

Testing the Percentage of Alcohol in Modern Gasoline

Testing to determine the percentage of ethanol alcohol in modern gasoline is easy. When you perform this test you are duplicating a process that occurs naturally over time in your fuel tank. The ethanol alcohol in modern gasoline will draw moisture over time from the atmosphere then separate from the gasoline and fall to the bottom of the fuel tank. In this test you are going to do in ten minutes or less what would normally take 30 to 90 days to happen. Upon completing this test you will have a reasonably accurate measurement (identified as a percentage) of ethanol alcohol present in the gasoline you are testing.

Safety First

Be careful when handling the gasoline used for this test. Keep the gasoline away from open flame. Do not do this test in a confined area. You can fill the test tube using a small funnel. Dispose of the gasoline from the test tube properly when you are finished. All you need for this test is clean water and a small sample of the gasoline you want to test.

Step One

Fill the test tube up with clean water to the water line on the test tube. The more accurate you are the more accurate your test results will be.

Step Two

Carefully pour a sample of the gasoline you want to test into the test tube filling the test tube up to the gasoline line. The more accurate you are the more accurate your test results will be.

Step Three

Screw the lid onto the test tube and shake vigorously for two to three minutes. Then stand the test tube in an upright position and wait for the separation to occur. This separation will take ten minutes or less to occur.

Results

Once the separation has occurred you can look at the markings on the side of the test tube and read the results. An increase in volume at the lower part of the test tube will occur when the alcohol has mixed with the water and separated from the gasoline resulting in an increase in volume in the water portion of the test tube. No increase in water volume portion of the test tube means there is no alcohol present in the gasoline being tested.

Note

If you are testing gasoline at a service station keep in mind the test results will change from day to day. This is due to the humidity, temperature changes over a 24-hour period, the volume of gasoline sold daily, and how often fresh fuel is delivered to the station. The longer fuel is stored in an underground tank the better the opportunity for the alcohol to collect water and separate from the gasoline allowing the concentration of alcohol and water to increase.

**Questions? Call: 785-632-3450 / E-mail: fifthave@oz-online.net
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Did You Know... When alcohol blended gasoline was first introduced back in the 1980's the gasoline pumps were required by the federal government to be labeled. Now that E10 blended gasoline has become the standard, in most states gasoline pumps selling E10 gasoline are NOT labeled.

Depending on where you live, there are over **forty different formulas** for gasoline. The formulas are determined by the federal government, **state** governments, local cities and counties, and some by the season of the year. The different formulas all have a different shelf life but none last much longer than 90 days.

Rubber Hoses- Modern gasoline requires the use barrier type fuel hose. Rubber fuel hose manufactured before 2000 is subject to damage from the alcohol in the E10 gasoline. The alcohol will cause the hoses to become brittle on the outside, soft on the inside, which could result in a leak and possible fire hazard. If you walk into your garage and smell gasoline but cannot find a leak...check your rubber fuel hoses. **Up to a gallon of E10 gasoline can soak thru a non-barrier type rubber fuel hose over a year's time.**

Plumbing- Steel, aluminum, and some other metals... E10 gasoline can be corrosive to aluminum and some alloys. Also fuel pump diaphragms, fuel pump gaskets, rubber washers in fuel pumps and carburetors are subject to damage if those parts were manufactured before 1980. Watch for damage in places like 90 degree bends in fuel lines.

Mechanical Parts- fuel pump housings, carburetor housings, metal filters, and related parts are subject to *etching* from the E10 gasoline. Watch for pinhole leaks in carburetor housings and metal fuel lines where the metal is thin.

Cleaning Effect of E10 Gasoline

The E10 gasoline will act as a strong solvent... so things like carburetors, fuel pumps, jets, floats, accelerator pumps, and internal components will become very clean. This "solvent" effect may loosen gum and varnish deposits that will then plug fuel filters and carburetor passages on a regular basis.

Fuel Tanks- the solvent cleaning action of E10 gasoline can also result in varnish removal from the inside of the fuel tank as well as causing corrosion and rust to form on the inside walls of the fuel tank. You may notice this as a clogged fuel screen that you have to clean repeatedly or the fuel screen that may disappear completely... dissolved by the alcohol. Rust formation inside of fuel tanks occurs quicker in high humidity conditions and when there are extreme temperature changes...unheated storage areas for example.

Filters- Fuel filters may clog more often as the inside of the fuel system gets a good cleaning. Also watch for any rubber components that may be deteriorating, with the tiny pieces getting caught up in the fuel filter. Adding a 30 - micron fuel filter between the fuel tank and the fuel pump is a good idea.

Water Phase Separation:

E10 gasoline will also attract moisture from the atmosphere thru places like gas cap vents. Water is heavier than gasoline so the water molecule is dragged to the bottom of the gas tank where it then separates from the more buoyant gasoline molecules. **A gallon of E10 gasoline containing 10% alcohol can suspend nearly 4 teaspoons of water per gallon.** Temperature changes and humidity can speed up this process. This affects vintage vehicles more because all of the caps on our fuel systems are vented.

Off Season Storage:

E10 Gasoline is typically stable for a period of 90 days under ideal conditions but may already be 30 days old. If you plan to put you antique vehicle in storage longer than 90 days be sure to **add a fuel stabilizer that ALSO address the corrosion affects of the alcohol in the gasoline.** The water and the alcohol together once separated from the gasoline become highly corrosive. Check your vehicle in storage often to be sure no damage has occurred that could result in a fire.