



## SynMax Performance Lubricants

13750 Metric Drive, Roscoe, IL. 61073 (815) 389-9999 [www.synmaxperformancelubricants.com](http://www.synmaxperformancelubricants.com)

### **Q & A TECHNICAL BULLETIN RACING MOTOR OIL APPLICATIONS & EXPLANATIONS.**

#### **Competition Racing Engines:**

**Q: I have a Late Model with a 350CI Crate Motor what SAE weight choice for Racing Motor Oil?**

A: Professional race engine builders agree that using SAE 5W40 weight oil is the best choice for the application. Remember, a crate motor is still a factory stock specification design. When the OEM designed the engine for factory applications the recommended weight was SAE 5W30 or 10W30.

**Q: Why is using a SAE 5W40 so important for a crate motor?**

A: OEM tolerance levels are designed for the SAE 30 viscosity film thickness. 5W40 will perform like a straight SAE 30. OEM Crate Motor still has a factory "Hydraulic" lifter valve train and proper viscosity is required to maintain the valve train to stay "pumped" up for full valve lift for intake and exhaust valve performance. Historically, reduced viscosity stability within the hydraulic lifter would effect horsepower and torque curves 200 – 400 RPMS simply because it takes that much longer to "pump up" the valve train to 100% opening for full flow performance.

**Q: What type of base oil and additive formulation should be used for a Crate Motor racing application?**

A: Fully Synthetic Base Oil with Molybdenum (Moly / MoS<sub>2</sub>) or Diamond Like Additives (DLA) for improved metal surface technology and high levels of Zinc for improved anti-wear protection.

**Q: What is considered fully synthetic base oil for gasoline racing or extreme duty applications?**

A: 50% blend of Group IV / PAO and 50% Group III base oil combination (SAE 5W20-50) is selected. Group IV provides superior viscosity performance while Group III is required to hold and work with the overall additive formulations much better than straight PAO (Group IV & V) base oils.

**Q: Will Synthetic Blend / Synthetic Plus base oils provide the same performance?**

A: Historically, a minimum 50/50 base oil formulation is needed for premium performance in true race and extreme conditions. Some Synthetic Blend/Plus or even called "fully" synthetic base oils are 20% or 25% PAO and 75% to 80% Group III or Group II/III combinations etc. base oils. You need to study and find out. Historically, "blends" 75/25 or 80/20 towards the end of the race session will have some break down resulting in reduced oil pressure, viscosity stability and film strength.

**Q: For Racing Applications - could I use a readily available off the shelf hi-performance racing or street oil – or should I stay with a off-road competition race engine only designed product?**

A: All racing applications with mufflers (non-modern emission systems) should use off-road use / competition race engine only designed oils. Normally these type of competition racing oils have premium additive packages with high levels of anti-wear additives such as Zinc (ZDDP) about 1700-2000 ppm.



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**Q: What is the anti-wear percentage difference between street and competition designed oils.**

A: Current street designed oils ( API SM) have about ½ the anti-wear Zinc (ZDDP) additives (800 ppm) than competition only race oils (1700-2000 ppm).

**Q: What is the premium choice for anti-wear percentage in competition designed oils.**

A: SynMax has 1500 ZDDP and a special aerospace additive of 2500 PPM which equal 4000 PPM burns clean and safe.

**Q: Why do street designed oils have ½ the anti-wear additives than race oils?**

A: Street applications have modern emission and catalytic converter type systems. Chemically when the modern emission system has over 1000 ppm of zinc / ZDDP within the motor oil, within a short period of time, this will coat the catalysts and harm the catalytic converter and emission sensors etc. That is why the EPA within the USA recently set standards to reduce the zinc/ ZDDP levels for street applications to 800 PPM.

**Q: Are European cars different with emissions design to use a higher level of zinc in the oils?**

A: Yes – European cars have a totally different catalytic converter design – not like within the USA and some call for oil which are designed for higher levels of zinc that will not harm the emission system.

**Q: Does using a SAE 10 or 20 make more horsepower over SAE 30 weight oils?**

A: Yes, a lighter weight oil will provide reduced viscosity drag – that will turn into a couple of percent more horsepower. Heed this warning: unless the motor is originally engineered or designed for the lighter weight oil (SAE 20 over SAE 30) there will be problems with viscosity break down in real race conditions resulting from heat and extreme use. Viscosity break down decreases oil film strength then increases heat and friction – which will in time reduce horsepower and component durability.

