Which VP racing fuel is right for your engine?

There's no simple answer to this question. As with everything, there is trade-offs. While you can't find a racing fuel that has the best of everything, you can find one that gives your particular engine the most power. That's why VP produces different fuels for different applications. The key isn't to just buy the fuel with the most octane, but getting one that's best suited for your engine. To determine what's best for your engine, you should first understand the basic characteristics of fuel that dictate its performance in an engine.

Four Fuel Properties

1. **Octane:** This does nothing more than rate a fuel's ability to resist detonation and/or preignition. Octane is rated in Research Octane Number (RON). Motor Octane Numbers (MON) and Pump Octane Number (R+M/2). A Pump Octane Number is the number you see on the yellow decal at gas stations, representing the average of the fuel's RON and MON. VP relies on MON because the MON test more accurately simulates racing conditions. Don't be fooled by high RON or R+M/2 numbers. Many companies use these simply because they look higher and are easier to come by due to the testing methods. Also, be aware that the ability of fuel to resist preignition is more than just a function of octane.

2. **Burning Speed:** This is the speed at which fuel releases its energy. At high RPMs, there is very little time (real time – not crank rotation) for the fuel to release its own energy. Peak cylinder pressure should occur around 20° ATDC. If the fuel is still burning after this, it's not contributing to peak cylinder pressure (which is what the rear wheels see).

3. **Energy Value:** An expression of the potential energy in fuel. The energy value is measured in BTUs per pound, not per gallon. The difference is important as the air/fuel ratio is in weight, not volume. Generally speaking, VP's fuels measure high BTUs per pound and thus, have a higher compression ratio or engine speed.

4. **Cooling Effect:** The cooling effect of fuel is related to the heat of vaporization. The higher a fuels heat of vaporization, the better its ability to cool the intake mixture. A better cooling effect can generate some horsepower gains in 4-stroke engines, and even bigger gains in 2-stroke engines.

We've briefly summarized the relevant characteristics, uses and applications for the fuels available from VP, but before making a final selection, we recommend consulting with your VP dealer. Be prepared to answer the following questions:

- Is your engine naturally aspirated, turbocharged, blown or using nitrous oxide?
- In what series or sanctioning body will you be racing?
- What are the race's fuel rules e.g. are there any fuels illegal or do they allow oxygenated fuels?
- In which class will you be racing?
- What is the compression ratio (CR) of your engine?
- Does your engine have O2 sensors or CATS?

You can be confident that once we understand your application, we'll find the fuel that will make the most power for your engine!