



Oil Treatment for Petrol Engines

Description

The exclusive formula in STP Oil Treatment for Petrol Engines fortifies motor oil with an extra measure of additives, providing increased levels of viscosity improver plus anti-wear, anti-friction and anti-oxidation agents. STP Oil Treatment for Petrol Engines, a mineral oil based additive, provides extra protection against engine heat and allows oil to maintain key lubricating properties for longer to keep the engine going strong until the next oil change.



Benefits of Using STP Oil Treatment for Petrol Engines

STP Oil Treatment for Petrol Engines used regularly helps:

- Reduce engine wear
- Reduce engine deposits, keeping vital engine parts cleaner
- Reduce oil consumption
- Provide extra engine protection
- Improve oil viscosity
- Fight oil oxidation and breakdown
- Reduce corrosion

STP Oil Treatment for Petrol Engines:

- Is recommended for use in all four cycle petrol engines including cars, trucks, vans, tractors, boats, motorcycles, marine engines
- Is effective with all types of engine oil
- Can be used in a turbo charged vehicle
- Must not be used in a vehicle with a wet clutch: the friction reducing properties of STP Oil Treatment for Petrol Engines will make the clutch slip
- Must not be used in a two stroke vehicle
- Is best added to a fresh oil change or in-between changes to boost or replenish key additives
- Can be used with other STP additives

How STP Oil Treatment for Petrol Engines Works

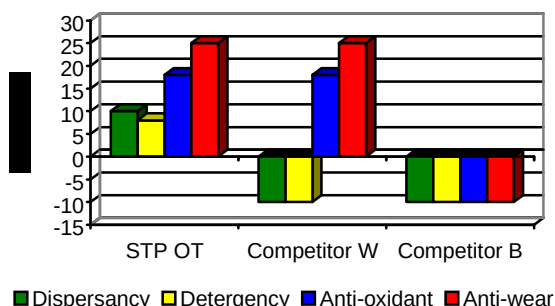
All motor oils contain additives to fight friction and reduce engine wear, but whatever quality of oil being used, the heat and extreme pressure generated by just normal driving uses up and breaks down this protection. Fresh motor oil and motor oil's additives can begin to break down after just 50 miles, and as a result may not provide the necessary protection between oil changes. This results in a sludge build-up, oil oxidation, and acid formation, which all lead to excessive wear and poor engine performance.

STP Oil Treatment for Petrol Engines is a mineral oil based oil additive specifically formulated for use with today's high quality motor oils to restore motor oil additives and provide extra protection to new motor oils and, as such, contains four of the important components typically used in the formulation of these motor oils:

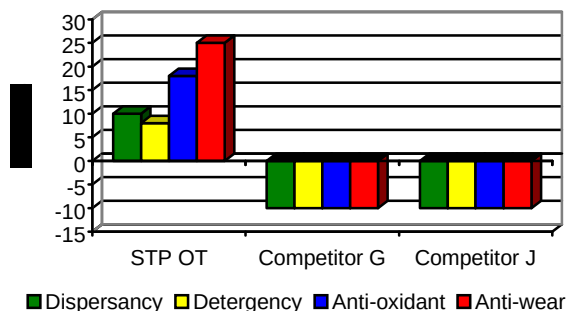
- 1 *A dispersant modified ethylene-propylene copolymer viscosity modifier (Viscosity Index Improver)*; used in the formulation of lubricants to provide greater resistance to thickening at low temperatures and thinning at high temperatures. The dispersant carries deposits away from the engine, preventing them from adhering to engine parts.
- 2 *An effective anti-wear/anti-oxidant compound (zinc dialkyldithiophosphate – ZDDP, the most highly recognised anti-wear agent used in today's motor oils)*; serves to protect vital engine parts from wear caused by metal to metal contact (cams, lifters, etc), and helps prevent thermal oil breakdown.
- 3 *An overbased calcium sulphonate detergent*; efficiently cleans deposits, varnish and sludge from the metal surfaces of the engine, neutralising acids formed by combustion and thus reducing corrosion. The dispersant then carries deposits away, preventing them from adhering to engine parts.
- 4 *A solvent refined mineral oil basestock.*

Graphs 1a, b and c show just how much STP Oil Treatment for Petrol Engines will improve motor oil performance, based on the approximate change in typical API SJ oil.

