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CENTRAL NEWS[®]

Seasons Greetings

Warning: there is no fake news in this Newspaper. Every sales number represents a true effort in sales, order processing, manufacturing, and shipping. We make no apologies for achieving our goals of another national yearly sales gain and providing superior products and good will to our customers. We can't exaggerate enough about the importance of our team's efforts and the products and services our customers provide for our Nation and the World.

Unlike some modern scholars, we have not changed the name of "Christmas" and why it is so important to mankind. Our heroes get up and work hard every day and don't make excuses just because there are occasional "bumps" in the road. We have learned that falling and failing are necessary before we can bounce back and achieve even higher heights and goals. Yes, we live in the real world where the generosity of this Holiday Season "matters".

Sometimes we take things for granted because we are human, but because we are also spiritual, we also feel the warmth of friendships and family that Christmas provides. What a wonderful life. What a wonderful Company. What a wonderful opportunity to share in thanks for all we have achieved together. Merry Christmas and Happy New Year!

Base Oils

The theory goes that our fossil fuels were formed when vegetation and dinosaurs became buried due to catastrophe or a shift in the Earth's tectonic plates. Then, after years of heat and pressure, they became the fossil fuels we have today. Land based vegetation became coal, and ocean based vegetation became petroleum.

The vegetation found in shallow water is different than the vegetation found in deep water, which resulted in different types of crude oil. Paraffin crude oil, like found in the Pennsylvania fields, is from shallow water vegetation. Asphaltic or naphthenic crude oil, such as in Venezuela, is from deep water vegetation. The vast majority of crude oils are a mixture of asphaltic and paraffinic types.

Petroleum is distilled into its various components, which are primarily different types of fuel--gasoline, diesel fuel, kerosene, etc. It varies with the crude source, but typically crude oil yields less than one percent lubricating oil (base oil, base stock).

Base oil, refined from paraffinic crude, is preferred for lubricants because of its superior heat resistance, film strength, and higher viscosity index.

Viscosity index or VI is a measure still used today that is rooted in the difference between asphalt and paraffin base oil. VI measures the change in viscosity with temperature. A higher VI indicates an oil losing less viscosity as it is heated than an oil with lower VI.

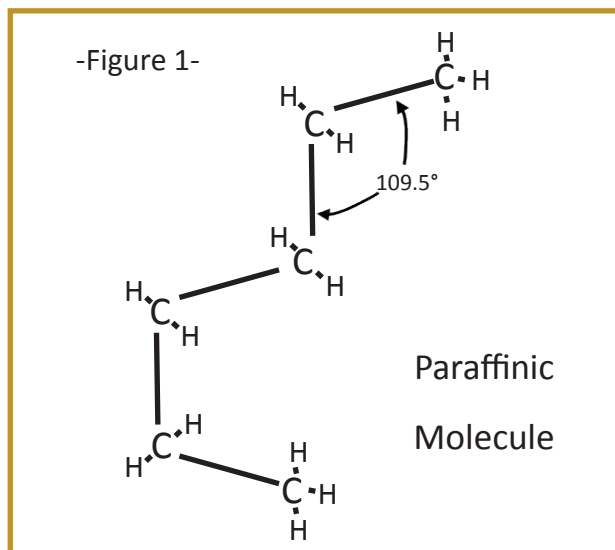
The scale was developed many years ago by taking the best paraffinic oil from Pennsylvania, measuring the viscosity loss between 100° F and 210° F, and assigning it a viscosity index of 100. Then they took the same measurements on the

worst asphaltic base oil from California and assigned it a zero. Back in the day, a VI of 60 would tell you that the oil was roughly 60% paraffinic and 40% asphaltic.

VI is still an important measurement, but refining technique and chemical additives make viscosity indices above 100 prevalent. Multi-grade, or multi-viscosity, oils always have a VI above 100, as do synthetic hydrocarbon oils.

You cannot say the word "Paraffin" without people thinking of the wax grandma used to seal her preserves. Some people will question if paraffin base oil leads to a waxy sludge. They are unaware that the wax has been removed and the alternative is asphalt base oil. There is not any more wax in paraffin base oil than there is asphalt in asphaltic base oil.

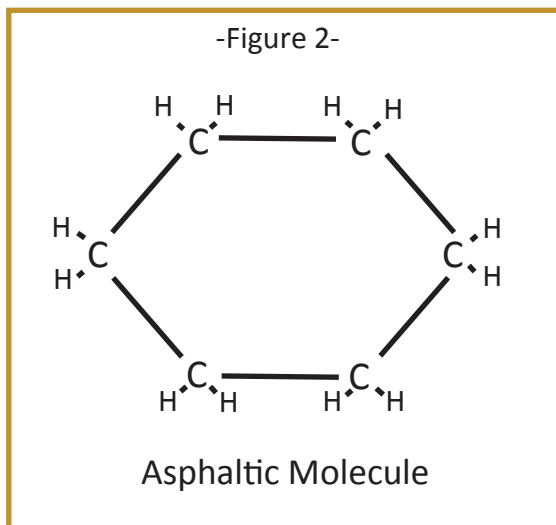
Petroleum is made of hydrocarbons, meaning that their molecules are primarily hydrogen and carbon atoms. Paraffinic and naphthenic base oils are also hydrocarbons, but the carbon and hydrogen atoms are arranged differently (See Figures 1 & 2)



Paraffin base molecules are described as carbon chains, which are a more stable structure. Naphthenic base oil molecules are described as carbon rings because the ends are joined together.

