# Grease consists of base oils, additives and thickener.

Just like fluid lubricants, each component offers a unique set of benefits.

**Dan Peterson** | VICE PRESIDENT, TECHNICAL DEVELOPMENT

For many, grease is a mysterious substance. People know it's there and that it's protecting their equipment's components, but questions remain on how it works.

It is important to first understand how grease differs from standard lubricating oils. Grease is made from many of the same components common to fluid lubricants, such as base oils, additives and viscosity modifiers; however, there is one important component that distinguishes grease from its lubricant counterparts: thickener. Thickeners make grease semi-solid or solid, so it can protect applications subjected to heavy loads, high temperatures and high impact.

Thickeners are used to give grease a consistent, gel-like structure that adheres to equipment surfaces. They can be made from a variety of substances, but typically fall into one of three categories: soap, non-soap or polymer dispersion. The chemical structure of each of these thickeners is complex and differs greatly depending on the type of thickener; for the sake of this article, we'll stick to the basics.

Soap greases are either simple or complex and are comprised of a variety of elements. For example, lithium is a simple soap-based grease. Lithium is the most widely used and versatile of the soap-based products; it accounts for at least 50 percent of domestic grease production. Lithium-based greases are often used in automotive chassis and wheel bearings, or as a general industrial grease. They are smooth and buttery in appearance and have a medium dropping point (up to 400°F). The dropping point is the temperature at which the base oil separates from the thickener and the grease can no longer adequately protect components. The higher the dropping point, the better protection the grease provides at higher temperatures.

Complex soap-based thickeners were developed to withstand higher operating temperatures in modern equipment. Aluminum-complex greases are a good example; they are often used in steel mills and rolling and plain bearings. They are typically smooth and slightly gel-like in appearance. Aluminum-complex greases also have high dropping points (above 500°F) and are resistant to water and softening, which enables them to provide protection in a variety of extreme environments. They are shear stable and resistant to washout; however, they often have poor rust and corrosion resistance.

Calcium sulfonate is a non-soap-based thickener. AMSOIL uses calcium sulfonate thickener in its Synthetic Polymeric Off-Road Grease, Multi-Purpose Grease and Water-Resistant Grease. Calcium sulfonate thickeners offer enhanced performance benefits by improving the performance of additives already contained in the grease for better wear protection, water-washout resistance, extreme-pressure performance and dropping point. This type of grease is a good candidate for off-road automotive applications and steel or paper mills where high temperatures and shock loading are common.

Polyurea non-soap-based thickeners are the most widely used non-soap thickener. They offer good oxidation resistance and thermal stability, which makes them very durable and ideal for use in sealed-for-life bearings.

The third type of thickener is a polymer dispersion thickener, sometimes referred to as a "specialty" thickener. In a polymer dispersion or specialty thickener, polymers are mixed with the base oil to produce a thickening effect. Silica is used as a thickening agent in some specialty greases and the result is a high-temperature, water-resistant grease. Carbon black and pigments are also used as specialty thickeners; however, they tend to have a consistency more similar to a very viscous oil as opposed to the more solid, stiff-like consistency of a grease.

It is important to remember the role grease plays in lubrication and the performance benefits it provides. Although many people have limited understanding of its finer points, grease is a necessary lubricant that offers extreme-pressure protection in numerous applications that couldn't perform properly without it. ■

# From the President's Desk

There was a time when AMSOIL INC. was the only player at the table holding a synthetic motor oil card. We were an unconventional newcomer to a totally conventional club. We were the maverick. Our new oil threatened to shake up the industry, and there was absolutely no support for a 25,000-mile oil drain recommendation. Beyond that, our direct sales approach to marketing motor oil had never been seen before. To say we faced obstacles is a major understatement.

Despite all the push-back, we made it work. Our Dealers found AMSOIL customers. People were drawn to the quality of the product. They cared about their vehicles and recognized that our oil could have significant impact on the performance and longevity of equipment. They were willing to pay for quality. Others appreciated the extended-drain potential. It was convenient, cost-effective and lessened the environmental burden.

In virtually all cases, these AMSOIL customers were do-it-yourselfers. They changed their own oil, and in many cases the exceptional performance they received from AMSOIL motor oil carried over to other applications as our product line continued to grow.

This all holds true today. A great deal of our marketing effort is directed at the do-it-yourself audience. We advertise heavily in power sports magazines, including those dedicated to the off-road, motorcycle, marine and snowmobile markets. We dovetail that with our racing program, and our event sponsorships are focused on do-it-yourselfers, as well. We target diesel pick-up owners, engine builders, classic car owners and a whole host of specialty groups that are committed to performance and dedicated to maintenance. These do-it-yourself customers fit our profile perfectly, and Dealers continue to find great success in these markets.

And while the do-it-yourself market remains tailor-made for AMSOIL and continues to offer tremendous potential, that is not to say the landscape isn't evolving. Today's sophisticated engine designs and busy lifestyles are forcing people from their own garages to the garages of their local installers. Fewer people are changing their own oil, and penetrating the installer market should be a primary focus for Dealers. Every Dealer should have at least one installer to send his or her do-it-for-me customers to. Preferred Customers, too, may see potential in this market and view it as an opportunity to jump-start their own AMSOIL businesses.

The company is well-positioned for the challenge. Our XL and OE motor oils were introduced specifically to break down the installer market barriers. Gone now are the API warranty concerns and drain interval hurdles. The oils are priced competitively with other synthetic oils and offer generous profit margins for installers. They also cover the full range of oil change intervals recommended by auto manufacturers and satisfy the increased demands for customer convenience.

We have a lot of work to do, and with the determination of our Dealers I am confident we will get the job done. We introduced the world to synthetic automobile oil. We broke through the once-impenetrable 3,000-mile drain interval. We led the way in improving the quality of lubrication throughout the industry. And now it won't be long before AMSOIL motor oil is the synthetic oil of choice for installers from coast-to-coast.

**A.J. "Al" Amatuzio**
President and CEO, AMSOIL INC.