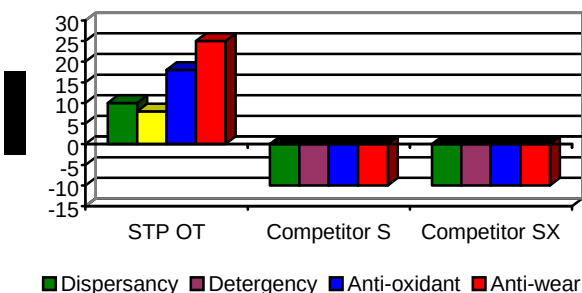
Graph 1a: Performance Additives Comparison



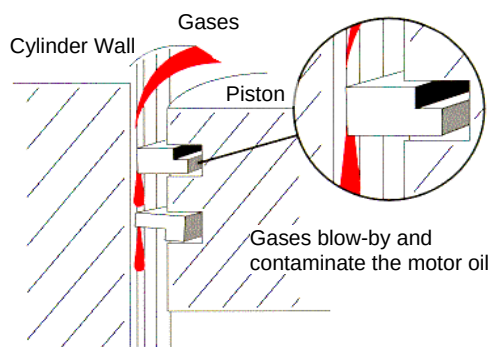
Graph 1b: Performance Additives Comparison



Graph 1c: Performance Additives Comparison



STP Oil Treatment for Petrol Engines' VI Improver Provides Extra Lubrication, Reducing Engine Wear



Increased engine wear can occur at start-up, before the motor oil circulates, and will lead to disruption in combustion timing. In addition, motor oil can thin out or shear at high operating temperatures. When an oil has thinned, wear between the cylinder wall and piston ring can lead to reduced compression (power). Combustion chamber gases “blow-by” and contaminate the motor oil.

STP's multi-additive formula helps maintain high viscosity properties. Viscosity Index (VI) Improvers are used in all multi-grade oils. (Oils such as SAE 10W-30 and SAE 10W-40 are typical examples.) STP's scientifically created VI Improver gives the oil extra protection by adding extra viscosity when it is needed most. Its highly specialised ingredient resists breaking down under heat and pressure, so gives a heavier film of oil for superior lubrication when the oil is hot, yet allows the oil to flow properly to engine parts when it is cold, better than the less stable VI Improvers used in most multi-grade motor oils. Typically, STP Oil Treatment for Petrol Engines will add approximately a full SAE grade to an oil (from SAE30 to SAE40, for example).

The anti-wear ability of ZDDP is very important in protecting sliding parts such as cams and followers, piston rings and cylinders against loss of lubrication caused by a rupture (failure) of the oil film under the high pressures and temperatures found in today's engines. In these cases, when the oil film fails, the ZDDP forms a chemical coating that takes over to help keep the two metal parts from welding or scuffing as they rub together. The combined effects of the higher viscosity provided by the VI Improver and the higher ZDDP content give greater protection to these critical parts than that provided by the oil alone. In independent tests, STP Oil Treatment for Petrol Engines reduced lifter wear by 63% versus API SH motor oil alone. In engine laboratory tests, STP reduced cam plus lifter wear by 81% with API SG motor oil. Image 1 illustrates a worn cam lobe.



Image 1: Worn Cam Lobe with Engine Oil Only

STP Oil Treatment for Petrol Engines Fights Motor Oil Contamination, Cleaning Vital Engine Parts

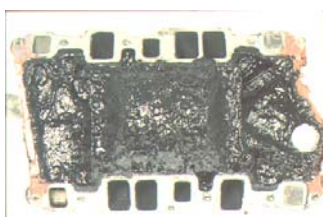
Oxidation is a chemical reaction where, as a result of high operating temperatures, hydrocarbons in the motor oil and oxygen from the air form various complex chemicals. These substances are eventually baked by engine heat to a hard, resinous, varnish-like consistency, causing the oil to degrade, thicken and lose its ability to flow easily. Soot, carbon and unburned fuel that leak past crankcase rings will also contaminate and dilute motor oil, causing sludge to form. Cooling system leaks are another source of contaminants.

Overbased Calcium Sulphonate is a detergent which efficiently cleans varnish, deposits and sludge from the metal surfaces of the engine. The dispersant properties of the VI

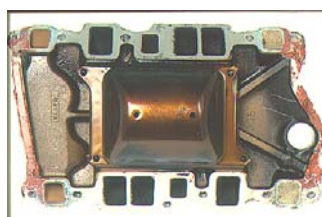
Improper keep the particles dispersed in the oil to reduce the possibility of oil passage blockages, helping to neutralise acids formed by combustion and thus reducing corrosion.

