

## Applications of Inert Oils, Greases and Waxes

Inert oils, greases, and waxes are preferred in many industrial situations because they are designed to have low reactivity in the presence of heat or another catalyst. These synthetic substances are generally inert because they are non-hydrocarbon based, and they are manufactured specifically to meet high standards of purity and inactivity.

For example, non-hydrocarbon lubricants that contain no carbon-hydrogen bonds are so inactive that they can safely be used with highly oxidative elements and substances, such as chlorine, nitric acid, or oxygen. These types of lubricants are generally based on halogens rather than hydrogen: they may, for example, contain fluorine rather than hydrogen. The advantage here is that fluorine binds very strongly to carbon, producing a more stable and inert molecule that is less reactive to heat and oxidation.

### Oils

Inert oils are heavily used in the automotive industry: engine oils, transmission fluid, gearbox fluid, brake fluids, and hydraulic fluids are needed to keep engines running smoothly. These types of oils must have a very low reactivity to heat, simply because engines reach high temperatures when in operation.

The same principle is true of many other industrial applications: motors, steam and gas turbines, bearing and circulating systems, air and gas compressors, and in fact anywhere that lubrication is required for moving parts. Extremes of heat and friction require that any lubricants used be as inert as possible.

Inert oils are so useful in this regard that they have a very wide range of applications in many industries, including automotive, aeronautic, aviation, and marine. In fact, they are used in an astonishingly wide variety of locations, simply because any machine with moving parts is likely to need some kind of lubricant to reduce heat and friction, and prevent wear and tear.

### Greases

The word 'grease' once applied solely to the rendered fat of animals. However, the term is applied much more broadly these days, and the word may refer to virtually any lubricant that has a higher viscosity than oil. Greases traditionally consist of sodium, calcium or lithium based jelly, which is emulsified with mineral oil (which is itself a highly inert general purpose lubricant, albeit with much lower viscosity than is required for greases).

Inert greases have some interesting applications that are, perhaps, much less obvious than those of the oils. While inert greases do have some apparent uses in industry (including automotive industries), there are some other less obvious ones. For example, inert greases are used on the valves of chlorine, oxygen, and hydrogen tanks. This gives them an important use in medicine, to improve the safety of oxygen provided to patients who are unable to breathe unaided. In any situation where a highly reactive gas is stored under intense pressure, any substance that gas comes into contact with during storage must of absolute necessity be highly inert.

### Waxes

Inert waxes are most often used as protective or barrier coatings, but may be used to reduce friction in some situations (similar to the way in which skiers use wax to reduce friction between skis and snow to increase their speed).

Waxes are often used to protect a substrate from the effects of aggressively oxidative chemicals such as fluorine gas, chlorine, and oxygen. They may also be used within the metals industry as a form of protective coating or friction-reducing lubricant, but are usually used with finished products (as in the example of skiers).

### Advantages of Inert Lubricants

The main advantage of using such inert lubricants is the very fact of their inactivity. Inert lubricants help make many industrial processes safer simply because they are inert. This provides a means of making many industries safer and of allowing technology to continue advancing without being held back by such mundane problems as the lack of appropriately inert oil.

Such inert lubricants have some highly crucial functions in many important industries. In the pulp paper industry, for example, inert lubricants are used in the process of bleaching wood pulp. Inert halocarbon-based oils are also used in the process of treating water with chlorine to improve its purity, and

fluorine to make teeth stronger and less vulnerable to decay. Inert lubricants are crucial components of the automotive industry and are needed in virtually any industrial process that involves the use of machines with moving parts.

### About the Author

About Author: Stephanie Larkin is a freelance writer who writes about issues and topics pertaining to the use of chemicals such as [Inert Greases](#)

Source: <http://www.article-idea.com>