

AeroShell TECH TALK

FREQUENTLY ASKED QUESTIONS.

I like to use a multigrade oil for better cold temperature starts, but I like the protection of a single grade oil in the warmer summer months. Which oil is right for me?

The old adage that one should never change oil types was based on problems with some oils with very "unusual" technology that were in the marketplace over 50 years ago. Present oils are compatible. So many pilots use AeroShell Oil W 15W-50 multigrade in the winter months and then switch to AeroShell Oil W 100 or AeroShell Oil W 100 PLUS single grade in the summer months. You may see small changes in oil temperature or oil consumption with this change, but it will not hurt your engine.

Will my oil temperature be higher or lower with a multigrade?

In most cases, the multigrade oil will run cooler. For a hot-running engine, like turbocharged, high performance or aerobatic aircraft engines, this is good, but for a cool-running engine it can be a disadvantage. If the engine runs too cool, it can't boil off excess moisture and unburned fuel, so there can be a tendency to form acid buildup. For cooler-running engines, pilots should use a winterizing kit, or check with their mechanics on how to keep oil temperature up.

Is it necessary to change the oil filter at every oil change?

Yes. If you don't change the filter each time, the new oil will automatically start off with one quart of contaminated used oil. (Remember, the primary purpose for changing oil is to remove contaminants.) Old filters can serve as an excellent indicator of engine condition. An old filter that's been removed and cut open can indicate the engine's condition by the amount and size of the particles in the filter. Champion sells an oil filter cutter and provides a

detailed explanation of its use in their service manual AV6-R. If your engine isn't equipped with an oil filter, the pressure screen should be monitored.

My oil temperature seems to be running low. Is this a problem?

Yes, low oil temperature can lead to excessive rusting and corrosion of critical engine parts. When an aircraft sits on the ramp or in a hangar, the engine heats up during the day and cools again at night. While the engine is cooling, some of the moisture in the air condenses on the engine walls and drops into the oil. This can form rust on internal engine components. The moisture can also react with by-products of combustion in the oil, forming acids which can lead to corrosion. The best way to remove this water is for the engine to boil it off during flight. Studies have shown that the temperature of your engine oil increases about 50°F as it circulates through the engine.

Therefore, unless the oil temperature reaches 170°F to 180°F during flight, the engine will not boil off the water that has accumulated in the crankcase. The result: rust and corrosion. Note that an excessively high oil temperature will also cause problems. Here are some tips to help avoid oil temperature problems:

Check your oil temperature gauge for accuracy. It should read about 212°F when the sensor is placed in boiling water.

Monitor the oil temperature during flight. It should be about 180°F even in winter. If it is lower, you may need a winterization kit. Otherwise, check with your mechanic to see what is causing the excessively low oil temperature.

The unique additive feature in anticorrosion/antiwear AeroShell Oil W 15W-50 can also help control problems caused by rust and corrosion.

Will the synthetic portion of semi-synthetic AeroShell Oil W 15W-50 harm an aircraft engine?

A number of pilots have asked this question. The answer is a definite no. When Shell first started evaluating multigrade aviation piston-engine oils over 25 years ago, testing proved that multigrades formulated only with mineral base oils did not have adequate base oil viscosity (thickness) to properly lubricate all high load points in the engine. Then we tested and flight evaluated a formulation made with all-synthetic base oils. This formulation had excellent antiwear characteristics in all tests run. However, in the flight evaluations, some engines would reach 600 to 900 hours, then lose oil consumption control and/or compression. When the engines were disassembled, we found that the piston rings were covered with a gray tacky substance that was primarily made up of the lead by-products of combustion (from the use of leaded aviation gasoline). Although synthetics are excellent lubricants with good high temperature stability and very good low temperature flow characteristics, they are relatively poor solvents.

In an aircraft engine, the lead by-products of combustion must be dissolved by the base oil so they can be carried away from the ring belt area and removed from the engine when the oil is changed. Anticorrosion, antiwear AeroShell Oil W 15W-50 is formulated with 50% synthetic base oils to give it the excellent low temperature flow needed for quick lubrication during cold starting. The synthetic base oils, along with the unique antiwear additive system, give it antiwear protection unequalled by any other product on the market. In addition, its mineral base oils provide lead absorbency to guard against ring sticking and excessive sludge. The bottom line: The synthetic component of AeroShell Oil W 15W-50 will not harm your engine. Instead, it gives you the best of both oils.

What is the recommended oil consumption rate for my aircraft?

This is a question that doesn't have a definitive answer. Oil can be consumed or lost by three different routes in an engine: the rings, leaks and valve guides. In a good, tight engine, there should be very little oil consumption or loss by the guides and none through the leaks. That leaves the rings as your primary concern. The amount of oil going by the rings will vary depending on cylinder type and break-in process. Assuming that the cylinders were broken in properly, oil consumption can still vary depending on the type of service and how the aircraft is flown. Even two identical engines (like on a twin), operated the same way, may have different oil consumption rates. So what's right? Engine manufacturers state that oil consumption of up to a quart an hour is acceptable on some models. (Some manuals for large radials say that anything over six gallons an hour is excessive.) The best answer is that oil consumption will be at a certain level for each engine. Consumption changes shouldn't be compared to an absolute level, but rather to the level that your engine sets historically.

HAPPY FLYING

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