Oxidation combined with moisture also produces complex chemicals that can attack engine metals (main and connecting rod bearings, for example). The water and acid by-products condense on cylinder walls and mix with crankcase oil, resulting in sludge, rust and corrosion. STP Oil Treatment for Petrol Engines contains alkaline-based acid inhibitors that help neutralise acids. STP's rust inhibitor also forms a film on metal parts that reduces corrosion and resists sludge formation. As the formation of harmful deposits (such as varnish and sludge) in the engine are reduced, oxidation is reduced, and the motor oil can flow freely throughout the engine.

Images 2 to 6 illustrate engine deposits and potential problems that can occur.



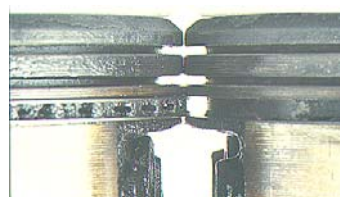
Engine Oil Only



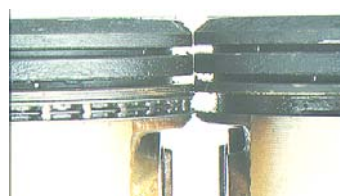
Engine Oil + STP

Image 2: Engine Deposits - Intake Manifold

Potential Problems: Increased Wear
Reduced Engine Life
Higher Maintenance Costs
Higher Engine Temperatures



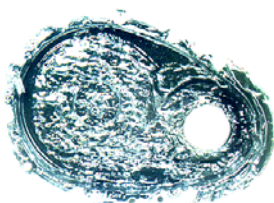
Engine Oil Only



Engine Oil + STP

Image 3: Engine Deposits - Pistons

Potential Problems: High Oil Consumption
Increased Wear
Reduced Engine Life
Higher Maintenance Costs



Engine Oil Only



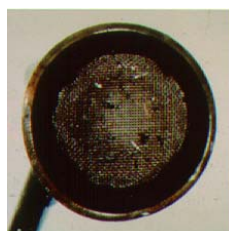
Engine Oil + STP

Image 4: Engine Deposits - Timing Gear Cover

Potential Problems: Timing Chain Jump
Increased Wear
Reduced Engine Life
Engine Failure



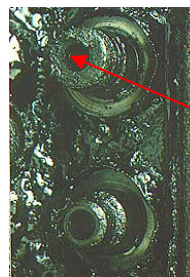
Engine Oil Only



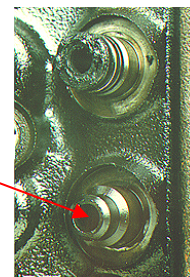
Engine Oil + STP

Image 5: Engine Deposits - Oil Screen

Potential Problems: Reduced Oil Pressure
Lack of Lubrication
Increased Wear
Reduced Engine Life



Engine Oil Only



Engine Oil + STP

Image 6: Engine Deposits - Valve Deck

Potential Problems: Worn Valve Guides
Reduced Oil Pressure
Lack of Lubrication
Increased Wear
High Oil Consumption

Directions for Using STP Oil Treatment for Petrol Engines

STP Oil Treatment for Petrol Engines should be added to the engine oil when the engine is warm, at a rate of one 300ml can to 3 litres of oil, or one 450ml bottle to 4 or 5 litres of oil (10% treat rate). Do not overfill.

Directions for Use: Rebuilding Engines and Mechanical Assemblies

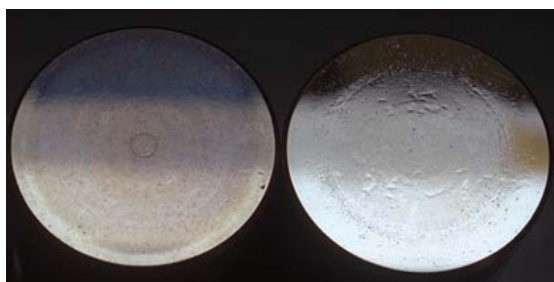
When using STP Oil Treatment for Petrol Engines in rebuilding engines and mechanical assemblies, mix 1 part STP Oil Treatment for Petrol Engines with 1 part motor oil, coating all moving parts prior to assembly. Use the mixture on new assemblies to keep parts in place. Thereafter, follow engine oil directions above.

Test Results

New York City Taxi Test

The effectiveness and benefits of STP Oil Treatment for Petrol Engines have been repeatedly demonstrated in extensive laboratory and field test applications. Among these tests was an evaluation of the benefits of STP Oil Treatment for Petrol Engines use in the severe stop and go driving environment experienced by New York City taxicabs.

