THE UNIVERSITY OF TENNESSEE
AGRICULTURAL EXTENSION SERVICE

SP268K

Small Engines

Testing Gasoline for Alcohol

James B. Wills Jr., Associate Professor, Agricultural Engineering

Gasoline retailers in Tennessee are required by law to label gas pumps with the kind and amount of alcohol mixed with gasoline to make gasohol. If a pump does not contain such a label, the consumer must assume that the gasoline does not contain any alcohol. Serious problems can arise, however, if alcohol is present in the gasoline and it is used in two-cycle engines. Chainsaws, weed trimmers, leaf blowers and outboard boat motors are the most common victims of alcohol fuels. Alcohol disrupts the lubrication process and can cause premature engine failure due to inadequate lubrication.

Consumers can easily test gasoline for the presence of alcohol by using the following test procedure on a small sample of the suspect fuel. Please keep in mind that gasoline is a flammable substance and should be handled with extreme care at all times. Conduct this test away from any open flames or potential ignition sources.

Step 1. Obtain a small (preferably 4- to 16-ounce capacity) glass container or bottle with a cap or lid that can be used to seal the container. A tall, thin container shaped like a test tube will work best, but a pint jar will also work well (Figure 1).

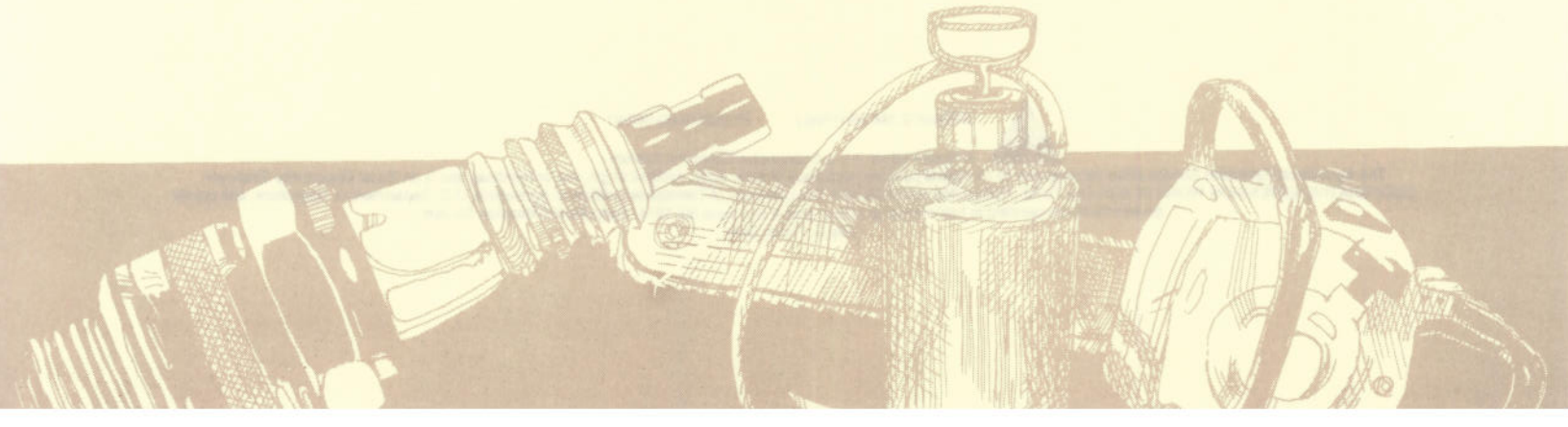
Step 2. Pour a measured amount of the gasoline to be tested into the glass container (use an amount slightly less than one-half the total capacity of your container). Using a marker or tape, make a line on the outside of the container marking the top of the gasoline level in the container. Note that the gasoline will have some color to it. It will not be clear (Figure 2).

Step 3. Pour an equal amount of clean water into the container with the gasoline. Cap the container and shake the mixture to mix well. Allow the mixture to settle and separate for about one minute. You should see two distinct layers of fluid in your container. The gasoline layer is lighter than water and should form the top layer. The water should form the bottom layer. There should be a very distinct line where the two layers meet about the center of the container. If no alcohol is present in the gas, the layer of separation should be at the same mark you put on the bottle earlier to mark the level of gasoline (Figure 3). If alcohol is present, it will mix with the water. The line of separation will be above the mark you put on the bottle earlier to mark the level of gasoline (Figure 4). The distance between the mark on the bottle and the layer of separation between the two fluids is the amount of alcohol in the mixture. If the layer of alcohol is about one-tenth the thickness of the layer of gasoline, the approximate amount of alcohol in the mixture is 10 percent. This is the allowable amount of alcohol by law in Tennessee. You may find more or less in your fuel. If you find alcohol in your fuel, you should not use that fuel for two-cycle engines where the oil is mixed with the gasoline for lubrication.

