



## SynMax Performance Lubricants

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

### **Q & A TECHNICAL BULLETIN – STREET MOTOR OIL & GENERAL INFORMATION**

#### **Q: Is SynMax Superior to other motor oils?**

A: SynMax outperforms other synthetic and conventional oils primarily due to its proprietary Diamond Like Additive™ (DLA) & SynMax aerospace anti-wear technology and its superior, synthetic base oils. (DLA) significantly increases Metal Surface Durability with reduced co-efficiency of friction which improves oil film strength to dramatically reduce friction. This translates into more horsepower and torque, improved fuel economy and reduced wear, heat etc.

#### **Q: What kind of performance gains can be expected?**

##### Typical performance gains:

- Horsepower and torque increases of up to 4%.
- Fuel economy improvements of up to 5% or more.
- Reductions in heat of up to 15%.
- Reductions in wear of up to 80%.

Performance gains will vary depending on the type of vehicle, its condition and the way it's driven.

#### **Q: Are SynMax Lubricants compatible with other motor oils?**

A: Yes, SynMax Performance lubricants are fully compatible with mineral or synthetic oils. No special procedures are necessary when switching to SynMax performance products.

#### **Q: Can I put SynMax Lubricants into my brand new car?**

A: Yes. SynMax currently offers many viscosity grades of street and heavy duty performance motor oils. To allow for proper break-in of the engine, SynMax recommends waiting until the manufacturer's first scheduled oil change or a minimum of 1,000 miles in new gasoline engines. Allow 8,000 to 10,000 miles before using SynMax in diesel engines.

#### **Q: How often should I change SynMax in my passenger car?**

SynMax recommends following the manufacturer's maintenance intervals while the vehicle is under factory warranty. In clean engines that are no longer under warranty, oil change intervals may be extended up to every 7,000+ miles or annually, whichever comes first. Oil filter changes should be done as recommended by the filter's manufacturer and oil should be topped off as needed.

In dirty engines or extreme use condition, SynMax recommends the standard 4,000 - 6,000 mile oil and filter change interval until the engine oiling system is clean and free of deposits left by lower quality oils and / or poor maintenance or mechanical problems. This will allow time to gradually remove existing deposits without overloading the oiling system. Mechanical problems such as fuel dilution, coolant leaks into the crankcase, poor air filtration and / or failure to maintain proper oil level are all detrimental factors to the service life of any engine oil. Any one of these factors can significantly shorten the useful service life of any oil.



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#### **Q: Will synthetic oil cause my modern engine to leak?**

A: Properly formulated synthetic oils in modern designed engines will generally not cause an engine oil leak. Synthetic oils possess a higher degree of natural solvency from a chemical molecule called "Ester", which can clean and remove deposits left by previous oils. Modern vehicles have special designed seals to handle the newer synthetic oils. The removal of extensive oil deposits can expose marginal or damaged oil seals, which may then leak. If an engine currently has excessive oil consumption (i.e. greater than 1 quart / 1,000 miles) the recommended course of action is to solve the oil consumption problem before switching to a synthetic.

#### **Q: Will synthetic oil cause my Classic - older engine to leak?**

A: Generally, Yes – Synthetic oils possess a higher degree of natural solvency from a chemical molecule called "Ester", which can clean and remove deposits left by previous oils. Further, older designed motors have seals materials made out of rubber. Rubber is not compatible with synthetic Esters – which will cause seals to become dry, brittle and fail. The removal of extensive oil deposits can expose marginal or damaged oil seals, which may then leak. For your older or classic type motor, it is suggested to use SynMax Classic Hot Rod motor Oil – which has 100% petroleum base oils with complete compatibility with older rubber material seals.

#### **Q: Should I use an oil additive with SynMax Performance Lubricants?**

No. We strongly recommend against using any oil additives as do most automotive manufacturers. SynMax engine oils are formulated with a fine balance of additives (improved metal surface technology, anti-wear, anti-foam, corrosion inhibitors, detergent / dispersants, oxidation inhibitors), and more is not necessarily better. The use of an oil additive could upset the balance resulting in reduced performance.

#### **Q: Is SynMax synthetic motor oil?**

A: SynMax synthetic motor oils are composed of a formulation of synthetic base oils and proprietary additives including exclusive Diamond Like Additive™ (DLA) Technology not found in any other motor oil

#### **Q: Does SynMax maintain its Blue color after it's put into service?**

A: No. Special dye is used to color the oil and dissipates shortly after being put into service.