The bond between carbon atoms is strongest at a 109 ½ degree angle. Since they are three dimensional, both paraffinic and naphthenic molecules are able to kink and oscillate to maintain their ideal bonding angles.

When heat is added, the molecules become excited and flail about. Since the ends of the naphthenic molecule are tied together, the gyrations caused by heat strain the bonding angles until one of the bonds breaks. When it does, the broken molecule is very unstable and will rapidly combine with other molecules that eventually form sludge and varnish. The paraffinic molecule, with its ends free to move, is able to rotate and maintain those ideal bonding angles long after the naphthenic molecule has broken.



With its inherent weakness, you cannot meet the requirements of a modern engine oil or transmission fluid with naphthenic base oil. However, naphthenic base oils are still used in specialty applications, like transformer oil, and cheap hydraulic oils, gear lubes, and greases.

The other major factor that determines the quality of mineral base oils is refining. Perhaps we

should start with defining “mineral oil” because it is not clear to most. It simply means it came out of the ground, like iron or molybdenum or other minerals.

Refining has been a real game changer. Advanced refining techniques have permitted refiners to use really low quality asphaltic crude and make a decent product. Where paraffin base or naphthenic base used to characterize base oil type, base oils are now defined by API base oil group. The five groups are defined as follows.

API Base Oil Categories			
Group	Sulfur, Mass %	Saturates, Mass %	Viscosity Index
I	>0.03	<90	≥80 to <120
II	≤0.03	≥90	≥80 to <120
III	≤0.03	≥90	≥120
IV	Polyalphaolefins (PAOs)		
V	All base oils not included in groups I to IV		

Progressing from Group I to Group III requires the oil to be more severely refined. Hydrotreating and hydrocracking removes impurities, including sulfur, and saturates the molecules with hydrogen. The molecules in Figure 1 are “saturated” because no more hydrogen atoms will fit. With low levels of refining, some hydrogen atoms are missing, making the molecules less stable. Saturating the molecules with hydrogen makes them more stable. However, hydroprocessing removes more “impurities” than sulfur and changes other properties.

You can probably relate to hydrogenation through processed foods. Oil separates from natural peanut butter. Hydrogenating the oil makes it more stable and prevents separation, but is harder to digest because it is more stable. Tran-fats are hydrogenated vegetable oils. They are more stable and do not burn as easily as raw vegetable oils when frying, but your body has trouble breaking them down for the same reason.

Group I is traditionally refined. Therefore, the quality of the crude oil it is refined from is a big influence on its quality, with paraffin base crude producing the best quality base oil.

Group II is hydroprocessed and the most plentiful group in North America.

Group III is more severely hydroprocessed than Group II. The majority of “synthetic” oil sold is Group III, even though it is refined from petroleum. Wax is removed from Group I oils. Wax is not removed from Group II or Group III oils, but the wax molecules are broken down into branched chain paraffins. Even though wax is a small portion of the base oil, the courts determined the molecular change to the wax molecules is a step in synthesis, so lubricants made with it can be called “synthetic.”

Group IV is a synthetic by any standard because it is built up in a reactor. They are called polyalphaolefins (PAO), which are synthetic

hydrocarbons. Their molecules have a chain structure, like that of paraffin base oils, but the chains are more uniform in length and purity is higher.

Group V is a catch-all for base oils that do not fit into the other four groups. They range from synthetic esters to vegetable based oils to naphthenic oils with viscosity indices too low to qualify for Group I.

So, which base oil does CenPeCo use? All of the above. It depends on what we are making. Solvency, surface tension, pressure-viscosity stability, and other differences between the Groups affect the best choice for a given application, and there is also a great deal of variation between oils within the same Group. For example, synthetic base oils make sense for thin oils, or cold temperature starting. For most of our heavy duty products, we prefer our paraffin base oil’s superior protection from wear.

Missouri Bans 303 Oil

By: Blaine Ballentine

The state of Missouri has banned tractor hydraulic oils that claim only “303.” John Deere’s 303 specification is 57 years old, and the parts are no longer available to run the test.

During the summer, the Missouri Department of Weights, Measures and Consumer Protection tested 14 different brands of oil claiming only 303 on the label. All 14 failed to meet current tractor specifications. They were found to be so far underperforming that they are likely to cause damage, which is why such oils are banned.

It seems the old specification marketing strategy is also being used to sell ATF to unwary buyers. Missouri does not allow 11 brands of

ATF to be sold within its borders. Ten of the 11 are labeled “ATF Type A.” Type A transmission fluid was recommended for General Motors automatic transmissions prior to Dexron, which was released in 1968.

Finally, the Missouri Weights and Measurers people tested some motor oils and banned 34 of them. Some were banned for under-filling, others were banned for not meeting viscosity requirements of the grade on the label, and still others were found to contain used motor oil.

One would expect the really low priced off-brand oil at the dollar store or convenience store to be among the banned products. However, 303 oils are sold at farm stores, parts stores, and other reputable outlets, and in some markets, they are the market leaders, but not in Missouri.