



## Which Lubricant?

### Grease, oil or dry film?

Oils come in many different types both mineral and synthetic with different properties depending upon their chemical make up. In a lubrication application the oil creates a sacrificial layer or film which shears and isolates the moving surfaces. Within oils many different additives can be used to enhance their properties including their viscosity, viscosity index, oxidation resistance and corrosion protection. Greases are very simply a thickened oil. The thickener is like a sponge and holds the oil in a matrix which under pressure releases the oil to lubricate the surfaces. A grease can be based upon a mineral or synthetic oil, thickened with a metallic soap or sometimes an absorbent particle, clay, silica or PTFE and additives can be either within the base oil or also held within the matrix. Solid additives are also sometimes included to reinforce the boundary lubrication properties of the material under extreme pressure.

A Dry Film Lubricant is either a solid lubricant that is added to a coating which is bonded to the surface like a 'low friction paint' or a layer of un-bonded solid lubricant is applied between surfaces to act as a sacrificial layer or film.

Aerosol or spray lubricants are simply one of the above oils, greases or dry film lubricants (or a mixture in some cases), suspended in a carrier fluid or solvent and with the addition of a propellant to push it out of the can. Depending upon the nozzle and pressure sometimes the product is a fine atomised mist and sometimes it is a stream of fluid.

Aerosols are simply product and application method in one package. Each of the different types of lubricant have both positive and negative points to consider when choosing a lubricant.

Greases and oils are easy to apply but can be messy if over applied and can attract dust or dirt, eventually creating a grinding paste. Oils can dribble and drain away from the application and often will evaporate when exposed to high temperatures, greases generally will stay put. However, in the case of a chain for example a thin oil will penetrate the links, a grease however will simply stay on top where applied.

In order to choose the most suitable lubricant many factors must be considered.

These include:

- Temperature of operation, upper and lower and for how long at the maximum temperature
- Compatibility with all materials, metal, plastic, rubber
- Speeds & loads between the surfaces and type of movement
- Opportunity for re-lubrication, how often?
- Other environmental factors, dust, chemicals, solvents?
- Flammability, biodegradability & recyclability?
- Toxicity under operating conditions and handling, is food approval required?
- Expected life...how long must it last?