**Q: If the motor produces more horsepower with the lighter oil (SAE 20 vs. SAE 30) on the dyno will that translate to real race applications?**

A: Remember, dyno sessions (normally) are short term on and off throttle sessions not long term full throttle examples of real race conditions (except for elite engineering teams with high level circumstances). Real race conditions, you need a trade off compromise for end of the race session performance with longer term durability. Of course a lighter weight oil would work for the qualify session or first few laps, but when the viscosity design of the oil cannot handle the long term use, the motor will begin to lose oil pressure and film strength through viscosity break down at the middle and end of the race session. Then the (light) advantage you originally had is now lost and costing you much needed performance and durability when you need it most (end of the race to finish and win).

**Summary: Dyno sessions help, but it is not real race conditions.**



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**Q: I heard NASCAR motors use SAE 20 weight oils – could I use that for my late model motor etc.?**

A: You must remember that NASCAR type engines (Cup, Grand National, ARCA & Truck Series etc.) are engineered & special designed to use the SAE 20 weight oil. With special engineering machine tolerances and total oil systems. These engines are literally flooded with oil including dry sump / tank oil capacities 5 – 7 gallons. Most racing applications using stock design oil passages and systems etc. should stay with a SAE 30 etc. Summary: unless your motor and application is specific engineer designed, never use a lighter weight oil unless the OEM or original engine builder approves and or warranties the suggestion.

**Q: In NASCAR (Cup / Grand National / Truck / ARCA type) motors is there a difference between OPEN and restrictor plate oil weight selection?**

A: Yes, OPEN (unrestricted): SAE 5W20 – (RESTRICTED) used at Daytona & Talladega: SAE 0W20.

**Q: So, if using lighter weight oil gives me more power, what is the real disadvantage?**

A: Remember: no matter the additive package (Diamond Like Additives, Moly, Zinc etc.) this does not make up for viscosity stability through the correct selection of the base oil and weight for the application. This is required to fill the oil galleries and provide hydrodynamic film strength and heat dissipation (cooling) between the parts and components etc.

There is always a trade off, if are you willing for a slight short term advantage (that will fall off) and sacrifice oil pressure and parts component durability then go ahead and try. But if you want real race performance you should consider the correct balance of the best of all worlds within the formulation design of the oil: Synthetic Base Oils for viscosity stability with the correct weight selection, improved Metal Surface Technology through (Diamond Like Additives, Moly etc) to coat the components and reduce friction, Anti-Wear levels (Zinc) for a increased barrier of protection and detergency to cleanse components.

**Q: I have tried a SAE 30 weight oil in my racing application, but I really want a little more oil pressure, but I do not want to resort to a SAE 50 that will slow down my performance.**

A: Yes, sometimes SAE 30 is to light and SAE 50 is to “bulky”, there is a happy medium by using a SAE W40. Trying to find a real W40 racing oil with the right combination is not easy but SynMax 5W40 is a true racing oil design formulation for the application with Superior Synthetic Base Oils and DLA with high levels of Zinc.



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**Q: Is there anything else I can do for improved oil stability performance without increasing my costs?**

A: Yes, you should look into your oil filter selection. Historically increased Gallons Per Minute GPM – Oil volume flow (especially with synthetic base oils) is important. You should have a minimum of 15 GPM for racing conditions. SynMax Racing Oil Filters in the one & 1/2 quart design flows 18 GPM. Feature: is increased GPM reducing resistance within the oil filter - therefore increasing oil volume flow. Benefit: Lower oil temperature (about 3-4°F) Increased Oil Pressure before hot operations (about 3-4 PSI).

**Q: Is there a cold start and pre-heat advantage with synthetic base oils over paraffin base and blend oils?**

A: Yes there is; Synthetic base oils have the ability to flow easier when cold, heat up to operational temperature quicker and hold the steady with better consistency. Paraffin / Mineral base oils are not as uniform in molecule structure and take longer to warm up to temperature, also the Paraffin / Mineral base oils over time, will want to continue to increase in temperature as compared to the synthetic that will hold steady. So, the higher amount of PAO Group IV base oils, the greater your advantage for thermal stability.

