony present
	1 : 4000	No growth	Bacterial colony present
	1 : 6000	No growth	Bacterial colony present

FUEL SLUDGE

Fuel injectors build up deposits from a variety of causes (poor quality fuel, waxes or biofouling, improper engine tuning, etc). Such deposits effect the spray pattern of fuel into the combustion, chamber so that there are areas of lean burn and rich burn. The results of this include higher exhaust emission of unburnt hydrocarbons and carbon monoxide, rough engine running, excessive fuel consumption and loss of engine power.

FUEL INJECTOR

Dirty Valve

Clean Valve

Dirty Fuel Injector

Clean Fuel Injector

EXTRA BENEFITS

ATFT is suitable for all liquid petroleum hydrocarbon fuels: leaded, unleaded & high octane petrol's, summer or winter grade diesels, heating kerosene ad bunker fuels. It has not been formally assessed for use in avgas and is not approved for use in aircraft.

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ATFT does not contain phosphates, boron or corrosive ingredients. It has a high flashpoint (>70°C) and low toxicity and is free from many transportation restrictions.

ATFT variants have been formulated to, for example:

- remain liquid to -30°C for use in sub-arctic conditions
- contain a premium synthetic top-end lubricant blend
- be much more strongly biocidal for severe bug infestations
- blend with cheap solvents to give "economy" products for retail sale (use rate 1:2000 to 1:1000)
- give optimal performance in low grade bunker fuels

ATDM AGRI LANDBOU

ATFT is a total fuel system treatment. It preserves the fuel and keeps the entire fuel system, combustion and exhaust system clean. From the tank, through the fuel lines, injectors, combustion chambers and exhaust. The result is better engine efficiency, improved fuel economy, reduced exhaust emissions and less maintenance downtime. **ATFT will pay for itself!**

IMAGINE
CHANGE
GROW
EXPAND
THRIVE

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