PDMCC

Pendle District Model Car Club

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Setup Guide

Understanding Nitro Fuel

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Model engine "glow" fuel is made up of three key elements: methanol, oil and nitro methane. Many fuel manufacturers include other additives that are designed to solve any number of common problems that may occur with our fuel. But for now, let's only address the most common elements of the fuel and how you can care for your fuel to keep it fresh and stop it from going "bad." These steps will ultimately make your model engine operations easier.

Droplets of water inside a fuel jug will contaminate the fuel. But there are ways to combat moisture.

Why would fuel go "bad"?

The largest portion of the fuel is methanol (alcohol). Methanol is hygroscopic; it attracts moisture. This can cause your fuel to be contaminated with water, which will cause poor engine performance. Additionally, the UV rays in sunlight will eventually break down the nitro methane if the fuel jug is stored in sunlight for long periods of time.

How can you tell when your fuel has gone "bad"?

The first indications will generally be the inability to start the engines at previously run needle-valve settings. Another clue might be that the engine has very poor idle, runs but bogs down tremendously during run up and/or will not attain the same RPMs you are used to.

How do I keep my fuel fresh?

If you have the opportunity, look for someone at a flying field on a sunny day who has a jug of fuel that is only ¼ full. What you may notice is that there are droplets attached to the top and sides of the fuel. This is the moisture in the air that is condensing inside

the jug because of the greenhouse effect of the semi-translucent plastic jug. One way to overcome the greenhouse effect is to store your fuel in a metal can.

You can also combat the effects of the moisture in the air by squeezing all the extra air from your fuel container at the end of the day or transferring your fuel into smaller containers as the level of the fuel is reduced in your gallon jug. Many pilots will invest in half-gallon or quart-size containers and only bring that amount of fuel to the field on any given day. This allows their main supply of fuel to stay at home in a controlled storage environment, virtually insuring problem-free fuel.

Additional Fuel Information

If you read the R/C car magazines, engine instruction manuals or talk to local racers, you'll likely find conflicting information about car fuels. The main controversy seems to focus on how much and what type of oil is needed for a car fuel.

Here the straight scoop based on over 15 years of experience that includes working closely with engine manufactures, industry experts, top-level racers and the results of testing literally hundreds of formulas in all types of car engines and conditions.

Why Not Airplane Fuel

Car engines operate in a totally different environment than do airplane engines. Airplane engines spend a great deal of their running life at full rpm, they have a constant airflow from the prop to aid in cooling and instant throttle response and acceleration is not as critical as with a car engine.

Car engines spend most of their life accelerating from one corner to the next and are seldom at full RPM for more than a few seconds. They rely on an oversize heat sink head to dissipate combustion heat and racers actually tune car engines based on throttle response.

Fuel designed for airplanes typically have from 15 to 20% oil. While the manufactures that truly understand the requirements of car engines typically put 8 to 12% oil in their car fuel.

Why 8% to 12% Oil

Using high oil content fuels (above 15%) in gas car engines won't provide improved engine life, as some would expect. Through extensive testing we've discovered the point of diminishing return as far as oil content to engine life is actually around 8% for most car engines. In other words any more oil than 8% in the fuel does noting to improve the life of a car engine. In fact the secondary effects of high oil content fuels can actually cause engine damage by encouraging over lean runs. Here's how.

Using high oil content fuel causes a car engine to be unresponsive during acceleration

acting as if the engine were running rich. Typically when using high oil content fuel, in order to get crisp acceleration and response, an engine will need to be adjusted overly lean. In addition the high oil content prevents lean bog when an engine is over-leaned thus allowing the engine to run at this lean setting without the customary telltale lean bog warning letting you know the engine is overheating.

In summary, high oil content fuels don't give added protection. The point of diminishing return from a protection standpoint in a gas car application is about 8% oil depending on the oil type and engine. Anymore oil than this doesn't offer added protection and has potential secondary effects that reduce performance and can actually cause you to over lean your engine in an attempt to get crisp throttle response and acceleration. Do yourself a favor and follow these two rules:

Rule #1- Always use a high quality fresh fuel designed specifically for gas car use that has between 8% and 12% oil preferably with at least some castor in it. (We recommend Blue Thunder Sport or Race Formula)

Rule #2 - Don't use airplane fuels or any other type of fuels that have over 15% oil in your gas car engine.