

## Oil Recommendations

### Summary

For most aircraft, we recommend using Aeroshell W100 monograde oil with one pint of ASL CamGuard added at each oil change.

For aircraft subject to unpreheated cold starts where multigrade oil is preferred, we recommend using Phillips X/C 20W-50 with one pint of ASL CamGuard added at each oil change.

### Discussion

Two decades of experience has shown clearly that monograde (single-weight) oil is superior at preventing corrosion than multigrade oil. Unless multigrade oil is indicated because the engine will be subject to unpreheated cold starts (never a good idea), we suggest using monograde.

The one oil that we actively discourage our clients from using is the semi-synthetic multigrade oil Aeroshell 15W-50. This oil has a number of problems:

- Poor anti-corrosion properties.
- History of producing high copper readings in oil analysis.
- History of aggravating TCM starter adapter slippage.
- History of aggravating oil leaks.

All these symptoms are caused by the synthetic PAO (polyalpholefin) that makes up 50% of Aeroshell 15W-50. PAO works fine in automotive engines that have very low blow-by and operate on unleaded fuel. For piston aircraft engines that run on highly leaded fuel, we don't like the stuff. Mineral-based oils without synthetics work much better.

Years ago, Mobil sold a 100% synthetic aircraft oil called Mobil AV 1. It was pulled off the market after Mobil got sued by thousands of aircraft owners whose engines were ruined by lead sludge buildup. Turns out that synthetic (PAO) simply cannot hold lead salts from 100L in suspension, so they precipitate out in the form of nasty sludge that can really screw up your engine, propeller and prop governor. So there are no longer any 100% synthetic oils on the market for piston aircraft engines.

Aeroshell 15W-50 is 50% PAO. Exxon Elite 20W-50 is 25% PAO (which is a lot better). Phillips 20W-50 is 0% PAO (and 100% mineral oil), which we think is the best if you need multigrade oil (because you will be doing cold starts in sub-freezing temperatures without a pre-heat).

W100 is much, much more viscous at room temperature, and so it doesn't strip off critical engine components as quickly during periods of disuse. If you don't require the cold-starting properties of Phillips 20W-50, we suggest you use W100 for improved corrosion prevention.

In addition to using single-weight oil, airplanes that live in very high corrosion environments should have a good anti-corrosion additive package added to the oil. We believe that the best available corrosion inhibitor is ASL CamGuard. Optimum corrosion control can be achieved by using Aeroshell W100 with one pint of ASL CamGuard added at each oil change.

Alternatively, Aeroshell offers an oil called W100 Plus, which is W100 with a corrosion inhibitor package added. We think CamGuard does a far better job, but W100 Plus is okay if you prefer.

Note that most Service Centers do not stock CamGuard, and some are reluctant to use aftermarket additives. Therefore, we encourage Savvy clients to purchase CamGuard directly and to add it themselves after taking delivery from the Service Center after maintenance. You can order CamGuard online at:

<https://www.aircraftspruce.com/menus/ep/oiladditives.html>

For an airplane exposed to the worst of both worlds—sub-freezing cold starts and high corrosion—we recommend using Phillips 20W-50 plus one pint of CamGuard. An acceptable alternative is Exxon Elite 20W-50.

I hope this helps clarify the reasons behind Savvy's oil recommendations. As you've already discovered, this is a controversial subject on which you will find a wide variety of divergent opinions. Now you know ours, and the carefully studied rationale behind them.

## **Oil Analysis**

We also recommend starting the use of or switching to Blackstone laboratories for oil samples. They do a much better job than other labs in our experience, and have the newest state-of-the-art equipment. Free oil sample kits may be ordered online at:

<https://www.blackstone-labs.com/free-test-kits.php>

Make sure the oil sample results are emailed back to you (not the Service Center), and post the Blackstone report to the Savvy ticket system when you get it. We suggest you fill out the oil analysis submission form yourself to ensure that the data is accurate.