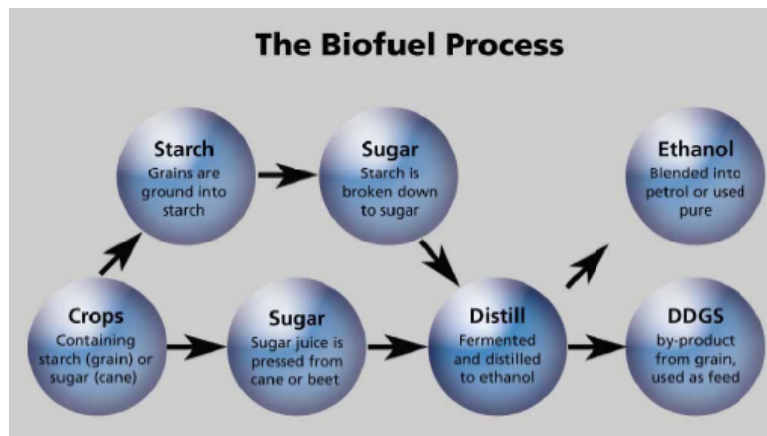


Production of Bio-Fuel from cellulose/Molasses/Wood/Starch.

An Abstract

High oil prices and growing concerns over climate change are driving investment and innovation in the biofuels sector as countries and industry increasingly look towards renewable bioenergy to replace fossil fuels. Bill Gates, the world's richest man, has recently invested \$84 million in an American ethanol company, while global energy gluttons ranging from the United States to China are setting long-term targets for the switch to such fuels potentially offering a secure domestic source of renewable energy and fewer environmental headaches. Biofuels are fuels that are derived from biomass, including recently living organisms like plants or their metabolic by-products like cow manure. Unlike fossil fuels—such as coal, petroleum, and natural gas, which are finite resources—biofuels are a renewable source of energy that can be replenished on an ongoing basis. In general, biofuels are biodegradable and, when burned, have fewer emissions than traditional hydrocarbon-based fuels. Typically, biofuels are blended with traditional petroleum-based fuels, though it is possible to run existing diesel engines purely on biodiesel, something which holds a great deal of promise as an alternative energy source to replace fossil fuels. Further, because biofuels are generally derived from plants, which absorb carbon from the atmosphere as they grow, biofuel production offers the potential to help offset carbon dioxide emissions and mitigate climate change. Ethanol can be mass-produced by fermentation of sugar or by hydration of ethylene from petroleum and other sources.

Current interest in ethanol lies in production derived from crops (bio-ethanol), and there's discussion about whether it is a sustainable energy resource that may offer environmental and long-term economic advantages over fossil fuels, like gasoline or diesel. It is readily obtained from the starch or sugar in a wide variety of crops. Ethanol fuel production depends on availability of land area, soil, water, and sunlight.



Ethyl alcohol, Ethanol, also known as ethyl alcohol, drinking alcohol or grain alcohol, is a flammable, colorless, slightly toxic chemical compound with a distinctive perfume-like odor, and is the alcohol found in alcoholic beverages. In common usage, it is often referred to simply as alcohol. It's the most commonly known primary alcohol. Its molecular formula is variously represented as EtOH, CH₃CH₂OH, C₂H₅OH or as its empirical formula C₂H₆O.

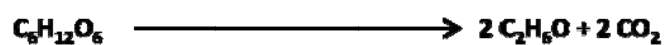
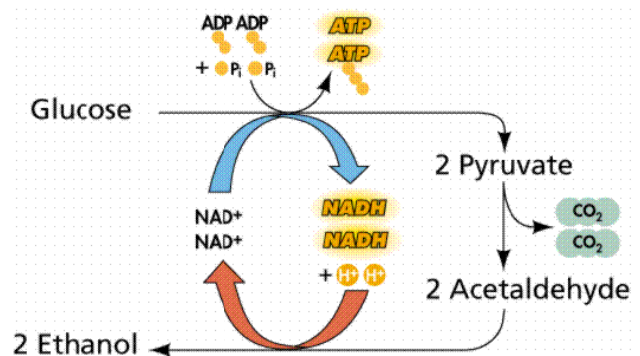
This report is mostly about ethanol as a chemical compound. For beverages containing ethanol, see *alcoholic beverages*. For the use of ethanol as a fuel, see *fuel*. Also Every liquid pharmaceutical product needs ethyl alcohol up to 90% of the total volume.