**Q: Previously I used a modern synthetic blend/plus (15W40) or synthetic (5W40) moly diesel oil I used in racing and it worked just fine – could I still use this low cost oil product within my racing application?**

A: Remember: Historic success of the past will not repeat itself in the future if change took place. Simply stated; as of 2007 the EPA required oil companies to updated and changed the requirements of the modern diesel oil anti-wear packages because newer and modern diesel engines (2007 or newer) made in the USA will have a heavy duty catalytic converter – just like the passenger cars. To prevent high levels of zinc / phosphorus (ZDDP) destroying the catalytic converter; just like the passenger car having the anti-wear packages cut ½ so is the 2007+ diesel motor oils (FACT). There have been special additive packages for the diesel motor oil application to make up for the reduced anti-wear levels – but it not the same at all. Remember: A pretty bottle and label with less performance additives (you really need that you had before) does not make up for reduced component durability and possible failures.

**Q: Can I still get the older low cost designed synthetic diesel oils for use in racing?**

A: Normally as of 2007 oil companies do not have the storage or packaging facility to hold “older” formulations of modern oils, but they will sell you the “new & improved” formulation – which for the racing application does not have the required performance additives. But if you can – than great!



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**Q: I used to have great success with my name brand racing oil, then recently I have noticed a change – does the same principal apply as the modern Diesel oils?**

A: Unfortunately the answer is YES. Unless the oil you purchase for the racing application states “FOR COMPETITION USE ONLY” or API service rating of SG/CD or the oil sample shows a zinc/ phosphorus (ZDDP) level of about 1700 – 2000 ppm+ - then you should not use it for the racing application period. No matter the advertised brochure or name on the bottle. Modern Diesel Motor oils (2007) are ZDDP 1200 ppm)

**Q: I purchase a off the shelf name brand 20W50 racing oil would that apply as well?**

A: Unfortunately the answer is YES, we have confidentially tested all of the racing oils on the market today and the SAD discovery is that even though the oil weight might test for a true W30, W40 or W50 etc. the additive packages could still be for a passenger street car (1/2 the anti-wear additives required for racing). Just like the modern diesel motor oils – the major oil companies in volume choose not to provide for the everyday, on the shelf oils with the expensive additive packages – it hurts the bottom line profits. **That is why the “FOR COMPETITION USE ONLY” oils cost so much more (you get what you pay for).**

**Q: Then how do I really know what is in my racing oil additive package – is it a secret?**

A: No, it is not a secret, with a simple oil sample test available through your major oil companies or local commercial diesel engine supplier (like Caterpillar) you can quickly see the majority of what is really in your oil. Remember: Oil sampling is a cheap insurance policy to know the real truth of what is going on. Or contact SynMax / Lefthander – they will help you with an independent oil study to show you as well.

**Q: What if I have a street class division or extreme (tuner) hi- performance application with a modern emission system – can I use the “FOR COMPETITION USE ONLY” type racing oils?**

A: “FOR COMPETITION USE ONLY” designed motor oils are for straight or muffler exhaust and non-modern emission system (pre 1994) only. For street class division or extreme (tuner) hi- performance applications with modern sensors and emission systems.

**Q: For a street class division or extreme (tuner) hi- performance with a modern emission system – what should be selected for racing requirements?**

A: That is a special formulation is combining both superior metal surface enhancement additives found in competition racing oils, yet balanced with lower anti-wear (zinc/ phosphorus) as not to disturb the sensitive emission systems. That balance was formulated within SynMax™ Street & HD Performance Motor Oil; the very same aerospace advantages with diamond like additives in combination using the most advanced synthetic base oils used in the competition racing oils, but the maximum allowable anti-wear levels allowed, not to harm modern sensors and emission systems.



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#### **Q: What if I have alcohol or nitro methane?**

A: Never use synthetic base oil with alcohol or nitro methane, synthetic base oils are “allergic” to them. Historically and chemically, alcohol will eat into and break down synthetic base oils. That is why after using a synthetic base oil product, you will discover within a short period of time oil pressure fluctuations and viscosity break down. This is simple a chemical FACT. For alcohol racing applications you should use a straight mineral / petroleum premium type base oils (group III). Alcohol will not break down these base oils. Further you need diamond like additives or moly to improve the surface technology and protect the components with extreme levels of zinc/phosphorus

#### **Q: Is there any exceptions for the use of alcohol or methane with synthetic racing oil?**

A: Yes, sophisticated fuel injection systems which a computer controls the fuel and air ratios precisely as used with Honda (IndyCar) or similar professional race engineered systems.

