

What is ethanol fuel?

The increasing usage of renewable energy has become an important mission of Government's development agenda. The Government is serious about exploring different types of renewable energy to be used as a viable alternative over the traditional non-renewable energy- like coal and fossil fuels, which are far costlier and hazardous to the environment.

Along with electricity generation with the help of wind and solar energy, bio-fuels derived from agri commodities like sugarcane, is showing promising signs of addressing the concerns of environment and limiting carbon discharge into the environment, along with proving to be cost effective as compared to petrol and diesel. Higher use of biofuels will also directly help reduce petrol and diesel imports which are at about Rs 6 lakh crores. But the key is to seriously nurture and provide all possible assistance by the Government to derive maximum benefit out of it.

Way back in 2002, the idea of blending ethanol derived from sugarcane molasses with petrol to be used as vehicular fuel, first germinated in the country. Though at that time it wasn't a mandatory programme. In 2007, the Government made it mandatory to blend 5% ethanol with petrol.

Ethanol fuel is widely used as a motor fuel, mainly as a biofuel additive for gasoline. The first production car running entirely on ethanol was the Fiat 147, introduced in 1978 in Brazil by Fiat. Nowadays, cars are able to run using 100% ethanol fuel or a mix of Ethanol and gasoline (aka flex-fuel). It is commonly made from biomass such as corn or sugarcane. World ethanol production for transport fuel tripled between 2000 and 2007 from 17 billion to more than 52 billion liters. From 2007 to 2008, the share of ethanol in global gasoline type fuel use increased from 3.7% to 5.4%. Ethanol fuel is widely used in Brazil and in the United States, and together both countries were responsible for 87.1% of the world's ethanol fuel production in 2011. Most cars on the road today in the U.S. can run on blends of up to 10% ethanol, and ethanol represented 10% of the U.S. gasoline fuel supply derived from domestic sources in 2011.

Ethanol: A Green Fuel

Compared with conventional unleaded gasoline, ethanol is a particulate-free burning fuel source that combusts with oxygen to form carbon dioxide, carbon monoxide, water and aldehydes. The Clean Air Act requires the

addition of oxygenates to reduce carbon monoxide emissions in the United States. The additive MTBE is currently being phased out due to ground water contamination, hence ethanol becomes an attractive alternative additive. Current production methods include air pollution from the manufacturer of macronutrient fertilizers such as ammonia.

Ethanol is a “wonder” green bio-fuel, produced in India from sugarcane, which reduces environmental pollution, improves engine-life, increases fuel efficiency and, at the same time, improves returns for farmers and the domestic industry. Ethanol, when used as a gasoline component, improves combustion—helping the fuel burn more completely. Thus, the quality of the environment improves. Carbon monoxide emissions are reduced, and lead and other carcinogens are removed from gasoline. Car-owners benefit from increased octane in gasoline, which reduces engine “knock” or “pinging.” This in fact, reduces wear-and-tear of the engine, increasing its longevity. Ethanol-blended fuels also absorb moisture and clean the fuel system. In India, two separate studies conducted by IIT-Delhi and the R&D centre of the Indian Oil Corporation (IOC) have confirmed the various benefits of adding ethanol to petrol.

The IIT- Delhi study confirms that:

- * mere addition of ethanol upto 10% could completely eliminate exhaust carbon monoxide emission,
- * ethanol is an environment friendly oxygenate that helps gasoline burn more completely, thereby reducing engine emissions, and
- * the cooler, smoother, knock free operation of the engine with the blended fuel were the added beneficial effects on the engine performance due to ethanol blending.