History

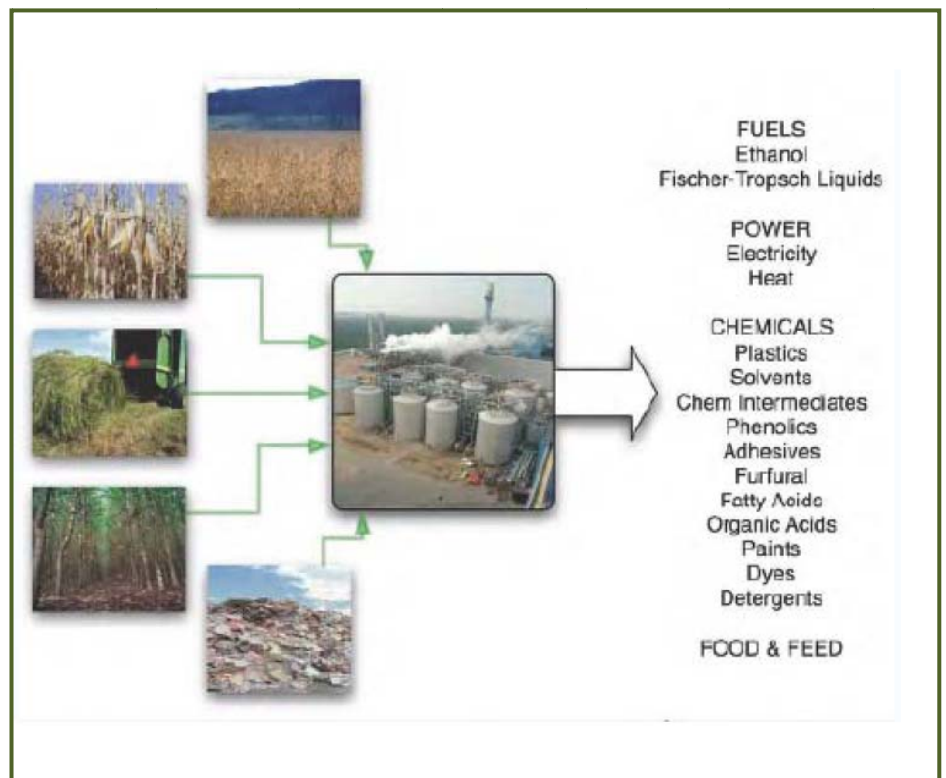
Ethanol has been known to humans since prehistory as the active ingredient of alcoholic beverages. Its isolation as a relatively pure compound was probably achieved first by Islamic alchemists who developed the art of distillation, such as Geber (721-815) and Al-Razi (864-930). Henry Ford originally had designed the Ford Model T, a car produced from 1903 to 1926, to run completely on ethanol, after surreptitious efforts were successful at thwarting Ford's desires to mass produce electric cars

Biochemical and Biotechnological Information



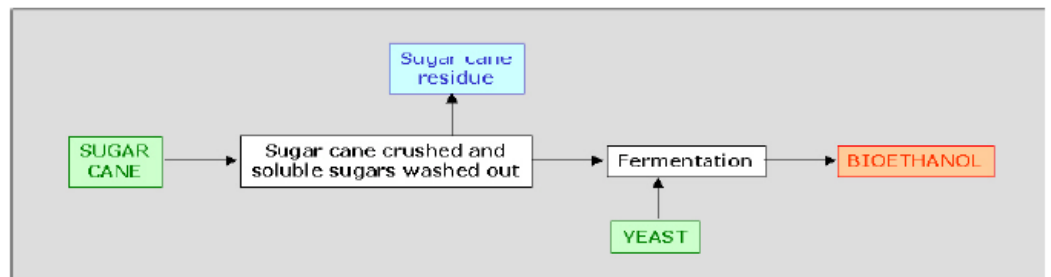
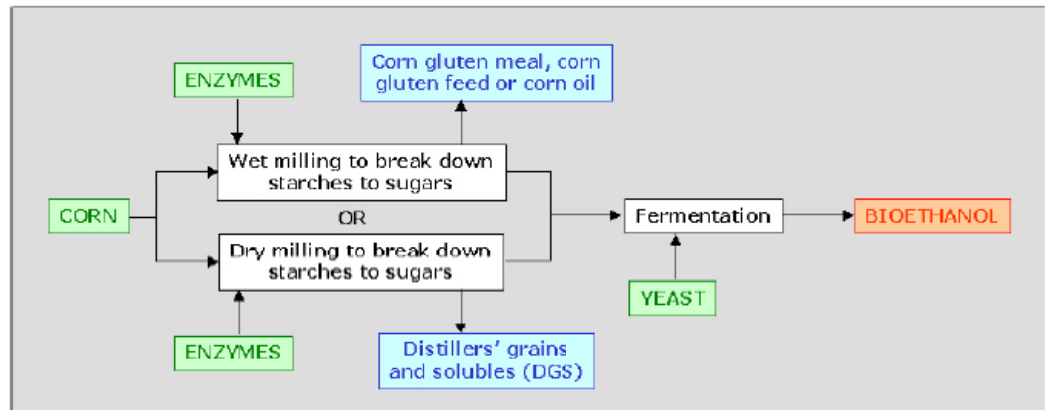
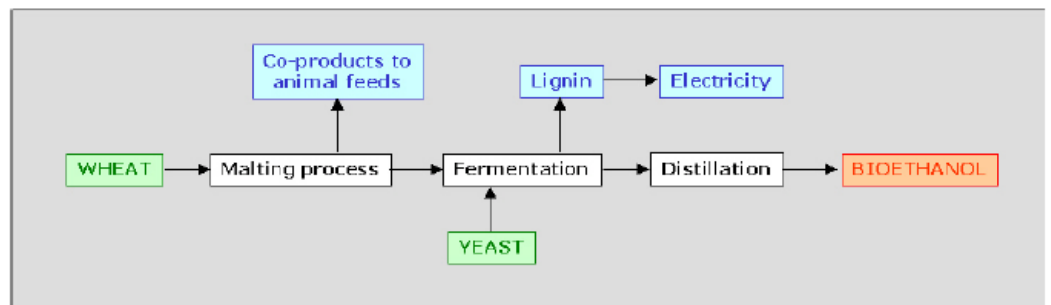
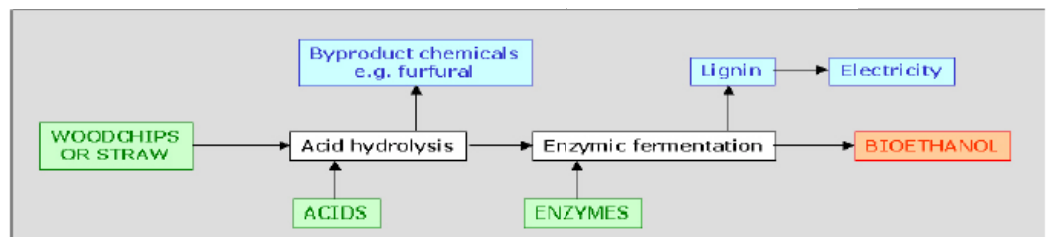
Ethyl alcohol Production Pathway