#### **Q: Is there a settling of additives that can happen?**

A: Yes, there is a settling of additives that can happen – you must remember additives (micro sized minerals or chemicals) are heavier than the oils they are placed into. Over time in storage there will be a settling to the bottom. Some exotic and advanced additives that are used with racing and commercial oils have this problem unless addressed. That means, you could have a 5 gallon pail or 55 gallon drum and if it sits for too long, additives will settle. So you possibly could have three different levels of product quality from the top, middle and bottom (especially with light weight synthetics).

#### **Q: Is there a over saturation of additives with the oil that can happen?**

A: Yes, there can be a over saturation of additives that can happen – there is no harm and it looks just like a settling issue. All you need to do is shake the container and all will come back in to blend.

#### **Q: Could quality control in packaging help the problem?**

Yes, it is best immediately right after blending to package same day in gallons and seal tight. Then the customer will be assured of exact quality control for each gallon purchased.

#### **Q: IF I purchase product from a major company is that the same?**

A: not really – what happens is the oil after blending is placed in a small tanker or 55 gallon barrels or totes ( 330+ gallon containers), then shipped to a separate packaging facility which could sit around for a week to a month. Additives within the oil begins to settle, unless the final packaging facility re stirs the oil to put everything back into blend ( which normally does not happen) – when the oil is pumped into the bottles or containers etc. you could have a variety of additive level qualities in each bottle and case you purchase.

#### **Q: I like to purchase in 55 gallon bulk to make things easy.**

A: the problem is that (especially for racing) you will have additive settling issues, and unless you have very strict cleanliness of air and the container – you will have cross-contamination problems.



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#### **Q: how can all of this be solved to keep additive and product quality level?**

SynMax addressed these problems and made the decision to have the ultimate procedures in quality control. Each product the same day it is blended is packaged in 1 gallon or 5 quart bottles. This keeps each gallon no matter when you use it level in additive quality control. Natural / frosted bottles are used so you can see the product or if there is any additive settling etc from long term storage.

#### **Q: Why did SynMax go through all of this effort?**

A: When dealing with the highest levels of motorsports and automotive engineering, you cannot afford for even one gallon of product to be off. Titan discovered through multiple oil testing of major and specialty oil brands that you could have variables from one oil sample of case / container of product to the next. The SynMax goal was reduce these problems greatly by implementing the best in quality and packaging control procedures.

#### **Q: I heard you could use additional anti-wear additives to increased Zinc (ZDDP), Moly, & Teflon "beef up" the oil.**

A: That is possible but not recommended. Oil additive supplements will never truly blend into the oil. Also Formulations have a delicate balance designed by chemists specialized in this knowledge and you do not know the adverse effects one chemical could have in reaction to another. Oil Supplements normally have a short term effect and do to last for the long term. Also, you should never use Teflon in a motor oil.

#### **Q: Why would the oil supplement not blend into the oil completely – it says so on the label and brochure?**

A: When additives and base oils are blended, first you need to know if they will co-operate and function with each other properly. Both the base oil and the additives are heat separately to about 130°F then while at temperature, blended and stirred together for about 2 hours then checked for quality. Over this period of time the additives and base oils chemically become as one unit. So, how could an additive you poured in stay suspended within the oil in 5 minutes? It does not happen = true it could float and mix around with the oil with some benefit, but it will never become one with the oil and eventually settle out. Besides, if you added up the cost of regular oil and the new additive/supplement, it would have saved you money in the long run to purchase the correct product with all the performance additives all ready blended together originally.

#### **Q: It is true that if there is an API service mark, starburst or donut-seal that the oil is no good for racing?**

A: That is a statement started by a racing oil company trying to sell product, even though there is some merit to what is said, it is incomplete information and bottom line for complete truth a false statement. API (American Petroleum Institute) is a certification and regulation organization for the oil companies, just like FDA (Food and Drug Administration) & AMA (American Medical Association) is for our food and health etc. There is API rated oils with older certifications (such as SG or SH) that have the higher anti-wear levels (Zinc) as acceptable for passenger cars 1994 or older (for pre modern emission systems). This is covered with the Titan Technical API bulletin to address these issues.



