

# ELEMENTARY ARTICLE: Will Your First Car Run On Ethanol?

Today, most people in the United States drive cars that run on gasoline. By the time you're ready to buy your first car, you will have lots of choices. You will be able to choose from cars that run on electricity, natural gas, ethanol, propane, or a mixture of fuels.

## Ethanol

Ethanol is a clear, colorless alcohol fuel made by fermenting the sugars found in grains such as corn and wheat, as well as potato skins, rice, and yard clippings. There are several ways to make ethanol from biomass. The most commonly used processes today use yeast to ferment the sugars and starch in the biomass. Many cars in Brazil operate on ethanol made from sugar cane.

A new process uses enzymes to break down woody fibers, making it possible to produce ethanol from trees, grasses, and crop wastes. Trees and grasses require less energy than grain crops, which must be replanted every year. Scientists have developed fast-growing trees that can be harvested in ten years or less. Many grasses can produce two harvests a year for many years. Soon, you may find yourself driving by huge farms that are not producing food or animal feed, but feedstock for ethanol.

## History of Ethanol

Ethanol is not a new fuel. In 1908, Henry Ford designed his Model T to run on a mixture of gasoline and alcohol, calling it the fuel of the future. In 1919, when Prohibition began, ethanol was banned because it was considered a liquor. It could only be sold when it was mixed with petroleum. With the end of Prohibition in 1933, interest in the use of ethanol increased.

## Ethanol as a Transportation Fuel

Today, more than fifty ethanol plants, mostly in the Midwest, produce over a billion gallons of ethanol a year. Gasoline containing ten percent ethanol—E10—is used in many urban areas that fail to meet clean air standards. Since ethanol contains oxygen, mixing it with gasoline reduces carbon monoxide emissions up to 25 percent. E10 is not considered an alternative fuel, but a replacement fuel.

There is also E85, a fuel that is 85 percent ethanol and 15 percent gasoline, used mainly in the Midwest and South. Vehicles are not converted to run on E85, they are specially manufactured as flexible fuel vehicles (FFV), designed to use any combination of ethanol and gasoline. There are about 50,000 trucks and vehicles using this fuel, provided by 145 ethanol stations. Forty percent of these are private vehicles; the rest are fleet vehicles. The cost of E85 is about the same as mid-grade gasoline.

The fueling process for E85 is the same as for gasoline. The range of vehicles using ethanol is about 15 percent less. Acceleration, weight capacity, and cruise speed are the same as for gasoline-powered cars. Maintenance is also similar.

Ethanol is made from crops that absorb carbon dioxide and give off oxygen. This carbon cycle maintains the balance of carbon dioxide in the atmosphere when using ethanol as a fuel. As new technologies for producing ethanol from all parts of plants and trees becomes economical, the use of ethanol will increase and more fueling stations will become available. Your first car could very well run on ethanol.

