

## What is the shelf life of avgas?

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by Ben Visser

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Bill Albrecht, who has a heli-pad and hangar in his backyard, recently installed a 2,000-gallon avgas tank. His question: "What is the shelf life of avgas?"

The short answer is that, under most conditions, the shelf life of avgas is about one year. If you are a commercial operator, this is the end of the discussion.

For a private pilot, however, there are several points to consider. First, there is a large margin of safety in the one-year storage life of avgas. The main concern when storing fuels is oxidation and subsequent formation of gum. Once the fuel starts to form gum, it can cause problems in the entire fuel system. I've checked numerous avgas samples after two years or even more and found no degradation, with the samples meeting all specification requirements. The samples will last even longer if the container is blanketed with nitrogen or stored in a colder climate.

The second point is that the one year shelf life applies to avgas and not auto gas. If a pilot is using auto gas, he should make a serious effort to use all of the fuel supply within six months of purchase.

So if avgas is good for one year, how long can you store lubricants? Let's start with engine oils. The specifications generally state that the manufacturer must guarantee a product will meet physical property limits for at least three years. Here again, I've tested oils after five and 10 years — from sealed containers — and found them to meet the spec. There was a small amount of additive settling after 10 years, but the oil was still on spec. I've also checked samples from open drums after three to five years and found them to be on spec except for a amount of moisture dissolved in the oil. This is not a serious problem if your engine is running with a proper oil temperature and can evaporate the moisture on the first few flights. However with a low usage aircraft, especially one with an oil temp below 160°F, the moisture can contribute to increased rust activity in the engine.

The mil spec for aviation greases calls for the manufacturer to guarantee that the product meets the limits for at least three years. This is for a product in a sealed container. The problem with grease is that much of it is used from an open-top container, which is generally open to the atmosphere. Here the product is prone to absorb moisture. This can be a problem because many of the applications for these products do not get to a temperature high enough to boil off the moisture. This can lead to increased rust activity and decreased component life. Therefore, it is important to always smooth out the top surface of the grease to limit the surface area exposed to air. I also have found numerous containers that were not properly covered. Many of these samples contained an excessive amount of dirt and foreign matter which could decrease component life. Greases should be stored in a dry place with the lids tightly sealed.

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