

WHAT IS A SYNTHETIC MOTOR OIL?

The Differences Between AMSOIL Synthetic Oils and Conventional Oils

Engines, transmissions and other components contain hundreds of moving parts. Though the metal surfaces of these parts look very smooth, they are actually filled with microscopic peaks and valleys. When a peak on one surface touches its mating surface, it causes damage. The damage may be abrasive, like scratching, or adhesive, in which a portion of one surface sticks to its mating surface, leaving a pit in the original and a lump on the second. When the damage caused by contact is severe, it causes failure, which is usually a sudden event. When it is mild, it causes wear, a long-term event. Wear cannot be eliminated altogether, but it can be slowed through proper lubrication. Failure prevention and wear reduction are the primary functions of lubrication.

Wear Reduction

Lubricants inhibit friction and wear by providing a film that physically separates surfaces so that when they move, the mating surfaces don't touch. The lubricant's viscosity, technically its resistance to flow, and often thought of as its "thickness," provides the lubricant's ability to separate surfaces. Viscosity is the single most important characteristic of a lubricant.

Cooling

Most lubricants also cool the components they serve. For example, the crankshaft, main and connecting rod bearings, camshaft, camshaft bearings, timing gears, pistons and lower engine components depend on motor oil for cooling. Lubricants pick up heat from components and carry it to an area, such as the engine's crankcase, where the heat transfers to the surrounding air.

Other

Lubricants also seal, clean and perform other functions.

Conventional vs. AMSOIL Synthetic Lubricants

Conventional lubricants are refined from crude oil. Refining is a process of physically separating light from heavy oil fractions. Crude oil is a natural substance. It contains millions of different

kinds of molecules. Many are similar in weight but dissimilar in structure. Because refining separates products by weight, it groups molecules of similar weight and dissimilar structure, so refined lubricants contain a wide assortment of molecules.

However, not all of those molecules are beneficial to the lubrication process. Some of the molecules found in refined lubricants are detrimental to the lubricated system or to the lubricant itself. For example, paraffin, a common refined lubricant component, causes refined lubricants to thicken and flow poorly in cold temperatures. Some refined lubricant molecules also may contain sulfur, nitrogen and oxygen, which act as contaminants and invite the formation of sludge and other by-products of lubricant breakdown.

AMSOIL synthetic lubricants are chemically engineered to form pure lubricants. Synthetic lubricants contain no contaminants or molecules that "don't pull their own weight." Because synthetics contain only smooth lubricating molecules, they slip easily across one another. On the other hand, the potpourri of jagged, irregular and odd-shaped molecules of refined lubricants don't slip quite so easily. The ease with which lubricant molecules slip over one another affects the lube's ability to reduce friction, which in turn, affects wear

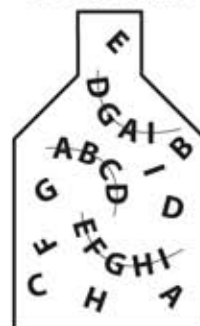
control, heat control and fuel efficiency. AMSOIL synthetics are superior.

Uniformity also helps synthetics resist thinning in heat and thickening in cold, which helps them protect better over a system's operating temperature range. Synthetic lubricants are designable; they may be made to fulfill virtually every lubricating need.

Does Conventional Oil Offer Any Advantage?

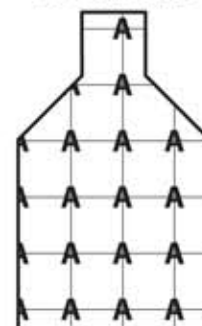
Petroleum oils have met our lubrication needs for more than 100 years. They provide adequate lubrication and protection in many applications and they usually cost less to purchase than synthetics. However, because synthetic lubricants may be used for longer drain intervals than conventional lubes, and components lubricated with synthetics tend to require fewer repairs than those lubricated with conventional lubes, people who use synthetics often end up spending less on lubrication and vehicle maintenance than those who use conventional lubricants. The savings to industrial and commercial users are well-documented by AMSOIL and others. AMSOIL synthetic motor oils are the finest lubricants available today. Because AMSOIL uses only the highest-quality base stocks and additive chemicals, AMSOIL synthetic motor oils provide maximum protection for virtually every application.

CONVENTIONAL PETROLEUM LUBRICANT



Molecular Inconsistency

SYNTHETIC ENGINEERED LUBRICANT



Molecular Uniformity