

## **What is Ethanol?**

Ethanol is a clean-burning gasoline additive that is produced from crops such as corn. Because it is domestically produced, ethanol helps reduce America's dependence upon foreign sources of energy. Pure, 100% ethanol is not generally used as a motor fuel; instead, a percentage of ethanol is combined with unleaded gasoline. Any amount of ethanol can be combined with gasoline, but the most common blend is E10, which is 10% ethanol and 90% unleaded gasoline. E10 is approved for use in any make or model of vehicle sold in the U.S. Many automakers recommend its use because of its high performance, clean-burning characteristics. Today about 46% of gasoline contains ethanol, in the United States.

### **Advantages:**

Ethanol production and use benefits U.S. agriculture and leads to rural economic development. Because it is made primarily from corn and other agricultural products, ethanol increases demand for these crops, increases the prices farmers receive for these crops, and brings economic development opportunity to the rural areas where the ethanol is made.

American-made ethanol directly displaces crude oil we would need to import, offering our country critically needed independence and security from foreign sources of energy. Current U.S. ethanol production capacity of 6 billion gallons per year can reduce gasoline imports by more than one-third and effectively extends gasoline supplies at a time when refining capacity is at its maximum. For every barrel of ethanol produced (1 barrel = 42 gallons), 1.2 barrels of petroleum are displaced at the refinery.

Fossil fuel-based gasoline is the largest source of man-made carcinogens and the number one source of toxic emissions, according to the Environmental Protection Agency (EPA). Ethanol is a renewable fuel, that is, it depends on farm crops that can be grown indefinitely with current farm practices. It is inherently cleaner than gasoline alone. Ethanol reduces harmful tailpipe emissions of carbon monoxide, particulate matter, oxides of nitrogen, and other ozone-forming pollutants. The use of 10% ethanol blends reduces greenhouse gas emissions by 12-19% compared to conventional gasoline. Research shows a 35-46% reduction in greenhouse gas emissions and a 50-60% reduction in fossil energy use due to the use of ethanol as a motor fuel. Finally, ethanol is highly biodegradable (gasoline is not), making it safer for the environment.

### **Disadvantages**

Ethanol production damages the environment, and much of that environmental damage comes from the large scale farming of corn used to produce ethanol. Corn production causes more soil erosion than any other single crop grown in the nation. It uses more nitrogen fertilizer than any other crop.

Ethanol requires more fossil-fuel energy to produce than it contains. How is this? First there are the fuel costs associated with growing corn-tractor fuel, fuel required to manufacture fertilizer that the corn requires, and fuel to get the corn from the farm to the ethanol production plant. Not only is the process energy demanding, it also produces a lot of carbon dioxide and other greenhouse gases and toxic gases that contribute to climate change and contribute to acid rain.

When corn is fermented in the ethanol production process, the yeasts release large amounts of carbon dioxide into the environment. This is another man-made contribution to climate change. The final contribution of ethanol to global climate is that every gallon of ethanol produced causes 12 gallons of sewage effluent that must be dumped into sewage system.

Although E10 gasoline burns more cleanly than gasoline alone, the use of ethanol results in lower gas mileage and thus brings higher transportation costs. Finally, ethanol is unable to completely replace our oil supply—we will never be able to grow enough corn to produce the ethanol required to replace gasoline.