

Blender Pumps Offer:

- A fuel choice of E10, E20, E30, and E85
- Cleanest choice of fuel
- Lowest cost per mile

Supporting SAE Papers

Abstracts can be found at SAE.org

2011-01-0099	2010-01-2129
2010-01-2115	2010-01-2117
2010-01-1490	2010-01-0735
2010-01-1408	2010-01-1203
2010-01-0585	2010-01-0619
2009-01-1907	2009-01-0238
2008-01-0319	2009-01-0149
2008-01-0020	2009-01-0140

MYTH: Ethanol Drives Up Food Costs

FACT: According to the U.S. Department of Agriculture (USDA), the value of corn represents an average of only 3¢ of every dollar spent on basic food items. The bulk of the costs go to labor, packaging, and transportation costs.

MYTH: Ethanol Has a Negative Energy Balance

FACT: The USDA, among other sources, assigns a positive energy balance to ethanol of 2.3:1, while gasoline has a negative energy balance of .8:1.

MYTH: Ethanol Burns Up Engines

FACT: In nearly all vehicles operating on the road today, ethanol burns cooler than gasoline due to ethanol's evaporative cooling effect.

*Ethanol is good for America –
it's homegrown, provides
choices for consumers at the
pump & burns cleaner.*

FOR MORE INFORMATION, CONTACT:

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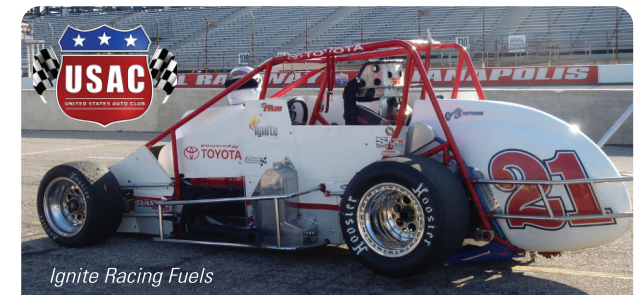
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Ethanol:
Improving the performance
of gasoline – on the racetrack
and on the road!



What's in your Tank?



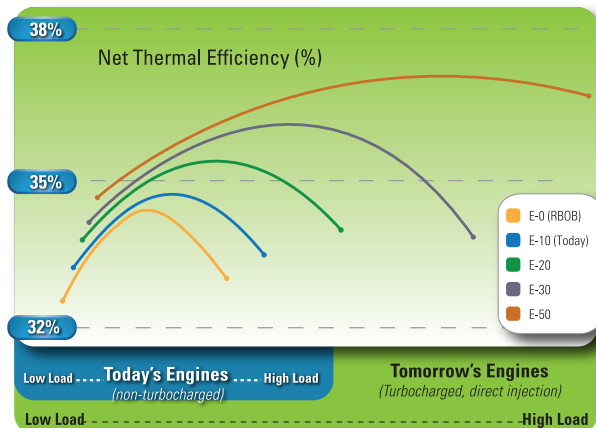
Superior Performance

Ethanol has a superior octane value, this is a huge reason why ethanol is so popular in a high performance engine.

- Adding 30 percent ethanol to consumer gasoline offers 100 octane performance.
- Cooling effect improves efficiency by reducing pumping and heat losses - making it more efficient than gasoline on a BTU basis.
- Ethanol can create a more competitive octane market, which will benefit the consumer by lowering the cost per mile.
- The auto industry wants more octane-enhancing fuels to achieve the higher mileage standards. Ethanol offers the highest level of octane and is the cleanest choice.

The chart below demonstrates how ethanol, when simply added to gasoline, can provide higher efficiency — both in today's vehicles and into the future.

Efficiency of your vehicle goes up with load. By extending octane limits, your vehicle can avoid mileage loss. Blends up to E30 can offer equal mileage to regular consumer-intent fuels.



It's Good for the USA

- It saves the consumer money. Many octane additives produced by oil companies are costly. Toluene is typically \$1.00 higher than gasoline.
- It has brought profitability back to farmers and eliminated many subsidies as well.
- The ethanol industry has created over 600,000 jobs that cannot be exported.
- Ethanol is only made from the starch. Protein, half the value of corn, still remains to feed livestock.

What's in Your Tank?

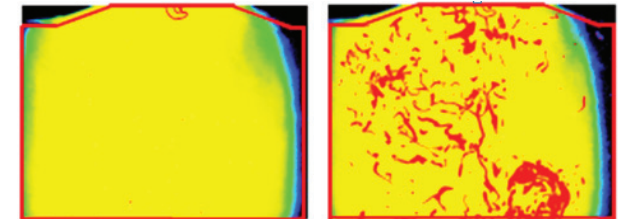
- A typical gallon of gasoline contains anywhere between 150–400 different molecules.
- The average content of gasoline contains 25 to 30 percent aromatics, all of which are common to Benzene, a known human carcinogen.
- These aromatics are classified as a Hazardous Air Pollutant (HAP's) by the EPA.
- Regulations have allowed the continuation of these HAP's while focusing on new vehicle technology.

Ethanol Reduces Emissions

- Ethanol is generally never added to consumer-intent fuels for testing. One should question how base fuels are changed as ethanol content is increased.
- EPA test fuels have shown to be cleaner than most gasoline sold today.
- Ethanol has proven to lower VOC's, CO, and NOx regulated emissions.

Particulate Matter (PM) Emissions

- Once thought to be a diesel issue, the particulate numbers in gasoline can be just as high.
- Ultrafine particulates are a raising concern in many medical studies, due to remaining airborne longer.
- PM emissions have increased, due to a range of aromatics used in gasoline.
- PM emissions have shown to be increasing as the auto industry transitions to direct-fuel injection.



E85 COMBUSTION

GASOLINE COMBUSTION

(Optical imaging shows increased soot from gasoline combustion, which results in increased PM.)

Today's exhaust systems (3-way catalyst) are very effective at reducing VOC's, CO, and NOx, but are very limited in reducing particulates.

Ethanol has proven to be more efficient, along with reducing the current regulated emissions.

The health effects being studied around this issue have focused on asthma, low birth weight, cancer, and other related illnesses.

With these growing concerns and the pending EPA regulations, the blending of consumer fuels needs to be addressed.