

## Real info on Race Gas/Av Gas...

My experience comes from 7 years as the western states representative for 76 Race Fuel, Unocal's 40 hours Advanced Products course, Working personally with Tim Wusz (senior performance products Rep for Unocal, Tim was responsible for Unocal's race fuel development for 30+ years). I have also met and discussed fuels/motors with just about every engine builder in every facet of racing in the western United States. I also conducted Educational Seminars at the Fred L. Hartley Institute in Brea in which we would invite Engine Builders for a tour of Unocal's testing facilities and do live octane tests on any gasoline they would choose to bring to the seminar. Included in the training we would demonstrate live tests how Distillation curve, Reid Vapor Pressure, Specific Gravity, Octane Rating, Flashpoint, etc are conducted and the importance of these numbers. Some of you will remember me from contingency with my 76 Racing Gasoline hospitality trailer in the 1990's.

Through the 50's, 60's, 70's and 80's Av gas was the base product used for most racing "gasoline". VP, f&L, Turbo Blue, and Trick all used AV gas as the base product. They would buy a tanker (8000 gallons of Av Gas) then add other hydrocarbons/TetraEthylLead (TEL) to the base, drive around the block stopping and accelerating the truck/trailer until they felt the product was mixed well. Obviously this was not science, but it worked for most racers only because most racers use a higher rated octane than they actually need.

In the mid to late 1990's VP graduated to buying their own base product and do their blending of products in a much better fashion. Turbo Blue and Trick have since been bought Sunoco and are blended by Sunoco. Trick was purchased by Phillips 66 and has continued to be blended by Phillips 66.

The only two companies I am aware of who "cracked" their own base product is Sunoco and 76. And as we all know, 76 race fuel is no longer available, leaving only one true manufacturer of Racing Gasoline....Sunoco.

AV Gas has a MOR (motor octane rating) of 96, R+M/2 rating of 100, and ROM (Research Octane Rating) of 106.

AV Gas is lighter than racing gasoline thus more fuel/larger jetting is required. Jetted correctly you should not experience a lean burn at WOT.

I would not use AV Gas as a cleaner. The amount of TEL (2 grams/gallon) and other hydrocarbons makes it extremely carcinogenic. Same goes for all other racing gasolines.

Shelf life is NOT better. The reason pump gas won't last as long is because street gas has extremely lightend hydrocarbons to help your car start and idle. Racing Gasoline does not have these light end hydrocarbons needed for idle and starting, hence the reason race motors start and idle poorly.

Av Gas is NOT designed for low RPM motors. AV Gas is designed to not detonate/preignite causing detination. This would be the same design as race fuel. If you compare the "distillation curve" of AV Gas to Race Gas, you will find they are almost identical. The "distillation curve" controls the speed of burn across the combustion chamber.

You will only "spit" gas out the exhaust pipes if you run to rich or include a supercharger/turbocharger on your engine and "overdrive" the blower. Example would be the bitchin flames you see at the starting line of a drag race on normally aspirated engines and the long flames you see on all "blown" engines.

The LEAD (TEL) added to AV Gas is to increase the octane rating only. All heads these days have harden valve seats. There is no need for lubrication of the valve seats. All engines have come with harden seats since the late 60's.

AV Gas is not formulated for High Altitude. and will have very little, if not any performance differences vs racing gasoline. On the other hand, commercial grade fuels (87, 89, 92) will definitely enhance your performance due to the commercial fuel being oxygenated. The Oxygen enhancers added to commercial fuel is only for California Smog laws.

Advancing timing on your motor will definitely help with AV Gas and Race Gas due to its slow burn characteristics. On the other hand, be careful if your running commercial grade gasoline, more timing can cause detonation/preignition quit quickly.

AV Gas does not go BAD faster. It is extremely consistent. The MOR is only 96, whereas Sunoco Purple or VP C12 is 104. A rating of 96 is good for up to 10:1 on Steel heads and 12:1 on Aluminum heads with

water cooling. Air cooled motors run much hotter.

Buying a higher octane for a \$20-50K motor is the cheapest insurance available.

Remember this...OCTANE is a measure of a fuels ability to resist detonation/preignition. The higher the Octane number, the slower the fuel burns. Technically speaking 87 Octane fuel will develop more power than 118 Octane fuel. With this said, you should see gains in throttle response and HP by mixing commercial fuel and AV Gas/Race Gas. You now have some light end Hydrocarbons for throttle response and heavy hydrocarbons/TEL for detonation resistance.

Bottom line... use the most consistent fuel you can find and create horsepower by moving as much air as possible through the combustion chamber.

I have no reason to be bias here as I have moved on to much greener pastures. See you on the race course.

Good Luck,

Steve Poole

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In Phoenix and other "boiling" spots over 100F, you should take special care of your AV Gas/Race Gas. The light end Hydrocarbons of commercial fuel start at approximately -40F. AV Gas/Race Gas starts at around 100F. So even performance gasoline loses its ideal performance. You must store your fuel in an enclosed room, not a trailer. Garages with attics or roof vents are the best. I have known drag racers who actually store their fuel in their house and in their motorhome on the trip to races. Also, keep the drums (5, 16, 30, 54 gallon) off the cement floor, preferably on a couple pieces of 2x4's. This keeps less condensation of water entering the drum. You can even go as far as turning your drum upside down so the Bungs are sealed not only by the gasket, but also by the actual fuel preventing air from entering the drum. Drums breathe on a daily basis as the temp rises and falls. As they breathe, air enters the drum with a minute amount of moisture. No Bueno. Always sweep the underside of the top of the drum with your finger looking for rust every time you open your drum.

High Altitude .... The reason AV Gas has a narrow distillation curve (100F to 210F avg vs -40F to 360F

commercial fuel) is to rid the possibility of vapor lock in the fuel lines. AV Gas is less dense than other fuels because of the hydrocarbons used. AV Gas has no real need for throttle response, acceleration, etc. And you actually need less Octane as you climb in altitude, hence 85 octane commercial gas in some mountainous areas.

Most race fuels equally don't worry about acceleration. Throttle response/acceleration is developed through removing rotating mass within the engine (ie. light fly wheel, balancing, short skirt pistons, etc). You guys in class 9 need to really pay attention to rotating mass. Nobody would ever believe it, but my class 9 which my brother still races would do an honest 90 mph.

Yes, 2 strokes are a much different animal. They run hotter and have an incomplete burn quality. Those of you who have the thinking "more oil is better" mentality, be careful. If your engine requires a 32:1 ratio and you add a richer mixture of oil, you're actually making the engine run hotter due to the fact that oil takes more heat to burn than Gasoline. Remember, Gasoline does also "cool" the combustion chamber prior to ignition. You get less cooling when you add more oil. Also reason the newer lighter 2 stroke oils are better than the old petroleum base oils.

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