#### **Q: Can SynMax Motor Oil be used in a rotary engine?**

A: Yes. A rotary engine is a modified four-cycle engine that recommends the use of motor oil for street applications. In a rotary engine, motor oil lubricates the eccentric shaft bearings, thrust needle bearings and rotor bearings (similar to a crank and rod bearing of a piston engine). Motor oil also is injected into the combustion chambers to lubricate the apex seals, corner seals, and side seals, all of which helps to create the sealing mechanism (the equivalent job of the piston rings). SynMax provides outstanding protection for the e-shaft, rotor bearings and thrust bearings and is suitable for the oil injection system as it has proven to run clean and is an excellent choice for rotary apex, corner and side seals.



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**Q: I hear that synthetic is ‘thinner or lighter’ oil. Is there a greater possibility that the oil will leak between the seals?**

A: No. If an engine’s sealing surfaces are in good condition, synthetic oil should not cause any leakage. However, if an engine has marginal quality and worn seals, there is a possibility seals will leak. Synthetic motor oil has a lighter gravity in design than mineral oils, yet improved viscosity to that of a conventional mineral motor oils. At low pour point temperatures synthetics will not “thicken” (easier winter cranking) and will not thin out as quickly at higher operating temperatures (better oil film at higher rpm).

**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.

**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: 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.



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#### 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.

#### Q: In general, what oil should I choose for my automotive, commercial or racing application?

A: as a general rule: the simplest way to select motor oil is to follow the model of good, better, best:

**GOOD** — Mineral-based (Petroleum) – regular type motor oils are the cheapest to produce and most widely available. Typically use standard additive packages that provide minimum levels of performance and protection.

**BETTER** — Synthetic motor oils — (man-made and/or highly refined oils) (normally a blend of Group III & IV) are more expensive than mineral-based oils and widely available. Performance advantages come predominantly from the synthetic design advantage. Regular synthetic oils typically use the same additive packages found in mineral-based oils. They have a longer service life and offer some improvements in protection.

**BEST** — High performance specialty synthetic motor oils have the most technologically advanced formulations. Specialty synthetic motor oils significantly outperform mineral-based or regular synthetic motor oils. Price is about the same as standard synthetic motor oil. These specialty synthetic motor oils primarily differ in their selected use of more advanced, proprietary additive technologies.

This might help: Older used car with little life left in it, stay with mineral-based motor oil. For a car you plan to keep for a few years and want better performance and fuel mileage, you should at upgrade to a specialty synthetic motor oil. To get the most performance out of your car, truck or RV, or to protect a vehicle you really care about and want to last, upgrade to a high performance motor oil.



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#### Q: What are the basic elements of regular and performance motor oils?

A: There are two (2) main components that determine how well motor oil will perform. The main component is the base oil; other is the combination of chemicals (additives) that are formulated into the base oil.

**1. Base Oils:** There are two primary types of base oils; mineral (petroleum) and synthetic. Mineral oils (Group II & III) are by-products of refined crude oil. Refining, and finishing processes, reduces unwanted impurities whose molecules are different shapes and sizes. Synthetic (normally PAO/ Group IV) oils are man-made compounds whose molecules are uniform in size and shape; consequently, synthetic oils have less friction and performs better than mineral (petroleum) oils.

Because of these performance advantages, in recent years, there has been sizable growth in the use of synthetic oils. In fact, synthetic oils are often the OEM factory recommendation in many new performance and luxury cars such as Mercedes Benz, Rolls Royce, BMW, Porsche, Ferrari, Corvette, Viper and many others.

**2. Additives:** Further formulated with the base oil selected, chemicals (additives) must be added to motor oil to help it do its job. Typical additives include metal surface enhancement (Diamond Like Additive Technology), anti-wear (Zinc/ phosphorus), detergents (Calcium & Magnesium) to reduce the formation and cleansing of residue, anti-foam to deter absorption of air and dirt and antioxidants.

Additives are typically 15% to 20% percent of motor oil and greatly impact a lubricant's performance (much more than the base oil). Example; a mineral-based (petroleum) motor oil with a premium additive package will easily out perform a synthetic motor oil with average additive package. Remember: Premium additive technologies cost more to produce and performance is the ultimate measure of an additive's package quality.

#### 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.



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**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 it 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.

**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. In general over 100,000 miles use 10W30 instead of 5W30.