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#### **Q: Is current off the shelf “racing oils” with API SM rating acceptable for racing conditions?**

A: Fact is that most off the shelf oils labeled racing ( 20W50 etc) are not designed for professional competition racing and they do not have the additives needed. However, there are products by specialty blended which are specifically created for off-road – competition use only – with high zinc and other additive levels not designed for street passenger car use etc. **Remember: If you really want to see what is in the oil with true hard facts – take an oil sample and find out for yourself.**

#### **Q: If specific oils are not API rated or certified, does that mean is not meet quality standards?**

A: Oil companies need to submit the base oil, additives, instructions and blending procedure – (as instructed by the base oil and additive suppliers) for API approval and certification. This process takes time; testing and costs hundreds of thousand of dollars of cost for each product (like a drug approval process). Problem for API certification with racing oils is; when you are using improved performance exotic additives at the higher levels with PAO / Synthetic base oils required for real race conditions there is no base for certification. There is no current API certification for this type of specialty off-road – competition use only racing oil. In fact the specialty blended products normally would exceed the API certification because of the improved formulations used.

#### **Q: What type of oil filter for racing performance conditions should I use?**

A: Oil filter selection is very important. Increased Gallons Per Minute GPM – Oil volume flow (especially with synthetic base oils) is important. You should have a minimum of 20 GPM for racing conditions. SynMax Racing Oil Filters in the one 1/2 quart design flows 18 GPM where Feature: is increased GPM reducing resistance within the oil filter - therefore increasing oil volume flow. Benefit: Lower oil temperature (about 3-4°F) Increased Oil Pressure before hot operations (about 3-4 PSI).

#### **Q: What is the difference of how a PAO Synthetic base oils or Petroleum / Mineral Base oils flow through the oil filter?**

A: How oil flows through the oil filter starts with the type of base oil used. Remember PAO / Synthetic Group IV Base oils have a less gravity or is “lighter” than its Petroleum Group II or III Base oil counter part. Therefore when oil pump creates pressure and pushes the oil, the “heavier” Petroleum straight base oil or 80% Group III /20% Group IV blend oils will force itself through the filter with no problem (10 GPM). PAO/Synthetic base oils are lighter with less gravity does have the “heavier density” of the Petroleum base oil, and needs an oil filter design with a higher (20+GPM) to flow easier. If you use less than a 20+GPM designed filter, it will act like an oil restrictor slowing the oil volume, creating heat, cavitations and increased oil temperatures.

#### **Q: Should I pre fill the oil filter before installation?**

A: Yes that is a good practice, this allows quicker oil flow through the system. Remember, always turn the engine over to pre charge the engine with the ignition “off” look for a few oil PSI either by turning the dry sump oil pump over first, or turn the engine over etc.





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**Q: I want to Break-In and power up my engine, but need to protect my parts and components especially the cam / lifter assembly.**

A: Yes, that is a problem: Previously passenger car and diesel motor oils were used, but with the API 2007 “newer advanced formulations” protection with higher anti-wear additives previously relied upon are not there any more. Further, standard motor oils designed for long term use do not have the special additives for power up procedures; especially to create improved compression in seating the piston ring /cylinder wall areas. Historically, use of moly within Break-In oil during these procedures, has not been suggested.

**Q: Could I use an oil supplement with a high level of Zinc to convert my cheap oil into a break in oil?**

A: That is not suggested, final oil products are a delicate balance – do you want to risk an oil product combination not originally blended together, which could be fighting itself or not compatible with each other during the important Break-In and Power-Up session of your engine worth tens of thousands of dollars?

**Q: Is there a Break-In motor oil product available that will work?**

A: Yes, Titan Performance Lubricants created a specialty motor oil product for this purpose called SynMax Break-In Motor Oil 10W45. High levels of anti-wear (ZDDP), low detergency and special power up additives to promote increased compression performance upon the piston ring / cylinder wall while protecting cam, lifter, bearing and component surfaces.

**Q: Why are there so many cam/lifter failures during the break-in processes recently?**

A: One issue is the proper oil selection for the Break-In session application, the other issue is some major cam shaft companies include a “free” set of lifters. Now you would assume that free is good right? – well you get what you pay for. After you have your failure, you will call the cam shaft provider and discover with your racing cam shaft, you assumed the lifter with the same quality as well right? Wrong – they were economy lifters to save money. That same cam shaft provider will tell you to order the upgraded performance lifters with better metal and improved design to prevent failures. Therefore, listen to your engine builder when they tell you to spend a few more dollars to protect your investment.

