

Oil Additives - Do They Work?

We do some serious homework on Teflon oil additives and here are the results.

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There are a lot of reasons for the content of the articles found in different issues of this magazine. Most of them come as a result of a suggestion or question from one of the members.

Not long ago, a fellow called me and told me he was going to make me rich. I immediately wondered if he was the administrator of a will from one of my long-lost relatives. Had I entered a contest recently? How was I going to be rich?

It didn't take long for the bubble to burst. He was going to make me rich by "allowing" me to market his "fantastic new break-through in the world of oil additives." This stuff made all aircraft engines run cooler, burn less fuel, develop more power while burning that lesser amount of fuel and it was probable that time before overhaul (TBO) could be a thing of the past. He told me about the published test results where an engine that was rated at 205 horsepower put out 272 horses on the dyno in about one hour after pouring this additive in the oil. He told me about a Bonanza owner that added this to his oil at his last annual and his engine ran twenty degrees cooler in all aspects of flight. He even told me he could drain all of the oil out of his family car and drive it without damage. Okay, it sounds great, right? It even sounds too good to be true, right? I've often found that when you hear something that sounds too good to be true, it often is, just that! I asked him what kind of engine was involved in test that showed an extra 67 horsepower. He told me it was the toughest engine known to man. A Cummins truck engine. I asked him if the

After the call, I talked to several other people and tried everything I could to get this experience behind me. As the day wore on, I

Bonanza owner had installed new baffle seals on his aircraft during the same annual where he added the revolutionary new oil additive. He said that information wasn't given. I asked him how long he had been driving his family car without oil. He said he only did that for demonstration purposes. I told him that things weren't always the way they seem.

What was this "new" product? Without mentioning any brand names, I will tell you it contained Teflon. I may have heard of this product. Oh, yeah, I remember this stuff. It was going to be the best thing since sliced bread back in the late 1970's. Is this the stuff he was trying to get me involved with? The initial investment was just under \$300.00.

To make a long story short, he went on and on about the revolutionary new pyramid marketing plan. All I had to do was get a few people under me to sell this stuff and I could sit back and wait for the checks to come in the mail. He went on to mention that with the large number of "contacts" I had and the way I could "get to them" each month in the magazine, not only would it be exceptionally easy for me to build a "customer base" but, "You'd be a fool not to take advantage of this golden opportunity."

By now, I had all the sales pitch I could stomach in the very short time allowed. My other line was ringing with someone that probably needed help. I told him this fool wasn't interested, I didn't have \$300.00 and there were several other people that had far larger organizations than I. Maybe he should call on them. I hung up - he didn't call back.

realized that I wasn't feeling any better about being called a fool. I decided to do some research on this product and while I was at it,

I found out some interesting facts about oil additives, especially Teflon.

Why should I take the time necessary to investigate this oil additive. There was a little nagging thought in my mind that wouldn't go away. First of all, any time you gain 67 horsepower on any engine that is only rated at 205 horse power to begin with, that is impressive. This is an astounding claimed gain of 1/3 in horsepower just by adding an additive to the oil.

I dug up some old literature I had originally picked up at one of the trade shows. Sure enough, there it was. An engine manufactured by Detroit Diesel (Cummins) had been used in the test. The brochure goes on to explain that the test was conducted in a laboratory in Mexico, not by Detroit Diesel. We called Detroit and asked if they were aware of the test and they said that they had seen the results but, they didn't recommend the additive.

The same brochure lists the price for enough product to treat one engine at \$250.70 plus shipping and handling. That works out to nearly \$600.00 to treat both engines on your twin Cessna.

I started with the Federal Trade Commission. This is the government operated task force that has the job (among others) of making sure that advertisements for a certain product are valid. I found out that in 1997, the Federal Trade Commission took action against the manufacturers of two popular oil additives containing Teflon. These are nationally advertised products. According to the records, the companies told consumers that Teflon particles in the above products coated all moving parts inside engines, the coating led to reduced wear and better gas milage.

According to the internet, Dupont makes no claims about the addition of Teflon to lubricating oils and states that this application could be detrimental to the engine. Teflon may indeed bond to metal under heat and pressure like the environment found inside the

However, they could not support these claims through valid testing.

