



100 Octane Racing Gasoline vs. Octane Boosters

What are octane boosters? Do they work? Why should I buy high octane gasoline when I can buy octane boosters? These are just some of the questions that we get from customers and potential customers.

Here is the straight scoop. Octane boosters usually contain one active ingredient, sometimes diluted in a solvent (like toluene). Typical active ingredients for octane improvers are alcohols, ethers, manganese (MMT), or tetraethyl lead (TEL).

Alcohols: Methanol and ethanol are alcohols which have been used as octane boosters. They work since both have a higher octane number than typical street gasoline. They are most effective in low octane gasolines. Alcohols have an affinity for water. This means that if there is a slight amount of water in the bottom of your gas tank, the alcohol can grab hold of the water and separate from the gasoline, leaving you with a water/alcohol mix at the bottom of your tank with gasoline floating on top. This is not good. And the last thing, even if you mix octane improvers containing alcohols with your gasoline, you will still not know what octane you end up with.

Ethers: MTBE, TAME, and ETBE are the most common ethers available for gasoline use. They have higher octane values than typical gasoline, so like the alcohols they will increase the octane quality of street gasoline. Ethers do not have an affinity for water, will not separate from gasoline, and blend like a hydrocarbon. When ethers are used as additives, the enthusiast still does not know what his final octane number is.

Manganese (MMT): Sometimes referred to as manganese, or more correctly Methyl Cyclopentadienyl Manganese Tricarbonyl (MMT). This can be an effective octane improver at very low concentrations. You can gain one or two octane numbers using the recommended treat rate. Problems with emissions, injectors, spark plugs, oxygen sensors, and catalytic converters have all been traced to the use of MMT, which is why it is not legal to use by U.S. Refiners in Reformulated Gasoline. As indicated above with the alcohols and the ethers, it is tough to know what octane number you have attained.

TEL(Lead): Lead, Tetraethyl Lead, or TEL is known to be a very effective octane improver used in many racing gasolines and aviation gasoline. It is extremely toxic in its pure form, and is illegal to use in any street driven vehicle in the U. S. since 1/1/96. It will poison oxygen sensors and catalytic converters. It is sold in a very diluted form by at least one vendor but not in California because of restrictions on metallic additives. Again, one still does not know the octane number of the final blend.

Street Gas Facts: The 87, 89, 91, 92, or 93 octane that you buy at the local service station is a good gasoline to satisfy the government's requirement for improved fuel economy and reduced exhaust emissions. It is a poor choice to make real power at high RPM. Spending money to enhance street gasoline with octane boosters is a waste unless you are more interested in satisfying octane needs than performance needs. Read on for another (and better) way to enhance performance with racing gasoline technology.

Rockett Brand™ 100: An alternate solution to using additives is to use ***Rockett Brand™*** 100 Octane Unleaded Gasoline. This is a street legal 100 octane unleaded gasoline that can be used in its pure form, or it can be blended with any street gasoline. You will always know what octane you end up with because we can provide you with a blending chart that helps you to determine that. In addition, if the 100 octane gasoline is used in its pure form, the engine will make additional power due to the “improved burn” characteristics. This is because ***Rockett Brand™*** 100 contains a very select group of hydrocarbons that vaporize and burn much more readily than those found in conventional street gasoline. When more of the gasoline is burned in the combustion chamber, the engine makes more horsepower. This phenomenon is known as improved combustion efficiency.

Engines equipped with nitrous oxide systems, turbochargers or superchargers develop higher cylinder pressures than normally aspirated engines and therefore need a higher octane gasoline. Higher cylinder pressures mean more horsepower. More horsepower (cylinder pressure) can translate into a destroyed engine if the octane quality is not satisfactory. ***Rockett Brand™*** 100 can be a significant benefit for these applications.

Knock sensors are used on some engines to detect detonation (also referred to as ping). When the knock sensor is activated by detonation, it sends a signal to the engine control computer which electronically retards the spark timing until detonation ceases. This spark retard reduces engine efficiency which reduces horsepower and fuel economy. ***Rockett Brand™*** 100 can provide you with higher octane and therefore solve the horsepower and fuel economy deficiencies.

Some racers and/or tuners think that they need a slow burning gasoline to make good horsepower. This is far from the truth. What they need is a good fast burn gasoline to be able to complete the burn in the time available. An added benefit is that less spark timing is required with a fast burn gasoline. The reason is that peak cylinder pressure occurs sooner with a fast burn gasoline. Too soon is not good, so the spark timing can be slightly reduced to take advantage of the fast burn, still allowing peak power to occur at the correct crankshaft position.

Keep in mind that at 6000 RPM, each spark plug fires 50 times per second. At this rate, there is very little time to draw the intake charge into the cylinder, compress it, burn it, expand it, and exhaust it. A good fast burn gasoline is very important in making as much horsepower as possible at this engine speed. The most horsepower is developed when the gasoline is burned completely.

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