

# ENGINE OIL 101



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Once again the question is raised regarding conventional engine oil versus synthetic engine oil for use in our Interior Alaska weather systems. What are the advantages (if any) for either type of engine lubricant? Are synthetics or synthetic blends worth the extra bucks? Let's take a look.

Probably the best place to start is to define what engine oil really does in the first place. What are its functions?

First, engine oil lubricates. It forms a slippery layer between the moving metal surfaces in a vehicle's engine that lets them slide past each other with no appreciable loss of power from friction. That thin film of oil also smoothes out the tiny hills and valleys found in any metal surface no matter how carefully machined those surfaces may be. So, the thin layer of engine oil keeps the moving parts from grinding together and destroying each other and also helps the engine perform at higher speeds and horsepower.

Next, oil cools the engine parts. Heat is generated from both the combustion process and the friction of parts moving across each other. The oil pump pumps oil through a series of passages where it is then pushed, sprayed or dripped across the engine's moving parts like the valve springs, rods, crankshaft, bearings, timing gears, camshaft and the underside of the pistons. The oil then carries the

heat away from these parts to the oil pan sump at the bottom of the engine. Once there, the heat is transferred to the surrounding air. Your vehicle may even have an extra engine oil cooler to help with this process if it is equipped to haul or pull heavy loads or to operate in extreme hot climates.

And then, oil cleans. Oil has the job of trapping and combating all the really nasty contaminants created by the engine's combustion process — things like soda, ash, acids or moisture. These elements can cause corrosion and, unless removed, will cause a lot of unnecessary wear inside the engine. Collecting and constantly running the oil through an oil filter removes harmful particles while the additives provide a chemical shield to reduce other combustion contaminants.

So, simply put, a good engine oil must lubricate, cool and clean.

Making it tougher on oil manufacturers, today's vehicle engines are smaller with higher output and have tighter clearances between their moving parts than the older models. Tighter clearances require higher fluidity at low temperatures. And smaller, higher output engines produce more heat and stress on engine oils. These factors demand engine oils with better low temperature fluidity so it gets to the critical moving parts quickly at start up and will also withstand higher temperatures without breaking down. Not simple.

With the above in mind, petroleum companies have worked hard to provide modern engine oils that reduce friction, withstand higher heat and better counteract internal combustion contaminants. As one

company recently put it, they "are striving for engine oils that provide low temperature fluidity (lower viscosity), higher boiling points for reduced evaporation, high temperature stability for reduced oxidation, greater lubricity (how slippery it is), higher fuel economy, better film strength and wear protection, greater water stability to combat moisture buildup and better detergent characteristics to counteract combustion contaminants (i.e., acids)." Frankly, the engine oil manufacturers are doing their job better than ever before.

So, what I highly recommend for our owners is that they use engine oil that lubricates, cools and cleans well in our very extreme sub-arctic environment. To do that, they need oil for their vehicle that will flow easily at temperatures down into the -30F or below ranges and that will still provide good lubrication at temperatures in excess of 250F.

Next week, in Engine Oil 201, we'll talk about how you can determine what kind of engine oil to use in your vehicle's engine to get maximum protection and performance.

*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](mailto:ralphs@seekins.com).*