

The truth about engine oil and additives.

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The Bottom Line *Don't use additives. Just change the oil and filter frequently and when it needs fixed, fix it.*

Welcome to the third part in my "The truth" series of articles. I've seen a lot of articles here related to oil but not much mention of additives or their effect on your engine. Let's start by explaining exactly what it is oil does inside your engine.

An engine oils job is primarily to stop all the metal surfaces in your engine from grinding together and tearing themselves apart. But it also has to dissipate the heat generated from this friction too. It transfers heat away from critical areas during the combustion cycle. Another function of engine oil is that it must be able to suspend the by-products of fuel combustion, such as silica (silicon oxide) and acids. It must also clean the engine of such by-products. And it must do all of these things under tremendous heat and pressure without succumbing to fatigue or loss of thermal viscosity.

The fact of the matter is that the companies who manufacture and process petroleum and synthetic engine oils include exactly what is needed for the application it is designated for. Though some additives may not contain anything harmful to your engine, and even some things that could be beneficial, most experts still recommend that you avoid their use. The reason for this is that your oil, as purchased from one of the major oil companies, already contains a very extensive additive package. This combination of components that the oil manufacturer has combined are often synergistic which roughly translated means that some of the individual components will only react mutually achieving a reaction none of the components alone could achieve. If you add to or change this formula the effect the formula was meant to achieve may be upset even if it's more of something the formula already contained.

Always make sure the oils you are putting together have the same rating (SA, SE, SC, etc.). This tells you their additive packages are basically the same, or at least compatible, and are less likely to upset the balance or counteract each other. Just think about this before I present you with the concrete reasons not to use additives in your engine oil. Both manufacturers and large oil companies are among the largest, and richest, corporations in the world. Doesn't it stand to reason that if there was some "Miracle" additive that truly delivered a reduction in engine wear then these companies would surely capitalize on it by including the component in it's engine oil formula and marketing it to death? But they don't, and probably never will. Why, because the ingredients used in petroleum oils today is blended to perform exactly the way today's engines require them to.

Let's make one thing clear right now, synthetic oil is nothing even close to an oil additive. Synthetic oil is by far the best lubricant you can use in your engine and is the only known product which honestly and continuously provides protection from start-up wear and extends the life of your moving parts without sacrificing anything except a few more dollars, but that's another story. Note: DO NOT use synthetic oil in a high mileage engine that was not previously using synthetic oil. Some will argue this point with me but trust me, it will cause you problems. Instead, use an oil engineered for older cars like Castrol High Mileage. It has an additive package designed for vehicles with years of engine wear and buildup.

As for the additives. There are many types but the most common are flushes and ones that use PTFE to reduce friction. The solvent or detergent based ones are designed to dissolve sludge and carbon deposits inside your engine so they can be flushed or burned out. Older products like Bardahl, Rislone and Marvel Mystery Oil advertise that use of their product may result in quieter lifters, a reduction in oil consumption and a cleaner more efficient running engine. Other products such as Gunk's 5 Min. Motor Flush attack deposits and varnish more aggressively. These products are usually comprised of solvents and distillates that will strip sludge and deposits out and clean up your engine, particularly if it is an older, abused one. The problem is, unless you have some way of determining just how much is needed to remove your deposits without going any further, such solvents also can strip away the boundary lubrication layer provided by your oil. Overuse of solvents is an easy trap to fall into, and one which can promote harmful metal-to-metal contact within your engine. Additionally, on engines that have not been maintained well, these components have been known to partially dissolve carbon deposits allowing the pickup screen on the oil pump to become clogged with carbon sediment. On newer engines this is not as much of a problem but if the engine is maintained properly, you wouldn't have any need for a motor flush as the oil formulas available today generally contain all the detergent needed to clean your engines interior.

Recent tests have shown that even some of the most inoffensive additives contain products which, though harmless in their initial state, convert to hydrofluoric acid when exposed to the temperatures inside a firing cylinder. This acid is formed as part of the exhaust gases, and though it is instantly expelled from your engine and seems to do it no harm, the gases collect inside your exhaust system and eat away at your mufflers from the inside out. So you exchange a couple of twenty dollar oil changes for a \$150.00 exhaust system replacement.

Currently, the most common and popular oil additives on the market are those that contain PTFE powders suspended in a regular, over-the-counter type, 50-rated petroleum or synthetic engine oil. PTFE or as it is better known, teflon, is a suspended solid. Yep, that's right. A solid. That makes sense to me. Doesn't that make sense to you. Let's take and add the very same things we design our oil and filters to get OUT of the engine (Suspended solids), into the oil.

Companies that manufacture additives like slick 50, Prolong and the slew of similar teflon treatments get you to purchase their products using testimonials and "Private testing" that can never be verified due to supposed "Contractual obligations preventing them from releasing the laboratories names that they claim have found their products successfull in extending engine wear and reducing friction." So while no verfiabe evidence exists other than some customer opinions, there is plenty of evidence that overwhelmingly proves the dangers of using these additives.

