

Technical information

Lubricants and greases come in many types, with varied specifications, and there are probably more on the market today than ever before. With cycle componentry, including frames, being manufactured in so many different materials, it is important to know which lubricant is appropriate for the material you intend to use it on.

The composition of the product is the key issue here. Each lubricant product will have its own specially designed compound necessary for specific tasks.

The following is a guide to this very complex subject, but as always, we recommended that you check the information provided by the manufacturer to ensure that you get it right.

Why use lubricants and greases?

The consequences of incorrect lubrication can be costly in maintenance time and can cause problems ranging from damage to a minor componentry through to writing off a frame.

When two or more components move against one another, it causes friction and friction produces wear and damage.

A lubricant such as oil or grease applied to a surface acts as a barrier. This barrier reduces friction, thus reducing wear and assists in protection from corrosion. This will also aid in the removal and assembly of components.

The need to use excessive force to overcome seizing caused by corrosion will be reduced when servicing a component or assembly.

What are the difference between oils and greases?

Grease is oil that has a soap-like additive included. The soap is added to thicken the oil so that it will adhere better to bearing surfaces or other areas. Also added are other elements such as lithium, calcium and copper, according to the purpose for which the grease is intended.

When should you apply grease and when should you apply oil?

Greases are designed to be applied to bearing surfaces, cables, threads, cantilever bosses, seat posts and stems, and in other situations where a barrier between two materials is desirable. Oil-type lubricants are for chains, levers and gear levers, where friction may occur.

Specific grease applications

- Copper grease should be applied when mounting components to a dissimilar material, i.e. aluminium and/ or titanium framesets with steel or alloy components. This will help prevent both galvanic corrosion and galling (see below).
- Lithium grease is ideal for cables and bearing surfaces, including ball races.
- Waterproof greases are specifically designed for areas and assemblies that will be subjected to severe weather conditions, or which may remain unserviced in vulnerable areas of the bicycle (i.e. headset or traditional bottom brackets, rear hubs).
- Teflon greases are synthetic greases loaded with minute particles of PTFE (Teflon), and are designed for fast-moving parts such as hub bearings and bottom brackets. These greases typically also have good waterproofing properties.

These are only a few types of greases and lubricants, but as you can see there are a wide variety of different types, so it is important to apply the correct one.

Galvanic corrosion

When two metals of the same type are placed side by side, with no physical barrier between them, they will corrode at the same rate. If, however, you put two dissimilar metals side by side e.g. aluminium and steel, the rate of corrosion will be different in each material, but generally increased.

This increased rate of corrosion is caused because the two metals act in effect like a crude wet battery, and an electric current flows between them, hence the name galvanic corrosion.

To guard against this, a physical, non-conducting, barrier must be placed between the two materials. Appropriate grease can form just such a barrier. Additionally you must take into consideration the increased rate of corrosion and be prepared to perform maintenance at more regular intervals than normal.

Galling

Galling occurs between particular materials when they move over each other with more than minimal friction between them. Aluminium will gall against steel, and most metals will gall against titanium.

Galling is the surface of the softer material picking up against the surface of the harder, and sticking to it so that minute fragments get into the joint, so increasing friction, heat and fragmentation, it is a vicious circle.

A layer of grease or anti-galling compound will minimise this effect. To minimise galling in threads, it is also very important that threads are clean, a good fit and truly compatible.

Types of lubricant

There are two main types of lubricant, either thin or thick in composition.

The thinner consistency lubricant easily lubricates all moving parts and penetrates well, but once applied could be washed off in wet conditions.

Thinner lubricants are also more volatile and so will not tend to remain in place as elements within the lubricant evaporate.

These lubricants should be regularly applied to avoid corrosion and wear, especially as another characteristic is that mechanical wear will break down the lubricant comparatively quickly.

Conversely, the thicker lubricants will resist being washed off, evaporate more slowly and so adhere for longer on the lubricated parts and break down in use at a slower rate.

They will not, however, penetrate as well as the thinner lubricants and will attract small particles of dust and grime that will accumulate around all the lubricated parts. This necessitates regular cleaning to ensure that the component will not suffer premature wear as the dust forms a kind of grinding paste with the grease.

How often should I re-lubricate or grease?

There is no set time scale. Whenever you assemble, service or maintain any component you should either apply a lubricant or grease, as appropriate to the job.

- Some new chains come with thick, sticky grease on them. It is applied by the manufacturer to stop corrosion only. This should be removed using a degreaser and an appropriate, lighter lubricant applied.

What is the correct lubricant or grease to use?

There are no definitive answers to this question, as conditions of service for the components will partly determine which lubricant or grease is most suitable. There are a number of possible sources of advice or information, though: -

- Component manufacturers' assembly sheets, websites and other advisory notes
- Lubricant manufacturers' helpline, website or instruction sheet
- A more experienced colleague