



## Oxygen In Gasoline

*Summary: Oxygen in gasoline is good for making more power and improving emissions.*

There is so much bad information in the field, on the Internet, and through word of mouth that I have decided to put some accurate information out on the subject of oxygen in gasoline. This is not a new component for gasoline. We (as gasoline blenders) have been using oxygenates in gasoline since the late 1970's. The two oxygenates that have survived to this point in time are MTBE (Methyl Tertiary-Butyl Ether) and ethanol (or ethyl alcohol as it is sometimes called). They were first used to extend the supply of gasoline, and improve octane quality, but in the late 1980's, vehicle testing showed that oxygenates reduced exhaust emissions.

The revised Clean Air Act (CAA) of 1990 required that oxygenates be used in all "non-attainment" areas of the United States. This was good because oxygenates helped to reduce emissions at a time when it was becoming very hard to meet the emissions standards of the day.

MTBE is an ether and is soluble in gasoline. This means that it mixes well with gasoline, and does not separate from gasoline when moisture is present. Normal amounts of MTBE in gasoline are from 11 to 15%, which converts to 2.0 to 2.7% oxygen. MTBE has been banned in some states making ethanol the oxygenate of choice.

Ethanol is an alcohol, the drinking kind. "Fuel Grade" ethanol usually contains 2% or more of gasoline (or some other undesirable component) so people will not be drinking it. Normal amounts of ethanol in gasoline are from 5.5 to 10.0%, which converts to 2.0 to 3.7% oxygen. From a technical point of view, ethanol is less desirable than MTBE. If moisture gets in an ethanol containing gasoline, the moisture causes the ethanol to separate from the gasoline. This is very unsatisfactory.

Both of these oxygenates will contribute to reduced exhaust emissions in carbureted vehicles and in fuel injected vehicles made up into the mid 1990's. The oxygenates will also contribute to increased engine output (horsepower) when the carburetion/injection is adequately adjusted to take full advantage of the oxygen in the gasoline.

The increased power comes from the fact that the gasoline contains an oxygen component. It works as if the barometric pressure was higher which provides more oxygen which translates into more power.

In racing applications, we encourage customers to use ***Rockett Brand™ 100 Unleaded Gasoline*** that contains an oxygenate because it will increase power output.

The benefit of oxygen in gasoline for reduced exhaust emissions has disappeared since the late 1990's. This is due to the continued efforts of the car manufacturers to improve combustion efficiency, more precisely manage fuel control, and develop more efficient catalytic converters. These late model vehicles can still benefit from additional horsepower when using an oxygenated fuel, but exhaust emissions benefits are not likely to be found as they were on earlier vehicles.

Think of oxygenates as a mini supercharger, or a small shot of nitrous oxide.

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