Dupont, the company that originally offered teflon to the market, has indicated that , "Teflon is not useful as an ingredient in oil additives or oils used for internal combustion engines." After a long legal battle between Dupont and the companies who use PTFE in their engine treatments, Dupont withdrew from it's stance regarding the use of PTFE in engines but still refuses to endorse such use. They do however continue to stand by the opinion that they have "No knowledge of any advantage gained through the use of PTFE in engine oil."

Avco Lycoming, a major manufacturer of aircraft engines, states, "We have tried every additive we could find on the market, and they are all worthless."

Briggs and Stratton, renowned builders of some of the most durable engines in the world, says in their report on engine oil additives, "They do not appear to offer any benefits."

North Dakota State University conducted tests on oil additives and said in their report, "The theory sounds good - the only problem is that the products simply don't work."

Tests conducted by researchers at the University of Utah Engineering Experiment Station involving Petrolon additive with PTFE. The Petrolon test report states, "There was a pressure drop across the oil filter resulting from possible clogging of small passageways." In addition, oil analysis indicated that iron contamination doubled after using the treatment, indicating that engine wear didn't go down - it appeared to shoot up.

Many companies such as Briggs and Stratton, Avco Lycoming and NASA have all conducted testing using nearly every available engine oil additive and have conclusively found no beneficial uses for them with the exception of the manufacturers formulations that incorporate pre-determined amounts of detergent, zinc, etc.

In the case of oil additives, there is a considerable volume of evidence against their effectiveness. This evidence comes from well-known and identifiable expert sources, including independent research laboratories, state universities, major engine manufacturers, and even NASA. No matter what the additive makers would like you to believe, nothing has been proven to stop

normal engine wear.

There is one main problem with PTFE treatments. They can cause oil starvation. This is particularly true in the area of piston rings, where there is a critical need for adequate oil flow. In practically all of the reports and studies on oil additives, and particularly those involving suspended solids like PTFE, this has been reported as a major area of engine damage.

Blue Corral, the manufacturers of the Slick 50 engine oil additive, have been banned by a Federal Commission from making claims about reduced engine wear, increased fuel economy and lower running temperatures in it's advertising in America. The Federal Commission found the company's claims of increased performance and reduced wear were unsubstantiated, and Blue Corral has agreed to pay upwards of \$20M in damages to affected customers.

The manufacturers of the ProLong engine additive have been dealt a smack in the face by a Consumer Reports Magazine report into their product. CR attempted to reproduce the "no oil" test where all the oil was drained out of an engine, which had been treated with ProLong, and then the engine was run. CR managed a maximum of 13 seconds running out of each of two engine before they seized up, welding the pistons to the barrels. The case is being brought to a Federal commission for prosecution, for false advertising claims.

The manufacturers of the DuraLube engine additive have also been dealt a serious blow by a Car & Driver Magazine report into their product. C&D tried the same tests as Consumer Reports did on ProLong, and had similar results, but in a much quicker time. The C&D engines lasted a staggering 11 seconds without oil.

In all the resources I've researched and in other articles regarding the use of engine additives, I haven't come across one single instance of a major engine or oil manufacturer that has endorsed the use of any brand of engine oil additive or additive ingredient other than those already found in modern engine oil formulations, and then, only in the proper combinations.

Your best bet regarding maintaining your engine and prolonging it's life is frequent oil changes and if you can afford it, the use of synthetic oil. Despite common manufacturer or technician recommendations you cannot change your oil and filter too often. If you could afford to do an oil change every month you would probably extend your engines life by an additional 50,000 to 100,000 miles over the standard three to five thousand mile recommendation used by many manufacturers. I have an '85 S-10 Pickup that at the point I tore it down for electrical work, I had put over 250,000 miles on since I rebuilt the stock engine. I changed the oil and filter every 2000 miles and used fully synthetic oil.

There are also additives that supposedly stop oil leaks but these products are often fraught with

their own problems too. In order to reduce oil leakage they saturate seals and gaskets expanding them. While this does seem to initially reduce oil leakage, over a period of time it also softens seals to the point where they can no longer contain the pressure and heat of the engine oil and ultimately fail. When that happens you usually end up with a worse leak than you started with. Cork gaskets seem to disintegrate after prolonged exposure to these additives while rubber gaskets and seals turn to jelly and fall apart. Additionally, these components may also affect the balance of ingredients your engine oil is comprised of causing an increased amount of carbon build up in your engines interior especially in the area of the lifter valley and the rocker arms. Basically, it creates sludge and carbon deposits.

The bottom line here is that the supposed benefits of using engine additives is far outweighed by the known benefits of frequent oil changes and use of oils with compatible additive formula's. If you want to increase your engines life don't attempt to use one of these "magic potions.", just maintain your engine properly and it will last. Use synthetic oil and it will last even longer.