

# How to Choose an Industrial Lubricant.

As manufacturers continue to push the limits of machine performance to increase productivity and reduce downtime for greater customer satisfaction, suppliers are called upon to offer increasingly creative solutions. Interestingly, one of the most effective ways to achieve these performance levels is also one of the simplest and most frequently overlooked: proper lubrication.

Choosing the right lubricant can be an especially tricky task. Not only do industrial lubricants come in many varieties and formulations, but many industries also have their own industry regulations and standards. As a result, choosing the proper lubricant for an application is critical. Before making a selection, it is advisable to consult a supplier who can help you answer key questions about your application.

## Special Considerations for Your Applications

For decades, lubricant suppliers have been developing and manufacturing specialty lubricants tailored to the requirements of industrial applications. There are general technical requirements that all lubricants must meet, such as reducing friction and wear, protecting against corrosion, dissipating heat and providing a sealing effect. But, depending on the operating conditions and manufacturing processes in your plant, lubricants may also be expected to provide a host of additional properties. With so many variables, choosing the right lubricant supplier is just as important as choosing the right lubricant.

## General Purpose or Synthetic Lubricants?

One of the first questions your supplier should ask is if your equipment's lubrication will be maintained at regular intervals or if it must be "lubricated for life," as this will help determine the use of a general purpose lubricant or a synthetic specialty lubricant.

Oils, greases, pastes and waxes represent the most common categories of industrial lubricants. Typically, an oil lubricant contains 95 percent base oil (most often mineral oils) and 5 percent additives. Greases consist of lubricating base oils that are mixed with a soap to form a solid structure. Pastes contain base oils, additives and solid lubricant particles. Finally, lubricating waxes are comprised of synthetic hydrocarbons, water and an emulsifying agent, which becomes fluid when a certain temperature level is exceeded.

The majority of oil lubricants, including many motor oils, are mineral oil distillates of crude oil (petroleum), while synthetic oil lubricants are also used. Synthetic oils, such as polyalphaolefins (PAOs) or synthetic esters are produced artificially from other compounds. Because of this, the composition is quite different from petroleum oil. Their higher purity and uniformity provide for several enhanced properties, such as



viscosity index, oxidation stability and color. There are also semi-synthetic oils (also called synthetic blends), which are a blend of mineral and synthetic oil. This class of lubricants provides many of the benefits of synthetic oil at a fraction of the cost.

When synthetic oil is selected, it is generally to provide mechanical and chemical properties superior to those found in traditional mineral oils. When a manufacturer does not stock an appropriate synthetic lubricant with the performance features needed for the task, a customized "specialty" or "optimized" lubricant may be called for.

If the equipment will be regularly lubricated, it is typically not necessary to use a synthetic or specialty lubricant that is designed to last for an extensive period of time. In this case, the lubricant needs only to meet basic performance standards and be replenished regularly.

If the equipment is lubricated for life, synthetic base oils are often recommended for their many benefits, including:

- Low/High temperature viscosity performance
- Decreased evaporative loss
- Reduced friction
- Reduced wear
- Improved efficiency
- Chemical stability
- Resistance to oil sludge problems
- Extended drain intervals

Despite their many benefits, synthetic lubricants are also known for one distinct disadvantage: cost. But, the cost may be mitigated by extended change intervals, as synthetic and specialty lubricants can last five times longer or more than non-synthetic lubricants when a high-quality base oil is used.

## Factors That Influence Selection

The key requirement for selecting the proper lubricant is the base oil viscosity. In order to select the appropriate viscosity, your supplier will need to gather information about your application, including:

- Operating speed (variable or fixed)
- Specific type of friction (e.g., sliding or rolling)
- Load and the environmental conditions
- Industry standards

For example, some lubricants, like PAG (polyalkylene glycol) oils, are good for sliding friction, but are not well suited for rolling friction. Likewise, PAO oils are used for rolling friction and can handle some sliding friction, whereas silicon and PFPE lubricants are typically used for extremely high temperatures.

## Common Mistakes

During the information gathering stage, equipment owners often make the mistake of overlooking some basic application details which can have a significant impact on the resulting lubricant's performance. It is important to provide as much information as possible and to be specific, as this will help you and your supplier identify the lubricant best suited to the task.

Another common mistake equipment owners make is choosing a lubricant based solely on price. Admittedly, there is a vast difference in the price of a synthetic or specialty lubricant and a general purpose lubricant. Some synthetic or specialty lubricants are 50 to 500 percent more expensive than general purpose lubricants; but the price per kilogram should not be the only determining factor in selection.

Additional factors to take into consideration are:

- Reduced operating costs resulting from less downtime
- Improved labor utilization (less time required for relubrication and maintenance)
- Measurable energy savings and increased output

Often, when a supplier makes a lubricant recommendation for a particular application, and that application is successful, the customer wants to use the same lubricant in another application. Unfortunately, this is typically not an option. Remember, every application is different, and while one lubricant may work well for a ball bearing application, it likely will not provide the same performance for a different bearing application.

Ultimately, the first step in choosing the right lubricant is choosing the right lubricant supplier. Look for your supplier to provide quality documentation and detailed test data that demonstrate the consistency and quality of the product being recommended. A reputable supplier will spend time educating you, so you can make qualified decisions about lubricating your equipment.

Lubrication isn't just about friction; it's about helping your facility achieve better operational reliability, increased energy efficiency and more uptime. With a product portfolio of more than 2,000 specialty lubricants, Klüber has a lubrication solution that fits your unique demands.



We lubricate your world.