Teflon

The word Teflon is a Dupont brand name and it has been used in lots of applications. This stuff is used inside non-sticking cookware, in the insulation found on most aircraft certified wire, in the composite of aircraft engine hoses and in fiber form to weave fire resistant racing uniforms, just to name a few.

So, what is Teflon? Teflon is an extremely stable plastic material. It is a polymer made up of completely fluorinated carbon, and long chains of atoms covalently bonded together with a chemical representation of C₂F₄. Teflon is characterized by its high chemical and thermal stability, and its resistance to adhesion. It is also used as a coating in many different applications.

Teflon is a soft waxy opaque material that is slightly off white in color. It is about 90% crystalline and is polymerized from a small molecule that combines with other molecules to yield a polymer called tetrafluoroethylene which is produced through a series of chemical reactions.

Teflon is inert to all solvents and chemical reagents except molten alkali metals and high temperature fluorine gas. It is capable of withstanding continuous exposure to temperatures ranging from near absolute zero to where it begins to de-polymerize at above 1,100 degrees F. Because of the resistance to chemicals and heat, it is widely used as an inert, tough and non-flammable material for electrical and heat insulation.

crankcase of an internal combustion engine, especially one equipped with a turbo charger.

It's no secret that the oil passing through the turbo on the big Continentals gets hot. The problem is that when Teflon will bond to metal, it will also bond to itself. If this action

is allowed to continue, it could buildup and lead to partial or complete blockage of oil galleys. This is not something I want to happen to my aircraft engine!

According to a Shell oil representative, it does no good to add Teflon particles to lubricating oil in any filtered internal combustion engine as the Teflon particles are large enough to be removed by the oil filter. The only time the particles would pass through the filter and on into the aircraft engine is after the filter becomes so clogged with Teflon that the by-pass in the filter opens up. I never want the filter by-pass valve to open on my aircraft engines.

There are several other items that are present in some oil additives. Among these are zinc-d, a zinc alloy that is believed to eliminate some of the friction and therefore some of the heat. This stuff has been found to clog catalytic converters on cars. If it can clog a catalytic converter, it might not be good for your aircraft engine.

Other oil additives that were listed contain large amounts of chlorine. What the chlorine does as an additive to the oil is a mystery. What chlorine does to almost all metals is speed up the oxidation process and therefore causes severe corrosion. This too might not be good for your aircraft engine.

Our advice is plain and simple. Save the money you were going to spend on oil additives. Some of these can be extremely expensive. Spend the money instead on more frequent oil changes. We recommend every 25 hours on normally aspirated engines without filters and all turbo charged engines. Normally aspirated engines with paper filters should be serviced (oil and filter changed) at intervals no longer than 50 hours. On engines that are flown less than 100 hours per year, change the oil every 3 or 4 months to prevent the buildup of acids in the oil. Use only a manufacturer recommended ashless dispersant oil in your aircraft engines. If you live where

it is above 40 degrees F most of the time, you could do well using a single grade oil. Use a lower viscosity oil in the winter and a higher viscosity oil in the summer. If you live where it gets cold, you might opt for a multi-grade oil in the winter to facilitate easier starts. Anytime the temperature is at or below 25 degrees F, preheat the engines, especially those of you flying behind GTSIO's.

What does Teledyne Continental Motors have to say about oil additives? Continental has a simple rule. The use of any Teflon oil additive voids the factory warranty.

We talked to several individuals that have been testing and reporting on Teflon additives for over a decade. Rather than recommending these new products that make tremendous claims, they consider them "a huge consumer scam." If the additives were as good as advertised, the manufacturers would specify their use. None of them do.

I went through my old copies of *Aviation consumer* and it didn't take long for me to find the article on this additive by Douglas S. Ritter. In reading through this article published in September, 1994, I found that his findings at that time were close to mine. That, added to the side bar by John Deakin, says it all. The stuff just doesn't work. In their tests it showed little to no improvement in any way, especially the outrageous gain of 33% in horsepower. They both state that anything gained was surely offset by the extreme cost and no one knows what the consequences of long term use of the additive might be.

Everyone we asked explained that any time you put anything in the crankcase other than oil, you are entering the world of the unknown.

We can only report on what we have found. If you are currently using an oil additive and feel it is doing something to make the engine more efficient or last longer, we would never ask you to stop. The choice of using either an oil additive or our advice is

yours. **Good flying!**