**Q: Is there a Break-In Gear Lube product available for transmission and differential that will work?**

A: Yes, SynMax Performance Lubricants created a specialty gear lube product for this purpose called Titan Break-In Gear Lube 80W90. High levels of anti-wear, detergency and special additives to promote increased performance protecting upon ring, pinion, gear, bearing and component surfaces.



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**Q: Previously, I used a straight SAE weight motor oil (W30, W40 or W50) is there any advantage?**

A: Historically, straight weight petroleum/mineral oils were used to prevent viscosity break down. Problem is that these petroleum / mineral base oils over a longer period of time with heat and friction would break down the molecules. Further the advantage of a heavier – SAE weight oil for increased stability would have the opposite effect because the heavier straight weight oil increases friction and heat which will decrease performance and thermal stability.

Within the last 10 years great improvements in base oils like PAO/Synthetics have provided improved viscosity stability. Further, improved anti-shear additives protect the molecules from cold (W5) to hot (W30, 40, 50) operations. That is why PAO/synthetics and anti-shear additives are blended for this purpose.

**Q: What about cold start straight SAE weight motor oil (W30, W40 or W50) is there any disadvantage?**

A: Yes, that is why you use a multi-SAE weight oil design, when the oil is cold it acts like a (W5) – this is required to flow through the parts and components much easier (example: when the cold oil is splashed from the crank up into and through the piston to lubricate the piston rings and cylinder wall) and how the oil functions with the components. If the oil was a straight weight, the oil when cold could not flow into the parts and bearings properly which would cause damage from lack of initial lubrication to the components no matter the additive package.

**Q: OEM sometimes suggested a straight weight SAE 30 is there something close?**

A: SAE 30 weight cross-reference is a multi-weight 5W40 – the advantage is better cold starting performance and when the oil is at hot operational temperature is operates like a straight SAE 30-35

**Q: PAO/Synthetics sounds like a great oil design is it the answer for all applications?**

A: Yes, synthetics are great for most automotive modern precision design and racing applications but all things in moderation. We must always remember to think of the application when the OEM engineer originally made the component (back in the day). If you have an older design engine, you need a base oil and additive package that will work with the original OEM tolerances and engineered clearances including the oil system and engine design. If the motor requires a heavier gravity in the base oil design – like found in the petroleum / mineral base oil to “fill the gaps” and you use a lighter gravity PAO/Synthetic – the lighter synthetic will find every gap, worn part and seal problem every time. Therefore use the right oil as specified or else the “synthetic” advantage could be lost when used in the older design application.



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**Q: Should I use synthetic base oil products in my older designed motor rubber type seals?**

A: No, all synthetic base oils have Ester molecules. Ester is in the solvent chemical family. Older designed OEM vehicles used rubber component products within the main, valve and other seals etc. This combination of Ester / solvents saturated into the older rubber products over time will cause dry and brittle conditions for eventual failure and seal / oil leakage. Modern and newer design OEM seal materials have been updated to work with synthetic type oils with no problem.

**Q: Is there current motor oil designed to work with the older & classic design OEM specifications?**

A: Yes, Titan created "Classic & Hot Rod" Motor Oil for the older design application as required by the original OEM – yet with current and improved additives for long term storage and improved performance.

**Q: Should I use lighter or heavier SAE weight oil in my older OEM application?**

A: You should look in the original OEM factory manual and follow best as possible the recommended SAE specification.

**Q: I have a 4 cylinder racing application using an original style factory motor including an over head type cam.**

A: Most of those older original design applications are used in sports car and short track racing applications originally the motors used a SAE 30 or 10W30. Older racing specifications would call for straight SAE 40 since that was the best they had for the day for the oil viscosity to become stable. Current uses are 5W30 competition racing oil for best performance, but for increased oil pressure and improved stability used under high temperature conditions, use a 5W40 oil competition racing oil. Remember always consult your engine builder for exact specifications.

**Q: I have been having increased lifter / cam wear problems on my overhead or regular placed cam.**

A: For racing applications (without modern emission systems) always make sure you have advanced metal surface technology with increased Zinc / phosphorus levels (ZDDP)– 1700-2000 ppm which provides a barrier and protects these extreme use parts.

