



SynMax Performance Lubricants

13750 Metric Drive, Roscoe, IL. 61073 (815) 389-9999 www.synmaxperformancelubricants.com

Q & A TECHNICAL BULLETIN **5W50 vs. 20W50 and DIESEL MOTOR OILS IN RACING APPLICATIONS**

Q: Why use Competition Racing oil instead of Street Automotive or Diesel Truck Oil oil?

A: Street car oils are designed to protect production engines that run in everyday use about 2,000 RPM's over an extended period of time (5,000 + miles). Racing engines experience the exact opposite, high temperatures, high rpm (9000+ RPM's) extreme conditions for 500 miles. To meet these extreme needs, Titan has custom blended specialty oil product for both the Street and Competition Racing Requirements.

Q: What is the purpose of racing oil?

A: You wouldn't use original factory parts in a professional racing engine, and the same goes for oil. Competition Racing oils contain high levels of anti-wear and friction reducing additives that the API won't allow in modern street car oils. That's why engine builders that use street oils in Racing engines, have seen increased valve-train wear, especially in flat-tappet engines within the last few years.

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

A: Street designed oils have about ½ the anti-wear Zinc/ Phosphorus (ZDDP) additives (800 ppm) than competition only race oils (1500-2000 ppm).



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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 update and change 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 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 the beginning of 2008 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.

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 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 Oil As of 2007 only have 1200 ppm of ZDDP protection.

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 is still 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).



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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.

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.

Q: If the additives were equal what is the difference between using a 20W50 vs. 5W50 Racing oils?

A: If the racing additive formulations were equal (High Zinc, Moly, Diamond Like Additive Technology etc.), then the difference would be the base oil design and performance. Most 20W50 oils would be 100% Petroleum a combination of (Group II & Group III base oils) or Synthetic Blend or Synthetic Plus a combination of (80% Group II & III and 20% Group IV PAO) – that would work fine for short term durations needs like street racing. 5W50 Racing Oils has a combination (50% Group III and 50% Group IV PAO). This Full Synthetic combination has superior viscosity durability over the 20W50. That means the oil will warm up quicker, flow easier into the smallest places, hold temperature and viscosity stability. In the long run, 20W50 base oils will break down quicker than 5W50.

Q: I notice my cam bearings at rebuild have greater wear with the 20W50 than with the 5W50.

A: Yes, that will happen – even through the additive packages would be equal – the improved oil stability of a Higher Group IV PAO – especially in the smallest places like a cam bearing, roller bearing, valve train etc. will make a difference.



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Q: My engine builder has larger machining clearances for a 20W50 should I go to the 5W50?

A: First, always consult your engine builder who machines the clearances of the motor. Remember the 100% Petroleum or Synthetic Blend / Plus has a heavier gravity base oil (Group II & III). 5W50 has a lighter gravity – to keep the bearing area clearances filled with the hydrodynamic oil film – even though there is a trade off for performance and long term durability, it is always the safe bet to keep that oil film area filled best as possible.

Q: I have higher oil pressure when the oil is cold on the 20W50 vs. the 5W50 – but the oil pressure stays stronger with the 5W50 what is best?

A: Remember 20W50 petroleum or synthetic blends will push itself through even a commercial truck oil filter, if you use a same design black Wix Racing oil filter – you will gain that initial 4-5 psi of oil pressure at the start up and cold operations. The 20W50 towards the end of the race session will begin to break down (slightly loose oil pressure) where the 5W50 has greater stability.

Q: Does 20W50 (Heavier Gravity) and 5W50 (Lighter Gravity) function the same SAE when hot?

A: Yes, at 210F both oils will operate very equal SAE viscosity strength.

Q: It seems the 5W50 Full synthetic has stability advantage, if my motor has miles, is a little worn in the valve guides and compression rings etc and I want to squeeze a little more to race mile to finish the season and I am currently using the 20W50 should I switch?

A: Probably not, over time of extreme use your motor has worn and increased the tolerance clearances, it is more important to keep those tolerances filled with a heavier gravity oil. This is especially important when under deceleration the oil could “suck” through the valve guides and piston rings etc. Remember, 20W50 is a heavier gravity and will stick better in older conditions. 5W50 full synthetic and being a lighter gravity will flow through every small area found.

Q: How often should I change my racing oil and why?

A: Short Track or Normal use is no more than 3 racing sessions or 200 miles etc. The problem you want to avoid is excessive fuel delusion and contaminates (carbon, dirt etc) which will break down the oil. It is hard for even the most premium additive packages to work 100% when the additives are fighting the excessive fuel and contaminations. Remember: It is not worth sacrificing expensive internal parts and bearing durability to save a few dollars for one more race weekend.