Ethanol for use in alcoholic beverages is produced by fermentation: it is a product of sugar metabolism in certain species of yeast in the absence of oxygen. The process of culturing yeast under conditions to produce alcohol is referred to as brewing. Yeasts can grow in the presence of up to only about 14% alcohol.



Ethanol can be produced by fermentation of organic materials such as sugar, potatoes, rice, cellulose and molasses, or it can be produced from mineral oil. The fermentation of organic matter can produce liquor with 10-15% ethanol. The liquor is distilled to remove the water and other constituents and obtain a high grade ethanol. The exchanges associated with alcohol fermentation and distillation varies from plant to plant depending on technology, equipment used as well as operational practices.

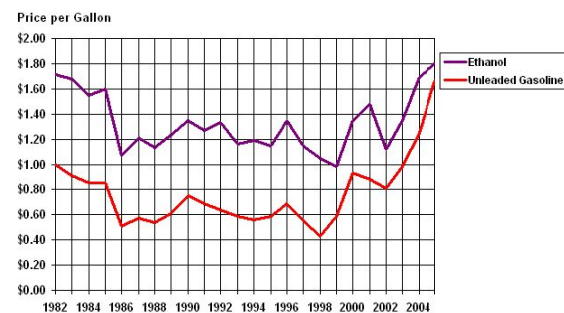
General Process Pathway using different start materials



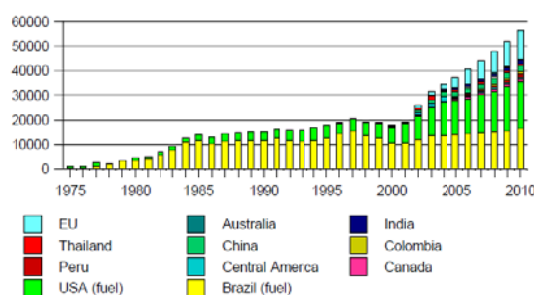
Economical /World market analyses

“Doesn't it take more energy to make ethanol than is contained in the ethanol?”

- In 1980, the short and empirical answer to this question was YES.
- In 1990, because of improved efficiencies by both farmer and ethanol manufacturer, the answer was, PROBABLY NOT.
- In 2005 the answer is clearly **NO**



World Fuel Ethanol Production By country



Yet the question will not go away. One might argue that this is because credible studies by one or two scientists continue to keep alive the claim that biofuels are net energy losers. Yet many grain and oilseed farmers wonder why it is that biofuels like ethanol and biodiesel are singled out for such an aggressive and persistent attack on the net energy issue. They compare the discussion of biofuels with that of hydrogen, a fuel that has captured the imagination of federal and state governments. Converting the transportation sector (and other sectors as well) to hydrogen has become a national priority. Thousands of articles have been written about hydrogen. Most are wildly enthusiastic. Some are negative. But very, very few even raise the net energy issue.

An aspect of renewable-fuel applications that has received relatively little attentions the growing demand for energy in the developing world. As these countries improve their living standard, energy demand per capita will increase, and an important element will likely include increased mobility through use of more public transportation and personal vehicles. Thus, the challenge will not be how to reduce petroleum use but instead how to meet a growing demand for transportation fuels that support improvements in the lives of more and more people around the world. In other words, the perspective should not be simply a myopic viewpoint to insulate the United States from petroleum shortages and resulting economic and strategic disruptions that are inconvenient to our high living standard, but should be on how to provide sufficient fuel to raise the standard of living for the much larger population of the rest of the world. An added benefit is that bioethanol could be made in many countries, including the United States, that have limited petroleum resources, helping them to reduce their trade deficit and grow their economies.

In case you are interested in our bioethanol production lines please don't hesitate to contact us for further information's. therefore please contact: info@ensymm.com