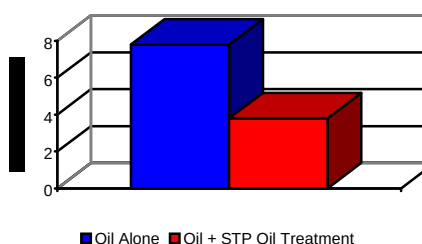
In these driving conditions, the NYC taxis tested the possibility of engine wear being increased due to the fact that the engine is likely to be operating in the “boundary layer” lubrication regime, where there exists a greater possibility of metal to metal contact due to a thinner lubricating film between moving metal surfaces. The use of STP Oil Treatment for Petrol Engines under these conditions was shown to reduce ring wear and to significantly reduce cam and lifter wear (Image 7 and Graphs 2 to 4).



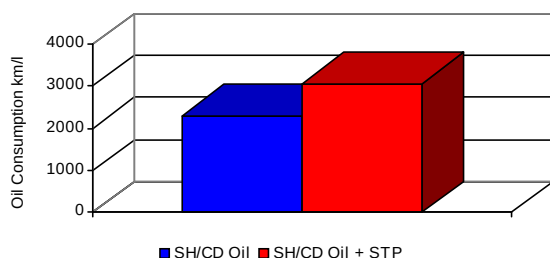
API SH/CD + STP OT API SH/CD
Image 7: 1995 NYC Taxi Test Lifter Wear

The tests showed that oil with STP reduced lifter wear by an average of 50%.

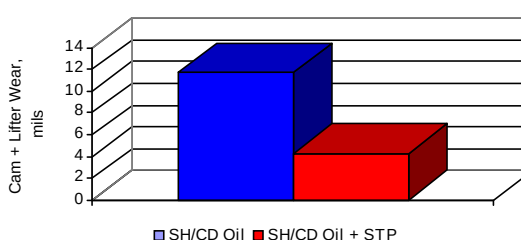
Graph 2: NYC Taxi Test
- STP Reduces Valve Lifter Wear



Graph 3: NYC Taxi Test - Oil Consumption (4.3L V-6
Chevrolets)



Graph 4: NYC Taxi Test - Valve Train Wear (4.3L V-6
Chevrolets after 96,000 km)

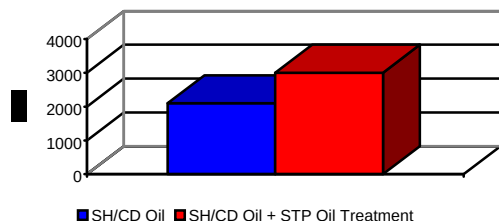


STP Oil Treatment for Petrol Engines Reduces Oil Consumption

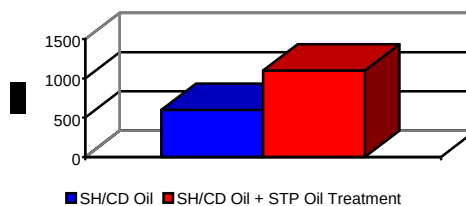
Engines that burn oil have reduced lubricating capacity and increased operating expense.

In independent tests, STP Oil Treatment for Petrol Engines reduced oil consumption by 30% in API SH oils and 50% in API SG oils. This can be seen in Graphs 5 and 6, showing the results of oil consumption tests in which a 4.3L V-6 Chevrolet and 5.0L V-8 Ford were both driven with and without STP Oil Treatment added to the oil. The distances measured are kilometres travelled before the vehicles required 1 litre of oil.

Graph 5: Oil Consumption Reduction (4.3L V-6 Chevrolets)

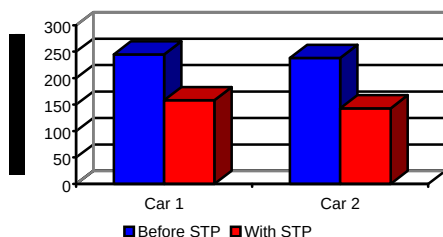


Graph 6: Oil Consumption Reduction (5L V-8 Fords)

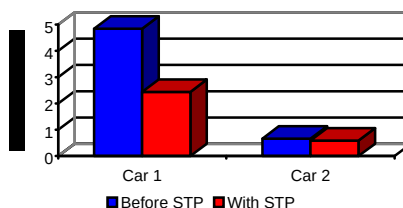


Engines that burn oil have increased carbon monoxide and hydrocarbon emissions. STP Oil Treatment for Petrol Engines can help to reduce these harmful emissions, as shown in Graphs 7 to 9.

Graph 7: HC Emissions



Graph 8: CO Emissions



Graph 9: Visible Smoke Emissions Reduction

