

Comments to the FTC on “Fuel Rating Rule Review, R811005”

The mid-level ethanol blends which the FTC is proposing to regulate present a difficult challenge to the consumer. These fuels are blends of petroleum-derived gasoline, ethanol and “natural gasoline” (used to denature fuel-grade ethanol and as the hydrocarbon portion of so-called E85.) These are three distinct fuels which have different amounts of energy per gallon, different octane ratings and different costs. In order to assess the value these blends, a consumer must have a good knowledge of the relative concentrations of these materials in the fuels being offered for sale as well as of the fuel properties of these materials.

Fuels are by their very nature valued for the energy they provide when combusted. Both “natural gasoline” and ethanol have substantially less energy per gallon than does petroleum-derived gasoline. In addition “natural gasoline” is always cheaper than petroleum-derived gasoline; and ethanol is frequently (and currently) cheaper. For instance on April 1, 2010, the New York Mercantile Exchange price for ethanol delivered in April closed at \$1.522 per gallon compared with \$2.3296 for the front month benchmark gasoline contract. With ethanol selling at an 80.8 cent/gallon discount to gasoline (34.7%), fuel sellers have a strong financial incentive to substitute ethanol for gasoline. Even if the seller passes some of the savings on the purchaser, this cost difference has to be considered in light of the fact that since ethanol contains considerably less energy than does petroleum-derived gasoline, the consumer must purchase more gallons of mixtures to drive the same distance.

To the extent that these materials are added to gasoline and have the effect of reducing the energy content of the mixed fuel and so reducing the value to a consumer while also reducing the supplier’s cost, they may be considered adulterants. This is similar to adding oleomargarine to butter or chicory to coffee. The fuel supplier may also pass along some of these supply cost savings as reductions in the per gallon price at the pump. The consumer who is unaware of these differences may be lead to believe that a fuel with a lower cost per gallon and a higher posted octane is a better value.

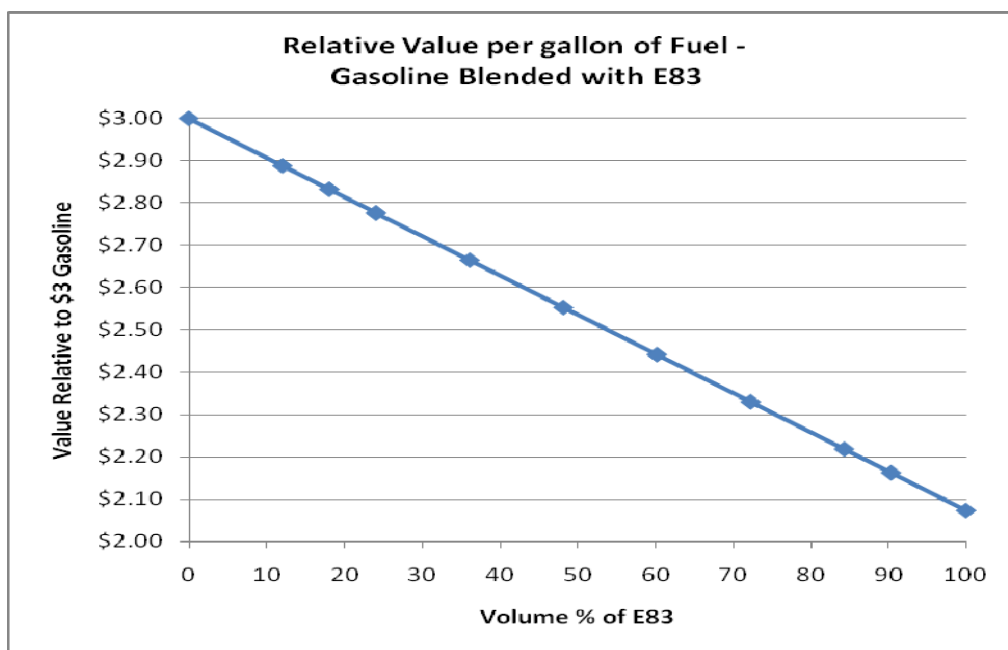
Both ethanol and natural gasoline contain less energy per gallon than does petroleum gasoline. This means that a vehicle will run for fewer miles and an engine will run for fewer hours before refueling is necessary. The table below shows the data. LHV¹s were calculated from from LHV/HHV ratios in Oak Ridge National Laboratory GREET² model.

Relative Energy Values of Major Components of Gasoline/Ethanol Blends			
	HHV	LHV	Relative LHV
Motor Gasoline -Conventional	5.253	4.904	1
Natural Gasoline	4.620	4.340	.885
Ethanol	3.539	3.196	.652
http://www.eia.doe.gov/mer/pdf/pages/sec13_1.pdf			

¹ LHV = lower heating value; HHV = higher heating value.

² http://hydrogen.pnl.gov/filedownloads/hydrogen/datasheets/lower_and_higher_heating_values.xls

Based on the LHVs the following graphic was created to illustrate the dollar value of the energy loss which occurs when “E85” (assumed here to be 83 volume % ethanol and 17 volume % natural gasoline) is combined with conventional gasoline to intermediate ethanol blends.



The data in the graph indicate that the value of blends decreases by about 3.7 % for each 10 volume % of ethanol (and its associated natural gasoline) added to conventional gasoline. This is equivalent to about 11 cents/gallon for \$3/gal gasoline.

Because of the complexity of making value decisions with mid-level ethanol blends, it is suggested that the FTC adopt a system of unit pricing based on gasoline-gallon equivalents (GGE). This would allow consumers to compare different fuels which are suitable for their vehicle on a common basis.

Retailers should also be prohibited from using look-alike octane stickers for fuels which do not require such stickers unless the posted octane has been determined by the exact methods which the FTC requires for gasoline and the sticker is changed in such a fashion so as not to be mistaken for those required by the FTC. Many retailers of “E85” incorrectly post that fuel at 105 octane³ and post mid-level ethanol blend octane by reference to that value instead of by testing. These erroneously high octane posting make these fuels appear to be better than they are in reality. Especially when posted on stickers which are identical as the FTC required stickers, they can lead consumers to put trust in the values as they would for actual FTC octane values.

³ The actual octane of most E85 blends is about 95 when measured by the required ASTM methods. See Alleman, Teresa L.; Ken Wright and Dan Hogan, (NREL), *National Survey of E85 Quality*, Coordinating Research Council Report No. E-85, November 2009, 22(30)p.
http://www.crcao.com/reports/recentstudies2009/E-85/E-85%20Final%20Report%20_120609_.pdf