When you are finished with your test sample(s), dispose of them safely and properly!

1. Pour the gasoline from the top of the mixture into a gasoline container.

2. Pour the remainder of the contents into a metal container and allow to evaporate into an outdoor area.



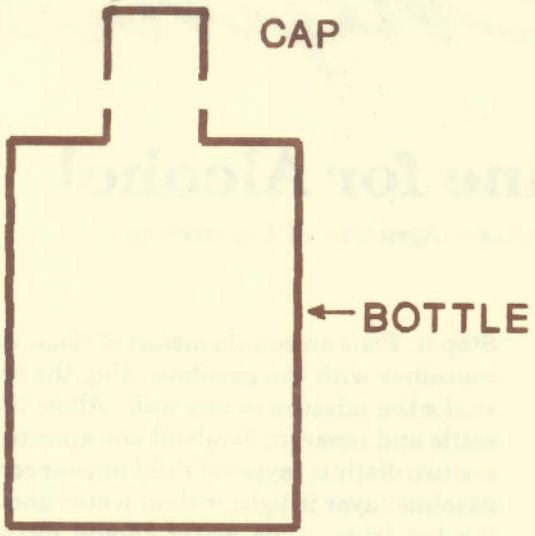


FIGURE 1

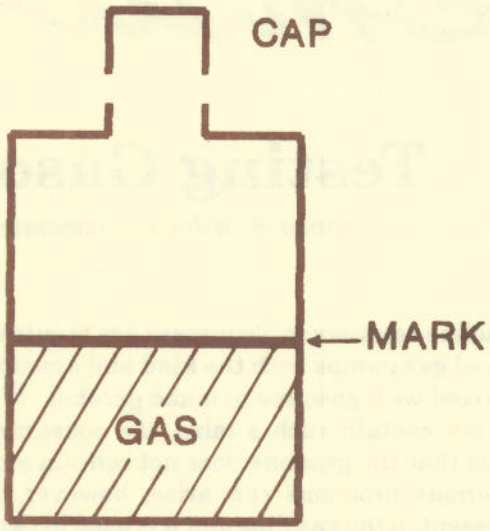


FIGURE 2

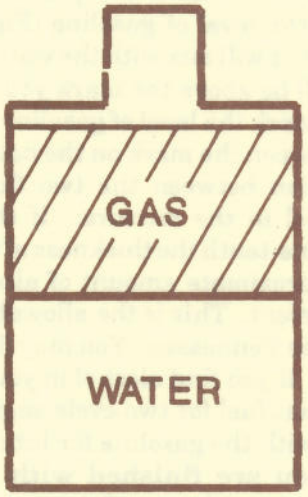


FIGURE 3
NO ALCOHOL

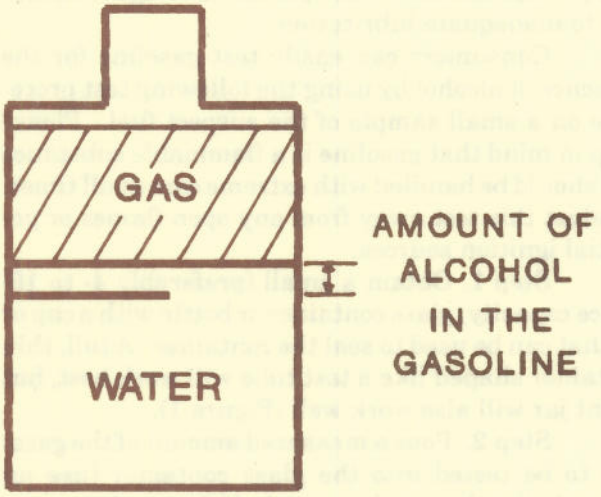


FIGURE 4
ALCOHOL PRESENT

SP268K-2.5M-3/91(Rep.) E12-2015-00-049-91