



# Tech Bulletin

Advancing the Science of Motorsports™

Tech Bulletin prepared by Steve Burns, Research & Development

## C12 Racing Fuel

C12 racing fuel has set the standard in the racing world for performance and consistency. C12 was the first fuel produced by VP Racing 29 years ago. As late as 1998, it was the fuel of choice for 75% of VP's customers. While VP's introduction of more specialty fuels led to a drop in use of C12, it is still favored by 50% of VP's customers today.

C12 was the first racing fuel to prove that burning speed, vaporization and BTU value were as important as octane. This allowed C12 to be the first racing fuel to make **more power** than other fuels that just concentrated on octane. C12 has been successful in a wide range of applications, including circle track (high and low compression), drag racing, off-road, desert, motocross, snowmobiles, jet skis and road racing. It's still the best fuel across the widest range of applications of any fuel on the market.

C12's popularity has been maintained over the years due to ongoing research efforts and continual improvements. The formula was last changed in 1998 and will not be changed again. In its present form, C12 still is one of the most effective fuels on the market for resisting detonation on the track and delivering power gains at high RPMs.

C12 is a perfect illustration of the concept of race fuel as a piece of racing equipment. If you want the best performance you can possibly get, you need to

Property	Typical	Test Methods
Specific Gravity @ 60F°	.717	ASTM D 4052
API Gravity		ASTM D 1298-85
Motor Octane	108	ASTM D 2700-86
Reid Vapor Pressure	7.30	ASTM D 323
Distillation F°		ISO 33405
Initial Boiling Point		
10% Evap.	131.0	
50% Evap.	194.0	
90% Evap.	228.0	
E.P.	233.3	
Leaded	Yes	ASTM D 3237
Color	Green	
Kenematic Viscosity in Centistokes @ 80F	-	ASTM D 445

buy the best equipment for your application. The same goes for fuel and it's hard to go wrong with C12 for most applications. The fact is, if there's anything on the market that will outperform C12 for your application, VP Racing probably makes it.

Available in drums or pails, C12 is green in color.

To store C12, keep it in a tightly sealed container. It will not separate as its components are solvents of one another. Do not expose the fuel to direct sunlight as the ultraviolet rays will oxidize the lead. (VP produces round or square utility jugs in a variety of colors, each of which is suitable for transportation of fuel. Contact your regional VP Racing sales manager for more information.)

*To maintain the original properties and comply with Health and Safety regulations, this fuel should be handled and stored in a cool place and always maintained in tightly sealed drums.*

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www.vpracingfuels.com**

Headquarters: San Antonio, Texas.

Offices in Delaware, Indiana, California, Georgia, Florida, Kansas and Washington.

International: Calgary, Montreal and Toronto, Canada; Sydney, Australia

# The four most important properties of racing fuel

You can't make a racing fuel that has the best of everything, but you can produce one that will give your engine the most power. This is why we produce different fuels for different applications. The key to getting the best racing gasoline is not necessarily buying the fuel with the highest octane, but getting one that is best suited for your engine.

1. **OCTANE** - The rating of fuels' ability to resist detonation and/or preignition. Octane is rated in Research Octane Numbers (RON), Motor Octane Numbers (MON), and Pump Octane Numbers (R+M/2). Pump Octane Numbers are what you see on the yellow decal at the gas stations and represents an average of RON and MON. VP uses MON because this test method is more prevalent in racing. Most other companies use RON because it is higher, easier to come by, and sounds better in marketing messages. Don't be fooled by high RON numbers or an average -- MON is the most important for a racing application. However, the ability of the fuel to resist preignition is more than just a function of octane.

2. **BURNING SPEED** - The speed at which fuel releases its energy. In a high-speed internal combustion engine, there is very little time (real time - not crank rotation) for the fuel to release its energy. Peak cylinder pressure should occur around 20° ATDC. If the fuel is still burning after this, it is not contributing to peak cylinder pressure, which is what the rear wheels see.
3. **ENERGY VALUE** - An expression of the potential in the fuel. The energy value is measured in BTUs per pound, not per gallon. The difference is important. The air fuel ratio is in weight, not volume. Remember, this is the potential energy value of the fuel. This difference will show up at any compression ratio or engine speed.
4. **COOLING EFFECT**: The cooling effect on fuel is related to the heat of vaporization. The higher the heat of vaporization, the better its effect on cooling the intake mixture. This is of some benefit in a four-stroke engine, but can be a big gain in two-stroke engines.

## The VP Racing Story

At VP, we've been making the best fuels for motorsports since 1975. We've developed a well-earned reputation for producing high quality racing fuels respected for their power and consistency. In fact, we've fueled the NHRA Pro Stock Champions for 28 consecutive years – a record unmatched anywhere in the industry.

However, our track record isn't limited to the drag strip. We've fueled champions in off-road, off-shore, circle track, road race, motocross and even airplanes. A VP-powered racer has won every major championship in North America that allowed the competitor a choice of any fuel producer.

Total control over our products is just one of the reasons VP has achieved such consistent success. We blend all our own fuels. We lead them. We dye them. We drum them, test and store them.

Our chemists, engineers, dynos and test engines are dedicated to one single-minded purpose – creating the best fuels in the industry. But we don't spend all our time in-house. You'll find us working with racers on their dynos and at the races working with their vehicles. We do all this to stay ahead of our competition so that you can stay ahead of yours.

VP Racing products are conveniently distributed through warehouses across the United States, Canada, Australia, Mexico and Europe. VP also carries a complete line of racing synthetic oils, two-cycle lubricants, additives, chemicals, traction adhesives and related products – all of which are available for export worldwide. Distributor inquiries invited.



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