



Street Gasoline & Low Compression Ratios

Summary: An engine with 8.5 to 1 compression ratio with a 4 inch bore or less, with aluminum heads, 180° max coolant temperature, and with a “fresh air” intake system will run just fine on 87 octane gasoline.

We frequently get calls from car enthusiasts who want to maximize performance but don't want to “pay the price” for gasoline. Following are some tips that will help these enthusiasts to use 87 octane in their engines. Pay close attention even if you already have built your engine since you may be able to use some of the tips to reduce the octane “appetite” of your engine.

1. Build the engine with about 8.5:1 CR (Compression Ratio). (More CR needs more octane)
2. Use a four-inch or smaller bore. (Bigger bores require more octane)
3. Use aluminum cylinder heads if possible. (Fewer hot spots with better heat transfer)
4. Use a 180° thermostat, a good water pump, efficient radiator and effective fan system (High temperatures need more octane)
5. Use an aluminum intake manifold. (These improve cold start driveability)
6. Be sure air/fuel mixture is correct. (Lean mixtures require more octane)
7. Cool inlet air is a benefit. Use a fresh air system if possible.
(A 25° increase in inlet air temperature requires 1 more octane number)
8. Live at a higher elevation. This may not be practical, but for every 1000 feet above sea level, your engine needs 1 less octane number, and makes less power.
9. Live in a humid region. Again, this may be impractical, but if you live in Florida and the temperature is 85°, your car will be satisfied with a gasoline that is 2 or 3 octane numbers lower than it would if you were in Phoenix at the same 85° temperature. This is why water injection works in the southwest U.S.
10. Reducing spark timing by 2° will reduced the engine octane appetite by 1 octane number. 4° is the maximum for this “fix”.

Now you know what you should do to keep the octane appetite down, but if you already built a big block with 12:1 CR and iron heads, call us and we can get you a blending chart to keep your engine out of detonation.

For your nearest Rockett Brand™ Distributor, call 800-345-0076