



## Octane Satisfaction

***Summary: An engine's octane appetite changes due to numerous parameters, so it is very important to have enough octane quality. There is no such thing as too much octane.***

Answers to the question of compression ratio limits for the various grades of *Rockett Brand™* Racing Gasoline are compiled in this bulletin to assist *Rockett Brand™* Racing Gasoline distributors in making recommendations to their customers. Many things besides compression ratio contribute to the “octane requirement” of an engine, so read on carefully.

The following is a list of the most significant items that contribute to octane requirement. These must be kept in mind when thinking about engine octane requirement.

1. Compression Ratio .....Higher requires more octane
2. Cylinder Bore Size.....Bigger bore requires more octane
3. Cast Iron Cylinder Heads.....Iron heads need more octane than aluminum heads
4. Restrictor Plates.....Less restriction requires more octane
5. Lean Mixtures.....Need more octane
6. Coolant Temperature.....Higher needs more octane; 160° F is ideal
7. Spark Advance.....More spark advance requires more octane
8. Intake Air Temperature.....Higher temperature need more octane
9. Humidity.....Dry air (low humidity) requires more octane
10. Barometric Pressure.....Higher needs more octane
11. Altitude.....Closer to sea level needs more octane

The above information is a guide as to which way the engine octane demand will go as these eleven key parameters are changed. There are other things that impact engine octane requirement, but those listed above are the most significant.

### Summary of Product Applications

#### *Rockett Brand™* 100 Octane Unleaded Racing Gasoline

This product has been used in endurance racing in four inch bore engines with 14:1 compression ratio and aluminum heads. With cast iron heads, compression ratios should be limited to 13:1

*Rockett Brand™* 100 Unleaded Racing Gasoline is street legal in all states and is used in current performance cars. Historic muscle cars from the 1950s and 1960s can also benefit from this product. It can readily satisfy the 11:1 compression ratios found in many engines from that era.

#### *Rockett Brand™* 110 Octane Leaded Racing Gasoline

This product has been formulated with a narrower distillation range than conventional 110 octane racing gasoline and is designed to provide maximum power output through complete combustion. It is an excellent fuel for use in normally aspirated small block engines with compression ratios up to 15:1 and big block engines with ratios to 13:1 and is capable of outperforming competitive fuels boasting higher octane ratings.

### *Rockett Brand*<sup>™</sup> 112 Octane Leaded Racing Gasoline

This product was used in seven NASCAR series with compression ratios as high as 16:1 without restrictor plates and as high as 19.5:1 with restrictor plates.

Some engines are temperamental to tune with ultra high compression ratios. It is best to stay below 16:1 to be on the safe side. If the engine to be used has a bore that is smaller than four inches, and has aluminum heads, it may be safe to bump the compression ratio up, but tuning may still be difficult.

### *Rockett Brand*<sup>™</sup> 114 Octane Leaded Racing Gasoline

This gasoline was designed for big block racing engines with 16:1 compression ratio. It is a particularly good gasoline for drag racers with high compression ratio big blocks that want the same quality every time they buy gasoline.

Other applications for this product include normally aspirated big block boat engines, as well as those equipped with superchargers or turbochargers.

This gasoline can also be used in small block engines where the engine builder wants a greater margin of octane safety over *Rockett Brand*<sup>™</sup> 112 Racing Gasoline.

### *Rockett Brand*<sup>™</sup> 118 Octane Leaded Racing Gasoline

This is a very good gasoline for high RPM drag racing engines. It was developed using an NHRA Pro Stock 500 cubic inch engine with the power curve optimized between 7,000 and 9,000 RPM.

Another application for this product is very high boost supercharged or turbocharged big block engines. It has plenty of octane and power potential for these high output engines.

This gasoline has been used with very good results in nitrous oxide equipped racing engines. The high octane quality of this product provides safety from detonation when used in these high output applications.

*Rockett Brand*<sup>™</sup> 118 Racing Gasoline has also been used in high RPM motorcycle engines with numerous wins in NHRA competition. These Pro Stock Bike engines have 17.5:1 compression ratios and run at speeds up to 14,000 RPM.

### Other

If your engine builder has a gasoline octane recommendation, it is wise to follow his advice rather than venturing into the unknown.

**For your nearest *Rockett Brand*<sup>™</sup> Distributor, call 800-345-0076**