**Q: What other advantages does higher zinc / phosphorus (ZDDP) ppm levels within the oil perform?**

A: Higher levels of zinc / phosphorus (ZDDP) help dissipate heat better within the oil internally. This assists the oil to run slightly cooler which increases the oil viscosity stability. Oil viscosity stability holds better between the parts, increases hydrodynamic film strength between the parts which decreases frictions and increases component durability.



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#### **Q: what happens when the oil get to hot?**

A: when the oil reaches a certain temperature (especially the lighter weight oils), you loose hydrodynamic film strength. When you loose hydrodynamic film strength (oil barrier) parts increase in friction. When parts increase in friction – this slows the engine performance, looses horsepower and torque since the motor is now fighting itself to do the same job. That is why you need to select the right oil to perform in real race conditions through out the entire race session (including last laps) not just the beginning. Remember: you need to first finish before you finish first. In professional race applications – the difference in 10 - 20 degrees of oil temperature (230F vs. 240F) in race conditions reduces horse power performance 5 to 15 horsepower depending on the situation.

#### **Q: Will cooler oil last longer?**

A: Yes, this is a natural and chemical fact: once you get above 100C (180F), every 10C (20F) you can reduce the oil temperature; you will double the life durability of the oil (not including contaminate factors).

#### **Q: If I have a modern OEM designed motor – using sensors, emissions and catalytic systems can I use a competition racing oil for mufflers only?**

A: Always follow the original OEM manual specifications with “street” level zinc/ ZDDP levels 800 ppm.

#### **Q: Is there a oil that can be used within a factory OEM racing specification that will protect the motor under racing conditions?**

A: There are many fine oil products that can be used – you need to find oil products that use a quality additive formulation for metal surface enhancement. SynMax Street & Heavy Duty performance motor oil uses Diamond Like Additive Technology (DLA) which historically and chemically has been found to greatly improve friction performance over regular moly type alone additives.

#### **Q: What about the oil flooding into certain parts of the engine more that others – like the upper cylinder head?**

A: For racing applications, the factory engine needs to have oil restrictors within the cylinder head and or oil lines as determined by the engine builder to prevent the cylinder head (or other parts of the motor) from over flooding with oil. Oil restrictions can also be accomplished in addition by using a factory OEM type filter design with a high micron filtration to slow the oil flow. Internal oil restrictors are most effective.

#### **Q: I have a modern Big Block design motor what SAE weight should be used?**

A: Always consult your OEM manual for specifications – modern big block motors – commonly used in heavy duty truck, camper or high performance applications. Suggest 5W30 or 10W30 synthetics since the engine is designed for the use of a 10W30. Problem is that most available 5W30 or 10W30 synthetics for modern emission systems do not have the high performance additive packages to perform in these extreme heavy duty applications. SynMax has the DLA technology needed to protect the metal surfaces and increased power, performance fuel efficiency and component durability.



## SynMax Performance Lubricants

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### **Q & A TECHNICAL BULLETIN RACING MOTOR OIL APPLICATIONS & EXPLANATIONS.**

**Q: I have an older Big Block design motor what SAE weight should be used?**

A: Always consult your OEM manual for specifications – older bog block motors – commonly used in heavy duty truck, camper or high performance applications suggest 10W40 or 20W50. Reason for the higher SAE viscosity weight is that a Big Block engine has small water jackets and also creates high temperatures since it is placed in a small engine bay area that does not have air passing by to dissipate the heat. Because of the extreme horsepower, torque and requirements it punishes the oil. If the oil is cool and viscosity stays good – friction is reduced and parts protected. If the motor does not have a modern emission system and mufflers – you should consider using 5W50 (synthetic) or 20W50 competition racing oil (with increased additive package) for best performance. If the motor has many miles and is worn – consider to use quality 20W50 petroleum or petroleum/synthetic (80/20) blend base oils. If the motor is new and tight with current seals – full synthetic will dissipate the heat much better. For improved metal surface component performance always use a oil with Diamond Like Additive® (DLA) Technology or Moly. SynMax has the DLA technology needed to protect the metal surfaces and increased power, performance fuel efficiency and component durability.

**Q: Could I use a higher weight SAE motor oil (W40 or W50) in my modern Big Block to protect it better?**

A: Even though heavier SAE viscosity (20W50) would provide more protection, modern OEM engineering design and emission systems are designed for a W30 for performance and efficiency so stay with 10W30 synthetic.