

ENGINE OIL 201



Ralph Seekins

Now that we understand the functions of engine oil (see Engine Oil 101 at seekins.com in the Column Archive tab), let's talk about the difference between regular motor oils and synthetic motor oils and then look at some of their advantages and disadvantages.

Regular (natural) engine oil is processed at a refinery out of crude oil. The thinner portions of the crude are used to make things like engine oils, gasoline and other fuels. The thicker portions end up as products like asphalt or tars. The refining process leaves certain contaminants like sulfur and natural occurring paraffin (wax) in the final "base stock" used to manufacture engine oils.

The engine oil base stock is processed into different thicknesses. The thicker the oil the slower it flows which basically means it has a higher viscosity. So, for example, SAE 30 oil is thicker and flows slower as temperatures decrease and coalesces at higher temperatures than SAE 10 oil. SAE 10 oil flows better at lower temperatures but thins out quicker at higher temperatures than SAE 30 oil. The SAE rating is printed on the bottle or can.

When you see a rating like 5W-30 on a bottle of oil, the W means the oil

passes a cold weather or winter specification. The oil pours at low temperatures as if it was SAE 5 oil but performs at 210°F like it was SAE 30 oil. To meet these wide or multi-viscosity ratings, the oil manufacturer puts in additives like Pour Point Depressants to keep the naturally occurring paraffin (wax) in the oil from thickening as fast in colder temperatures. And to make sure it doesn't thin out too much at 210°F, the companies add what are known as Viscosity Improving additives. So, a can of multi-viscosity oil is kind of an oil/chemical cocktail.

As the engine oil additives are subject to heat and/or heavy use, they begin to break down. This breakdown is a major cause of sludge build up and the breakdown also causes the oil to thin out faster at 210°F so that it doesn't protect the engine parts as well at high temperatures. So, in those cases, 5W-30 engine oil can degrade to 5W-20 or 5W-10. Not good. That's a good reason for more frequent oil changes.

Synthetic oils are created through a carefully controlled chemical process that produces a very uniform molecular composition that doesn't contain any of the contaminants that contribute to sludge buildup. That structure allows the synthetic oils to remain fluid at lower temperatures and to not thin out at higher temperatures and pressures. Thus, they can withstand heat and heavy use without breaking down. That's why you find many race cars and trucks using synthetic engine oils rather than mineral based engine oils.

The synthetic engine oil producers have done a better and better job of custom designing and producing synthetics that meet all the needs of the modern materials that are used in our present day engines. But – the drawback is they are expensive – often twice the price per quart as regular engine oil.

Then, there are synthetic blend motor oils. Some manufacturers take advantage of the fact that regular petroleum-based motor oils and synthetic oils are compatible and blend well together. By combining the two, the manufacturers can produce a synthetic blend that offers a lot of the benefits of the full synthetics and keep the price lower.

We recommend that our customers use the synthetic blend engine oil in Interior Alaska provided your vehicle's manufacturer authorizes its use. And, next week, in ENGINE OIL 301, I'll explain why we make that recommendation and talk about reasons for regular and timely oil changes.

Meanwhile, drive safely out there on our Interior Alaska roads.

Ralph Seekins has more than 40 years' experience in the automotive industry. He started as a mechanic, worked in sales, and for the past 33 years, has been the owner of Seekins Ford Lincoln Mercury. If you have an automotive question you'd like answered, forward it to ralphs@seekins.com.