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Ethanol Fuel Testing

Run the ethanol test on all the gas you buy.

DO NOT burn fuel with ethanol in your airplane. Revert to 100LL if ethanol free gasoline cannot be found.

- Ethanol fuels can damage the rubber and aluminum components of your aircraft fuel system.
- Ethanol increases the volatility of fuel.
- Ethanol can absorb significant amounts of water in flight.
- Ethanol may vent off at altitude, reducing both range and octane.
- Ethanol has fewer BTUs than conventional gasoline, which further reduces range.

Ethanol has an affinity for water and can pull moisture from inlet air on humid days to such an extent that the engine may malfunction. Allowing gasoline with ethanol to remain in the airplane for extended periods of time has resulted in the need to replace carburetors, hoses, and gaskets. It has also been reported to clean the interior of fuel tanks, leaving the accumulated sludge in the screen. If you cannot find gasoline that you are certain is ethanol free, you must revert to using avgas.

Not all gasoline service station pumps label ethanol content. The ethanol industry considers pump labeling to be discriminatory and lobbied successfully for elimination of Federal pump labeling laws in regards to ethanol content. Today's pumps are labeled as to ethanol content only if state law requires it.

It has become increasingly difficult for many pilots in the US to obtain ethanol free gasoline. In some areas of the country, it is impossible to find. This is primarily due to [Federal requirements and EPA regulations](#) which require ever increasing quantities of ethanol to be blended into the nation's gasoline supply. Oil companies are required to add ethanol or they face hefty fines. Most of them today however are happy to use it because it allows them to manufacture an inferior product (sub-octane gasoline) and then to sell it for the same amount of money after blending in ethanol to make up the octane deficit.

You must be vigilant when purchasing fuel to make certain that it is conventional, non ethanol gasoline. Be certain, before ordering an STC, that you are able to purchase conventional, non-ethanol gasoline of the proper Anti-Knock Index or AKI.

Be aware that sub-octane gasoline (gasoline intended for the addition of ethanol) is being distributed to terminals in the US. **Never use gasoline with an octane rating less than the minimum proscribed on your Auto Fuel STC.** The old maxim is: "You may always go up in octane but not down." Failing to observe this one simple rule can lead to failure due to detonation.

[n on why ethanol is not suited for use in general aviation airplanes.](#)

HOW TO TEST FUEL FOR ETHANOL

To determine if ethanol is in the gas:

- On a test tube or olive bottle six or seven inches long, make a permanent line about two inches from the bottom.
- Fill with water to this line, then fill the tube to the top with gasoline.
- Cover the tube, agitate it, and let it stand.

The ethanol and water will mix and separate out together. If the water level appears to have increased, the fuel contains ethanol and should not be used. Ethanol percentages of less than 5% can sometimes give a reading below the line. Therefore, any deviation in the water line indicates the presence of ethanol and should serve as a basis for rejecting the fuel.

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