

Can gas really go bad?

(AOL Autos) -- Does gasoline really go "bad" if you leave it unused for a period of time? Some people are convinced this is just another urban legend, and that people who worry about "old gas" and spend money on fuel stabilizer are wasting psychic energy as well as cash.



Compare stored gasoline with fresh gas. If you notice it is darker or smells sour it is probably bad.

But in fact, gasoline can degrade over time. That can lead to a number of problems, ranging from hard starting, to rough running, to no starting at all.

Here's why

Unlike crude oil, gasoline is a highly refined product brewed to a certain chemical composition with very specific characteristics. One characteristic of gas is volatility, a term used to describe how easily and under what conditions the gas vaporizes so it can be efficiently burned in your car's engine.

The most highly volatile components in gasoline also tend to evaporate over time. As they do, the remaining fuel's volatility and ability to combust properly degrades. The less volatile the fuel, the less effectively it burns in your engine. The result is diminished engine performance. Your engine may still start and run, but it probably won't run as well.

The good news is, once the old gas has been consumed and the tank is topped off with fresh fuel, the problem should cure itself. Evaporation of volatile compounds can be limited by making sure the gas cap is secured tightly. For the same reason, be sure all portable gas containers are sealed tightly as well.

A more serious problem: Oxidation

Hydrocarbons in the gas react with oxygen to produce new compounds that eventually change the chemical composition of the fuel. This leads to gum and varnish deposits in the fuel system.

These deposits and impurities can clog up gas lines and filters, as well the small orifices in a carburetor and the even smaller orifices in a fuel injector. Removing these deposits can be expensive and your vehicle may not run at all or run very poorly until they are removed.

Water contamination

Condensation can form inside your gas tank and lines from heat cycling. Fuels such as E85, which have a high concentration of ethanol alcohol, may be even more susceptible to water contamination, as ethanol likes to draw moisture out of the surrounding air.

Water contamination can be a problem at gas stations with light traffic due to a slightly different kind of heat cycling. The underground storage tanks experience increases and decreases in temperature. This can cause moisture to form and contaminate the fuel. When you fill up at such a station, you're pumping in the water along with the gas. Such low-traffic stations may also have other contaminants in their underground storage tanks, such as rust. They are best avoided when possible.

Water, of course, does not work too well as a fuel in an internal combustion engine. It will cause hard starting and rough running until it's purged from the system. It can also contribute to internal rusting of the gas lines and tank. The resultant scale and small particles can create a true nightmare, sometimes requiring the replacement of the gas lines and tank at considerable expense.

You can reduce the chances of water contamination by keeping your car's gas tank as close to full as possible, especially if the vehicle is going to be left idle for an extended period.

How do you identify bad gas?

One way is to eyeball it. Oxidized fuel often turns darker over time and may even smell sour. You can check stored gasoline by pouring some into a clear glass container and comparing it side-by-side with known fresh gasoline. If your old sample looks noticeably darker than the fresh gas, you have strong evidence the gas has gone bad.

How long does it take for gas to go bad?

That depends on a number of factors. For one, it's hard to know how old the gas you just bought actually is. It may be fresh from the refinery, or it may be a month old already by the time you top off your tank. Some gasoline is mixed with better or more oxidation inhibitors than others.

It's a good rule of thumb to avoid leaving gas in your tank or a storage container for more than a couple of months, if you can avoid it.

And if you can't?

If you know gas will sit in your tank or a storage container for a couple months, then it's a wise move to buy some fuel system stabilizer and mix it in with the gasoline. Do it before you put the vehicle into long-term storage or before leaving your lawn equipment fuel containers sitting for the winter. The stabilizer helps prevent oxidation, the biggie that can turn gas into garbage that gunks up your system and leads to expensive repair work.

Using fuel system stabilizer for extended storage is preferable to draining the tank and leaving the system dry. This can cause rubber hoses, gaskets and seals to dry-rot and crack, possibly leading to leaks and even a fire. In addition,

a dry system can expose the insides of metal fuel lines and your gas tank to air and moisture, which can lead to or accelerate the formation of rust.

Fuel system stabilizer is not a cure-all and it doesn't last forever. It must be mixed with fresh gas before the vehicle is stored, not added to already old gas. It can slow down the oxidation process and keep gas fresh for as long as 12 to 15 months. If you're going to leave the vehicle parked for longer than that, you may want to drain the tank and refill with fresh fuel before returning the vehicle to service