

Stop Corrosion and Varnish When

Storing Gasoline

By Blaine Ballentine

Sport Aviation magazine published a three-part series of articles comparing the use of avgas with car gas which revealed some interesting information. Now before you go thinking this does not apply, consider a lot of other equipment gets seasonal or intermittent use and has vented fuel tanks. Think generators, old farm tractors, lawn equipment, boats, snow mobiles, ATV's, motorcycles, jet skis, classic cars, and even storage tanks.

We all want our equipment to be reliable, but reliability is critical to survival in an aircraft. So they take maintenance very seriously.

Corrosion

One of the big differences pointed out between avgas and car gas is that car gas usually contains ethanol, and ethanol blended fuels are more corrosive. Ethanol contains halide ions, "which promotes increased galvanic and electrochemical attack." To

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make matters worse, small aircrafts have vented tanks that expose the fuel to the atmosphere. Ethanol is hygroscopic and absorbs moisture, including the humidity in the air. Ethanol blends increase the risk of

corrosive damage to the fuel tank, fuel pump, fuel lines, and carburetor.

Varnish

The other big issue is stability, and car gas is less stable with a shorter storage life than avgas, and alcohol blended gasoline is even less stable. The rule of thumb in sport aviation is that

car gas has a "reliable shelf life of about 30 days."

Since small airplane gas tanks are vented, the lightest components of the gasoline evaporate and are lost to atmosphere. The remaining fuel is less volatile, making the engine harder to start. It is also more prone to creating deposits, both in the fuel system as varnish and in the engine after combustion as carbon.

A line that stood out from the article was, "Of the hundreds of carburetors that we have torn down for troubleshooting, repair, or rebuild, the one universal characteristic seems to be varnish buildup that needs to be addressed."

Octane

Finally, losing those lightest components can lower the octane of the remaining fuel. Keep in mind that sport aviators are like hot rodders and the power density of their engines is impressive. Lower octane in these high performance engines lowers the protection from ping, knock, and detonation (not that they could hear ping or knock over the roar of the propeller).

Recommendations for Aircraft

Their conclusion was that car gas, particularly ethanol-free car gas, is okay for sport aircraft that is used frequently. If it sits around too long, they recommend draining the gas tanks to avoid the formation of varnish.

They also recommend getting the gasoline from a high volume gas station where

the fuel is more likely to be fresh, as opposed to a mom and pop station where the fuel may have been sitting around for a while. They also noted that premium grade gasoline is only about 5% of total gasoline sales, so premium gas is likely to have been sitting under ground longer.



Recommendations for Other Equipment

Most of what is important to sport aviation is not applicable to cars. Cars are usually driven every day, and modern cars are not vented to the atmosphere, so evaporative loss and contamination from moisture are not as much of an issue. Their fuel systems and components are resistant to ethanol blends, with many cars allowing up to E85 (85% ethanol).

However, small engines and storage tanks are another category as most of them do not have the elaborate evaporative



from the corrosive attack of gasoline and ethanol blended gasoline contaminated with water.

The surface active components in Gas-O-Klenz are attracted to surfaces—not just metal surfaces, but also the surface of the

emissions systems of automobiles. Ethanol blends are fine for most equipment during the season they are used because the fuel is turned over often enough. However, for boats (humid environment) and for other equipment during the off-season, straight gasoline is more stable. A list of places where alcohol-free gasoline can be purchased is available at pure-gas.org.

Our advice for small engines and storage tanks is to add CenPeCo Gas-O-Klenz to your gas can or storage tank. If the fuel or your equipment is going to sit idle for more than 90 days, double up on Gas-O-Klenz. Gas-O-Klenz contains powerful corrosion inhibitors that protect tanks and fuel systems

gasoline itself. These molecules lined up on the fuel's surface tend to interfere with evaporation, slowing its rate and the rate of degradation and octane loss due to evaporative losses.

The dispersants in Gas-O-Klenz are not only effective at removing injector deposits, they also prevent degradation solids from depositing on surfaces as gum and varnish.

Your equipment may not need the same rigors of aircraft maintenance, but long equipment life and trouble free operation of all of your equipment makes life better.

Reference:

Carpenter, Carol and Brian, Rainbow Aviation Services. "Avgas Vs. Mogas in Light-Sport Aircraft." *Sport Aviation*, Aug., Sept., and Oct. 2019.

